

Town of Mendon Vermont
Local Hazard Mitigation Plan

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1 Introduction

The impact of expected, but unpredictable natural and human-caused events can be reduced through community planning. The goal of this plan is to provide an all-hazards local mitigation strategy that makes the Town of Mendon more disaster resistant.

Hazard Mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. FEMA and state agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck. This plan recognizes that communities have opportunities to identify mitigation strategies and measures during all of the other phases of Emergency Management – Preparedness, Response and Recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

2 Purpose

The purpose of this Hazard Mitigation Plan is to assist the Town of Mendon, VT in identifying all hazards facing the community and identify strategies to begin reducing risks from identified hazards. Once adopted, the local mitigation plan is not legally binding; instead, it outlines goals and actions to prevent future loss of life and property.

Adopting and maintaining this Local Hazard Mitigation Plan will provide the following benefits:

- Make certain funding sources available to complete the identified mitigation initiatives that would not otherwise be available if the plan was not in place.
- Ease the receipt of post-disaster state and federal funding because the list of mitigation initiatives is already identified.
- Support effective pre- and post-disaster decision making efforts.
- Lessen the Town’s vulnerability to disasters by focusing limited financial resources to specifically identified initiatives whose importance has been ranked.
- Connect hazard mitigation planning to community planning where possible.

The community vulnerabilities emphasized and addressed in this plan are:

Flooding and fluvial erosion on Wheelerville Road and Rt 4.

Lack of an Emergency Operations Center (EOC)

Lack of a generator in the town office.

Mendon is fortunate to not have critical facilities in vulnerable locations such as floodplains. The critical facilities in town - the town office and town garage - are not considered vulnerable buildings/locations.

3 Community Background

Land Use and Development Patterns

The Town of Mendon is a rural community located in east central Rutland County. The village is on Route 4 in the northwest section of town. The village contains the Town Office, a church, a municipal garage, a number of commercial enterprises, and many residences. Route 4, connecting Rutland and points west with the Killington-Pico ski areas, is a major east-west traffic corridor through Mendon.

A large percentage of businesses and jobs within Mendon are tourist-based, feeding off of the success of nearby Killington-Pico ski area. These uses include hotels and restaurants as well as a few retail stores. The mountainous terrain here features year-round recreation and natural beauty, making it a world-wide destination. The town's close proximity to the ski areas has resulted in nearly one-third of all housing units being seasonal.

Other than the development along Route 4, the remainder of Mendon is sparsely developed with clusters of housing. This is partly due to the terrain and other natural features of the area that limit development, and partly a result of the fact that large tracts of land (approximately 9,000 acres) within the Mendon borders are preserved as forestlands. This includes Green Mountain National Forest (U.S. Forest

Service), Aitken Mendon State Forest, Coolidge State Forest and Rutland City Forest.

The Rutland City Forest is designed to protect the watershed that supplies Rutland City from development. The security and safety of this water supply is an important regional issue.

In addition to the mountainous terrain which makes building on the steep slopes unfeasible, shallow depth to bedrock, soil types that make on-site septic challenging, and a high water table all place limitations on the amount and location of development that is permitted in Mendon. However, the presence of the Alpine Pipeline, which runs along Route 4 from Sherburne Pass to connect with the City of Rutland Sewer System, is one feature that allows denser development than other parts of the region that rely solely on the ability to install on-site septic systems.

In addition to newer commercial development and residences, the town also has a number of historic buildings and cemeteries worthy of preservation.

Demographics and Growth Potential

U.S. Census 2007 population estimates that Mendon's population is 1,083 people. This is a slight increase from the previous census period, but overall the population in Mendon has been remarkably stable since the 1980 census.

Mendon continues to experience mild growth in terms of development, mainly increasing the number of single family housing units.

Land Features

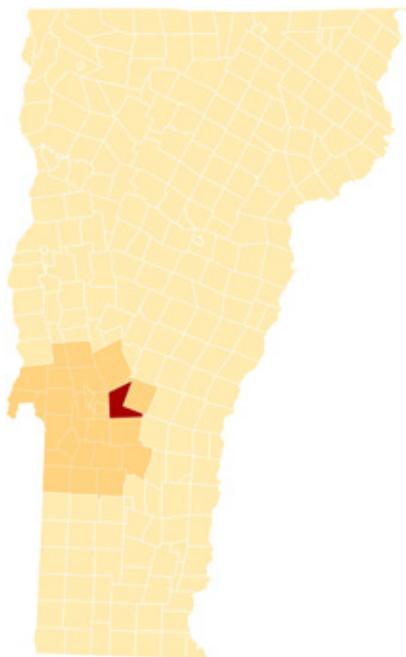
Mendon has a mountainous terrain ranging from a low of 805 feet above sea level to a high of 4,235 feet above sea level. There are several major peaks in Mendon – and peaks of both Pico and Killington ski areas are located in close proximity to Mendon's town borders.

Precipitation and Water Features

The Town of Mendon lies within the Otter Creek drainage area. Natural water features consist primarily of streams and rivers, with a few very small ponds. Due to the high elevations in Mendon, precipitation rates are a bit higher than other parts of the county.

Water Supply

Water is obtained from individual drilled or dug wells



or springs. No municipal water system or fire district exists at this time. Despite the plentiful surface waters, the groundwater table that supplies local wells has been low in recent years causing many wells to go dry. To access water, homeowners are drilling deeper wells, some as deep at 1200 feet. As more people move to Mendon, the long-range sustainability of the water supply is a concern the town.

Water Supply

There is no municipal water service in Mendon. Structures in Mendon are primarily served by springs, individual artesian wells or small community water supplies. In addition, Mendon's natural water resources are a major source of water supply for the City of Rutland.

Sewer Services

Local residences are primarily served by individual, on-site septic systems. The Alpine Pipeline, owned and maintained by a private company, serves properties along US Route 4, Woodard Road, Robinwood Development and other roads, transporting wastewaters into Rutland City for treatment.

Transportation

The town is served by a sparse road network, principally due to topographic constraints and a small population. The primary highway is US Route 4. Town Line Road, Park Lane and Meadow Lake Drive are the other primary collector roads.

Mendon has a total of 17 bridges, of which only 1 is on the state system. Nine of the bridges measure over 20 feet in length. Under new Federal regulations, any bridge 20 feet or over is eligible for Federal funding assistance.

Emergency Response Resources

Mendon does not currently have its own fire department. Fire protection is provided by the Rutland City Fire Department on a contractual basis. At present, this arrangement is working fine. To supplement the resources of Rutland City, Mendon's mobile emergency response trailer has seen limited use in recent years with the availability of emergency equipment available from the Fire Department and State Police. Hazardous material containment is now handled by those agencies, however, Mendon does have limited containment supplies.

Law Enforcement in Mendon is provided by the Town Constable and part-time special officers with assistance from the Rutland County Sheriff's Department and Vermont State Police as needed.

The nearest hospital is the Rutland Regional Medical Center. Ambulance service is provided by Rutland Regional Ambulance as needed.

Please refer to the Hazards Analysis map for the locations of town emergency operations centers and emergency shelters.

Emergency Management Planning

The Town of Mendon has continued to update emergency planning on a regular basis to bring their emergency management plans up to date and to address any special issues. This includes establishing a written agreement with the Green Mountain National Forest about handling forest fires within their lands. It also includes approval by the American Red Cross of the town's shelter at the Mendon Garage. The Towns of Mendon and Chittenden currently partner in the use of Barstow Memorial School as a Red Cross approved emergency community shelter. Addition of an emergency generator allows Barstow Memorial School to operate during power outages in either Mendon or Chittenden. Mendon is currently working with the local United Methodist Church, located at 2600 Route 4 East, to utilize and equip the church as a third emergency shelter.

4 Planning Process

The Rutland Regional Planning Commission (RRPC) and the Town of Mendon coordinated the Local Hazard Mitigation Plan update process. Hazard Mitigation Grant Program (HMGP) funds from FEMA supported this process.

Updating the Plan

RRPC staff discussed updating the plan with town officials in Mendon in 2016. The Select Board met on [February 22, 2016](#) and identified local officials and stakeholders to serve on a committee to review and update the plan.

A thorough update of data was conducted by RRPC staff. Data sources on past hazard events were incorporated into the Community Hazard Inventory and Risk Assessment section, and local and regional policies/plans were incorporated into the Hazard Mitigation Strategy section. As discussed in the following section, the plan was also restructured to a single jurisdictional format. RRPC staff revised the plan throughout the planning process, circulating multiple draft plans to committee members and posting drafts on the town and RRPC website.

Local and Public Participation

The hazard mitigation committee meetings were publicly warned in the following locations: Front Porch Forum, RRPC and Town of Mendon office bulletin boards, and the RRPC and Town of Mendon websites. Each meeting provided an opportunity for public discussion, questions, and comments on the plan. Committee meeting sign-in sheets can be found in Appendix C.

The first committee meeting was held on [February 24, 2016](#) in Mendon at the Mendon Town Offices. Participants discussed the purpose and timeline for updating the plan, other groups/individuals that should be aware of the plan preparation, and damages that occurred in town from Tropical Storm Irene. Town maps were reviewed and the town's hazards were ranked according to their probability, impact, and risk level. The committee discussed high risk hazards in further detail. After this meeting a draft plan was developed by RRPC staff and circulated to committee members.

The second and third committee meetings were held on [March 23, 2016](#) and [April 13, 2016](#), respectively, at the Mendon Town Offices. The committee reviewed the updated draft plan and made changes as necessary. The committee discussed and agreed upon the town's mitigation goals. Then committee members discussed the status of each mitigation action from the town's last plan, and identified new mitigation actions for the town. After this second committee meeting, RRPC staff communicated with committee members at two subsequent committee meetings to gather final pieces of information, and the draft plan was finalized. The final draft plan was distributed to the entire committee for their review.

A 14 day public comment period for the draft plan was held from [April 20th, 2016 to May 2nd, 2016](#). The comment period was warned by posting at the town office, website, and other designated spaces in town; the RRPC office and website; and in the Rutland Herald (see Appendix C for notice). The following neighboring towns planning commissions and emergency management directors were invited by email to review and comment on the plan: [Killington](#), [Rutland Town](#), [Chittenden](#), [Shrewsbury](#), [Clarendon](#), and [Pittsford](#). These organizations were also emailed regarding the public comment period: Rutland Natural Resources Conservation District.

All entities (surrounding towns, town residents, and local organizations) were told to mail, phone in, or email comments to Elysa Smigielski, RRPC, and/or town of Mendon. No comments were received.

The draft plan was then submitted to DEMHS hazard mitigation planning staff for review. Required and recommended revisions received from DEMHS were addressed by working with the town's hazard mitigation committee members on an individual basis.

The plan was then submitted to FEMA Region I for review. Upon receiving FEMA's Approval-Pending Adoption (APA) status, the final plan was reviewed by the Selectboard and adopted after the hearing on the same date. The final plan with the local adoption certificate was forwarded to FEMA Region I and the State Hazard Mitigation Officer, and on date final FEMA approval of the plan was granted.

Plan Evolution

A local hazard mitigation plan was originally adopted by the town as an Annex to the Rutland Region All Hazards Mitigation Plan in 2004, which received FEMA final approval in 2004. As noted in the State Hazard Mitigation Plan, regional planning commissions throughout Vermont are now mainly encouraging towns to create local mitigation plans as single jurisdictional documents rather than annexes, due to the issue of plan expiration being based on the first town that is approved in a regional effort. This plan is a single jurisdictional local hazard mitigation plan.

The following table provides an overview of the town's local hazard mitigation actions from the 2004 Annex along with their current status. Note that mitigation actions which are completed have been deleted from the Mitigation Actions & Projects Table in Section 6.5 of this plan.

There has not been a change in the town's mitigation action priorities between this plan update and the 2004 plan. All plans, including this one, have placed flooding mitigation as the highest town priority, as flooding is the highest and most prevalent risk hazard in the town.

The town will incorporate the hazard mitigation concepts and actions from this plan in to their next town plan update, slated for 2017. The Hazard Mitigation Committee is unsure of incorporation of mitigation actions and concepts from the 2004 plan, since all members of the committee obtained their town positions after 2011 and therefore were not involved in the previous mitigation action plan development.

This plan does reflect any changes in development and any changes to vulnerabilities in the town since the last plan update. Mendon has not had any major development since 2004. The development that has occurred has been the construction of single family homes and accessory structures. This development did not occur in the floodplain, and did not make the town more vulnerable.

The hazard mitigation actions from 2004 are located in Appendix C.

Additional Resources

In addition to the local knowledge of committee members and other relevant parties, the following documents and resources were utilized in the preparation of this plan:

National Oceanic and Atmospheric (NOAA) National Climatic Data Center's Storm Events Database

National Weather Service (Burlington, VT) Recent Weather Event Summaries

Vermont Department of Environmental Conservation Waste Management Interactive Database

FEMA Disaster Declarations for Vermont

OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont

U.S. Geological Survey National Water Information System- Stream Gage Data

"Climate Variability and Socioeconomic Consequences of Vermont's Natural Hazards: A Historical Perspective" by Lesley-Ann Dupigny-Giroux, 2002, Vermont History 70: 19-39.

United States 2000 and 2010 Census

Rutland Herald Archives

Rutland Region All Hazards Mitigation Plan (2012)

State of Vermont Hazard Mitigation Plan (2013)

FEMA Flood Insurance Rate Maps

Relevant Stream Geomorphic Assessments and/or River Corridor Plans

Town plan (2012) & land use bylaws (2010)

5 Community Hazard Inventory and Risk Assessment

What follows is an analysis of local natural hazards and human-caused hazards based upon review of the Hazard Analysis Map produced for the town (see Appendix C), review of existing data, and information provided by local officials and stakeholders. Whenever possible, the issues identified below are represented on the Areas of Local Concern Map (see Appendix D).

Local Vulnerabilities

The vulnerabilities identified in Section 2 of this plan drive this hazard mitigation plan and the town's mitigation strategies, in order to reduce potential losses in the community.

Risk Assessment

The Risk Assessment table below lays out all the hazards identified for the town and covered in this plan. Each hazard was discussed by committee members and ranked in terms of its Probability and Impact, and then given an overall Risk

Level (see table endnotes). This assessment resulted in the categorization of High and Low Risk Level hazards for the town. Following the Risk Assessment table is a detailed discussion of High Risk hazards including tables on Hazard History and Hazard Summary. **Note that the Low Risk hazards that are considered to have low incidence and low probability (i.e. Drought, Extreme Temperatures, Earthquakes, Hurricanes and Tropical Storms, Ice Jams, Landslides and Rockslides, Tornadoes, and Wildfires and Forest Fires) in the community are not profiled in detail in this plan. For more detailed information on these hazards, please consult the State Hazard Mitigation Plan. Despite the overwhelming impact that Tropical Storm Irene had on the Town in 2011, tropical storms are not profiled in this plan due to the low incidence and low probability of the high winds that are usually associated with Tropical Storms. If and when Mendon is affected by a tropical storm, the effect on the town is flooding, and therefore flooding caused by Tropical Storms is covered in the flooding profile.**

Hazard	Probability ¹	Impact ²	Risk Level ³
Climate Change	*	*	*
Drought	Low	Low	Low
Earthquakes	Low	Low	Low
Extreme Temperatures	Low	Low	Low
Floods and Fluvial Erosion	High	High	High
Hurricanes and Tropical Storms	Low	Moderate	Low
Ice Jams	Low	Low	Low
Landslides and Rockslides	Low	Low	Low
Thunder and Wind Storms/Hail	High	High	High
Snow and Ice Storms	High	High	High
Tornadoes	Low	Low	Low
Wildfires and Forest Fires	Low	Medium	Low

1 High likelihood of happening: Near 100% probability in any given year. Medium likelihood of happening: 10% to 100% probability in any given year (at least once in the next 10 years). Low likelihood of happening: 1% to 10% probability in any given year (at least once in the next 100 years).

2 Minor impact: Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries.

Moderate impact: Occurrences of moderate to severe property damage, temporary shutdown of critical facilities, and/or injuries or fatalities. Major impact: Severe property damage on a town-wide scale, shutdown of critical facilities, and/or multiple injuries or fatalities.

3 Based on Probability and Impact, is the risk level: High or Low? Risk is defined as the potential for damage, loss, or other impacts created by the interaction of hazards with community assets

Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change as "... a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity." The 2014 Vermont Climate Assessment (based on the National Climate Assessment) shows that the average annual temperature in Vermont has increased by 1.3 degrees Fahrenheit since 1960, and 45% of that temperature change took place since 1990. The growing season in the state has lengthened due to warming, along with a shorter freezing period in the winter. Average annual precipitation has also increased 5.9 inches, and again much of that change (48%) has occurred only since 1990.

Looking ahead, it is projected that temperatures in Vermont will rise by another 2 to 3.6 degrees Fahrenheit by the year 2050. Precipitation will continue to increase, particularly during wintertime and in mountainous areas. More weather extremes will occur in Vermont, such as record-breaking high temperatures and high-energy lightning storms. The impacts of these projected trends in Vermont will be more severe natural disasters, increased energy demands, power outages, high stream flows and flooding, stress on trees, changes to agriculture, and changes to recreation and tourism seasons. It is clear that the already felt and future effects of climate change will intensify a variety of other hazards, such as flooding/fluvial erosion, severe thunderstorms, and winter storms.

The town will not be profiling climate change as a high risk hazard due to the present day difficulty of analyzing storm history for climate change trends and for identifying specific examples of climate change. However, the Town understands and appreciates the importance of cataloging weather events in an effort to understand how certain natural hazards may change in their intensity and/or frequency as a result of climate change. The Town acknowledges that by continuing the efforts of compiling a complete storm record for the high risk hazards – flooding, thunderstorms, and snow and ice storms – the Town may, in the future, analyze the presence and effects of climate change within the Town.

*Since detailed local information is not available for some historical hazard events, those events are summarized in the Hazard History tables regarding state or countywide impacts.

Floods and Fluvial Erosion

Flooding is the overflowing of rivers, streams, drains and lakes due to excessive rain, rapid snow melt or ice as well as overflow of banks caused by sudden high water flow due to breaching of dams (both human-made and natural dams caused by beavers or debris build-up). Flooding of land adjoining the normal course of a stream or river has been a natural occurrence since the beginning of time. If these floodplain areas were left in their natural state, floods would not cause significant damage.

Floods can damage or destroy public and private property, disable utilities, make roads and bridges impassable, destroy crops and agricultural lands, cause disruption to emergency services, and result in fatalities. People may be stranded in their homes for a time without power or heat or they may be unable to reach their homes. Long-term collateral dangers include the outbreak of disease, loss of livestock, broken sewer lines or wash out of septic systems causing water supply pollution, downed power lines, loss of fuel storage tanks, fires and release of hazardous materials.

While inundation-related flood loss is a significant component of flood disasters, the more common mode of damage in Vermont is associated with fluvial erosion, streambed and streambank erosion, often associated with physical adjustment of stream channel dimensions and location during flood events. These dynamic and oftentimes catastrophic adjustments are due to bed and bank erosion, debris and ice jams, or structural failure of or flow diversion by human-made structures. An ice jam occurs when the ice layer on top of a river breaks into large chunks which float downstream and cause obstructions (State HMP 2013). The town does not have a high incidence or high probability of ice jams.

As noted in the State Hazard Mitigation Plan, "Flooding is the most common recurring hazard event in the State of Vermont" (2013: 4-7). Several major flooding events have affected the state in recent years, resulting in multiple Presidential Disaster Declarations. From 2003 to 2010, Rutland County as a whole experienced roughly \$1.4 million in property damages due to flood events (State HMP 2013). The worst flooding event in recent years came in August of 2011 from Tropical

Storm Irene, which dropped up to 10-11 inches of rain in some areas of Rutland County (State HMP 2013: 4-61). Although the storm was technically a tropical storm, the effects of the storms are profiled in this flooding section, due to the fact that the storm brought only large rainfall and flooding to the town, not the high winds typically associated with tropical storms. This caused most streams and rivers to flood in addition to severe fluvial erosion.

Moon Brook in Mendon has undergone Stream Geomorphic Assessment (SGA) and a Corridor Plan has been developed. This study and plan is vital in determining river and stream alterations, which affect water flows and could potentially lead to future flood damage. The SGA and Corridor Plan suggest potential remediation actions that can be taken to reduce the risk of future flood damage, including planting stream buffers, stabilizing stream banks, removing berms, removing structures and restoring incision areas.

Approximately 10-11" of rain fell in a period of 12 hours during Tropical Storm Irene (August 27-28, 2011), causing significant damage to roads, streambanks, bridges, and culverts. Sections of Route 4 were completely washed away on either side of a four mile stretch, leaving 250 people stranded in the "island" formed between the washed away sections. Approximately 3-4 miles of Wheelerville Road was washed away, leaving the people residing on that road cut off from access to Rutland City. The entrance to Cream Hill Road, sections of Woodward Road, and numerous bridges and culverts were washed away or severely damaged. The storm totaled \$13 million in damages.

Other flooding events in the town typically lead to clogged culverts and to the need for clearing woody debris.

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Severe Thunderstorms

Severe thunderstorms can produce high winds, lightning, flooding, rains, large hail, and even tornadoes. Thunderstorm winds are generally short in duration, involving straight-line winds and/or gusts in excess of 50 mph. Thunderstorm winds tend to affect areas of Vermont with significant tree stands as well as areas with exposed property and infrastructure and aboveground utilities. Thunderstorm winds can cause power outages, transportation and economic disruptions, and significant property damage, and pose a high risk of injuries and loss of life. From 2004 to 2010, for thunderstorms that caused more than \$200,000 in damage, Rutland County experienced nearly \$2 million in property damage. (State HMP 2013: 4-38 to 4-42) Rutland County experienced severe thunderstorms on May 18, 2004 which included large hail (near one-inch diameter) and damaging winds up to ninety miles per hour (National Weather Service).

Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 5–50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the thunderstorm that produces it. (State HMP 2013: 4-68) Much of the hail activity in Rutland County is scattered and varies in intensity. Most areas of the region have been affected by a hail event at some point. Property damage reported from the hail incidents have typically been associated with uprooted trees, downed power lines, and crop damage.

The town is not as vulnerable to thunderstorms/windstorms as it is to flooding. Typically towns' vulnerability to thunder and windstorms are power outages. Mendon is situated in close proximity to Rutland City and to Green Mountain Power, which has facilitated the swift recovery of the town's power. Also, power comes from numerous directions to the town, therefore reducing the amount of time that the power stays out and even preventing outages entirely. The town could be vulnerable to a power outage caused by a thunder/wind storm, however, should a wind event knock down a tree and disrupt power service to the Town Office.

Winter Storms

In the Rutland Region, most winter weather events occur between the months of December and March. Throughout the season, winter weather events can include snowstorms, mixed precipitation events of sleet and freezing rain, blizzards, glaze, extreme cold, the occasional ice storm, or a combination of any of the above. Events can also be associated with high winds or flooding, increasing the potential hazard.

Total regional damages due to winter weather events peak at over \$1,000,000 per month in January, February, and March. The costs of these storms come in the form of power outages due to heavy snow or ice accumulations, damaged trees, school closings and traffic accidents. From 2002 to 2010, Rutland County experienced \$1.1 million in property and crop damages from winter storms (State HMP 2013). There have only been two winter storm related federally declared Disasters in the county (the ice storm of January 1998 – DR 1201, and the severe winter storm of December 2000 – DR 1358). Historically, the winter storm of December 1969 brought record snowfall amounts and snowdrifts to Vermont, and later freezing rain caused prolonged power outages (Dipugny-Giroux 2002: 26).

The town is not as vulnerable to snow and ice storms as it is to flooding. Typically towns' vulnerability to snow and ice storms are power outages and loss of road accessibility. Mendon is situated in close proximity to Rutland City and to Green Mountain Power, which has facilitated the swift recovery of the town's power in the event that the power does go out. Also, power comes from numerous directions to the town, therefore reducing the amount of time that the power stays out and even preventing outages entirely. However, the town could be vulnerable to a power outage caused by ice/wet snow accumulation on power lines or trees falling on powerlines due to weight of ice accumulation in a storm, especially if the outage disrupts power service to the Town Office. Also, snow accumulation has not made the town vulnerable to loss of road accessibility. The town's fleet of snow plows has ensured that roads – especially Route 4 – are accessible, even in major snow accumulation events.

Hazard History

Floods

11.3.1927: Statewide flooding. Extent: 5-10 inches of heavy rainfall on frozen ground. . Statewide damages: \$35 million including 1,000+ bridges, hundreds of miles of roads and railroad, and 84 deaths.

3.21.1936: First flood due to rain and snowmelt, plus second flood due to intense rainfall. Statewide damages ~\$1 million.

6.28-30.1973: Extent: 6" of rain and flooding. Impact: \$64 million in damages.

1.5.1996: Extent: storms and flooding. Impact: \$19,564 in damages

9.16.1999: 5" of rain in TS Floyd

12.16.2000: DR 1358. Extent: flooding. Impact: \$14,008 in damages.

8.28.2011: TS Irene. Extent: 11" of rain / flooding. Impact: FEMA disaster declarations for Public Assistance and Individual Assistance. Federal Public Assistance reimbursement for damages in Mendon = \$13 million

Thunderstorms and High Winds

11.10.1998: Extent: Strong Wind. Impact: \$5,000 in damages, mainly downed trees and power.

6.29.2003: Extent: strong wind. Impact: \$5,000.

8.16.2007: Extent: 60-80 mph winds.

7.19.2008: Extent: Hail

Winter Storms

12.9.2014: Extent: 10-20 inches of snow

3.13.2014: Extent: gusts of 35-40 mph and 8 to 24 inches of snow

12.26.2012: Extent: a snowfall rate of 1-2 inches per hour and snow accumulation of 6-18"

2.23.2010: Extent: 6 to 30 inches of snow.

12.11.2008: Extent: freezing rain, sleet, and 5-9" of snow.

12.6.2003: Extent: 12-18" snow

Hazard Summary

Flooding

Location: town-wide

Vulnerable Assets: Houses, bridges, culverts, wells, pump stations, Alpine sewer pipeline

Extent: Flooding: 10-11" of rain

Fluvial Erosion: 3 miles of streambank along Wheelerville Road, and 1 mile of streambank along Rt 4. The erosion affected up to 100 vertical feet of the embankment

Impact: up to \$13 million in damages.

Probability: High

Thunderstorms and High Winds

Location: town-wide

Vulnerable Assets: houses, trees, powerlines, roads

Extent: up to 50 knot wind, and up to 0.88" hail

Impact: up to \$75,000 in damages

Probability: High

Winter Storms

Location: town-wide

Vulnerable Assets: houses, trees, powerlines, roads

Extent: Up to 30" of snow and up to 0.5" of ice

Impact: Up to \$30,000 in damages

Probability: High

6 Hazard Mitigation Strategy

The high risk hazards and vulnerabilities identified in the previous section of this plan directly inform the hazard mitigation strategy outlined below, which the community will strive to accomplish over the coming years. The mitigation strategy chosen by the town includes the most appropriate activities to lessen vulnerabilities from potential hazards.

Mitigation Goals

The hazard mitigation committee discussed mitigation goals, and recognized that due to the significant impacts of Tropical Storm Irene in 2011 the town now puts a higher priority on flood mitigation. The committee identified the following as the community's main mitigation goals to reduce or avoid long-term vulnerabilities to identified hazards

Reduce the loss of life and injury resulting from all hazards.

Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.

Reduce the damage to public infrastructure resulting from all hazards, especially flooding and fluvial erosion.

Encourage hazard mitigation planning as a part of the municipal planning process.

Encourage the adoption and implementation of existing mitigation resources, such as River Corridor Plans and Fluvial Erosion Hazard Maps, if available.

Recognize the connections between land use, storm-water road design and maintenance and the effects from disasters.

Ensure that mitigation measures are sympathetic to the natural features of community rivers, streams, and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.

Existing Authorities, Policies, Programs and Resources

The hazard mitigation plan is one of several plans and policies that influence local land use decisions. The town's ongoing and recently completed hazard mitigation authorities, policies, programs, and resources are listed below. These programs illustrate the community's capabilities regarding hazard mitigation, and show the town's commitment to incorporating mitigation into other planning mechanisms. The mitigation planning process is continual, and as new issues arise the town will incorporate new information into local plans and other documents as appropriate.

Town Capabilities

The town employs four full time staff: a town administrator, bookkeeper, clerk, road commissioner, and two part time road crew staff. The annual budget for the town is approximately one million dollars.

Flooding: The Town has adopted standards for upgrading bridge dimensions and culvert size, when work is done on those structures. The Town has worked closely with ANR, DEC, and FEMA in repairing roads, bridges, and culverts in the aftermath of Tropical Storm Irene, and is familiar with each agency's processes. [The town should seek the opportunity to collaborate with RRPC, DEC, ANR, and numerous private funders such as the High Meadows group to increase flood resiliency in the town and increase flood resiliency education to town residents.](#)

Fire Protection: Fire protection is provided by the Rutland City Fire Department on a contractual basis. They also provide emergency response for traffic crash incidents. Given its proximity to Rutland City, Mendon is well served by the Rutland City fire department, and the town does not feel the need to expand on this resource.

Vulnerable populations: There are currently very few vulnerable persons in the town. The town has attempted to keep a record of vulnerable individuals who reside in Mendon and who might require special assistance during emergency situations. The town may expand on this capability by annually reviewing the list of vulnerable persons and reviewing the emergency plans in place to assist the vulnerable persons.

Power loss: Power loss has historically been minimal, with outages varying from several minutes to several

days. Given the proximity of the Town of Mendon to Rutland City, and therefore Green Mountain Power (GMP) offices, power in the Town of Mendon is typically restored quickly after an outage event, compared to the restoration times of more rural towns. Many residents in the Town of Mendon own generators, which further reduces the impact of a power outage on the town. The town feels it is adequately prepared for power loss.

more than adequate for Mendon.

Communications: The town has radio communication capabilities with all area first responders. All radios have multi-channel function for both portable radios and land based radios in the Town Hall. The town also has good cellular service. There are no dead zones for either radio or cell service in the town. The town feels that its communication strategies and resources are

Town Policies and Programs that Mitigate Hazards

Municipal Plan: Adopted December 2015

Opportunities for Improvement: Town should contract with the Rutland Regional Planning Commission for assistance with the town plan update.

Land Use Bylaws: Adopted March 2010. Subdivision regulations adopted September 2014

Opportunities for Improvement: The town of Mendon is working with RRPC to update their land use bylaws and subdivision regulations, and the town should continue to work with RRPC to ensure that the regulations are up to date at all times.

Local Emergency Operations Plan: Last adopted on April 20, 2016

Opportunities for Improvement: Town should collaborate with Emergency Management Planners at Rutland RPC on the LEOP update.

Flood Hazard Area Regulations: Adopted August 31, 2009

Opportunities for Improvement: The town has discussed with the RRPC options related to updating the flood hazard regulations, and should continue to work with RRPC to ensure that the regulations are up to date at all times.

River Corridor Regulations: Not yet adopted

Opportunities for Improvement: The town should continue to work with the RRPC to discuss options related to this regulation

Road and Bridge Standards: Adopted on March 18, 2013

Opportunities for Improvement: No improvement needed at this time.

Community Protection: The Town has a Public Safety Director

Opportunities for Improvement: No improvement needed at this time.

National Flood Insurance Program Compliance

The National Flood Insurance Program (NFIP) is a voluntary program organized by FEMA that includes participation from roughly 20,000 communities nationwide and the majority of Vermont towns and cities. Through floodplain mapping and floodplain management at the municipal level, NFIP participation makes affordable flood insurance available to homeowners, renters, and businesses, regardless of whether they are located in a floodplain.

As a participant in the NFIP, a community must adopt regulations that:

1. Require any new residential construction within the 100 year floodplain to have the lowest floor, including the basement, elevated above the 100 year flood elevation. The community must maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed;
2. Allow non-residential structures to be elevated or dry flood proofed; and
3. Require anchoring of manufactured homes in flood prone areas.

The town joined the NFIP in 1988, and the effective date for the Town's Flood Insurance Rate (FIRM) maps is September 18th, 1985. Currently there is 1 structure in town located in the Special Flood Hazard Area, and that structure is not covered by flood insurance. There are no structures in town deemed by FEMA to be repetitive loss properties. **Mendon's zoning administrator enforces the town flood hazard regulations, and monitors development in the floodplain.**

The town has discussed the following actions as possible actions the Town could take to continue NFIP compliance:

1. Distribute literature to residents on flood insurance
2. Adopt river corridor protection language in to the flood hazard regulations bylaw.
3. Ensure that flood plain and river corridor maps are kept up to date, by requesting mapping assistance from the RRPC.

Other Incentives for Flood Mitigation

Vermont's Emergency Relief Assistance Funding (ERAF) provides state funding to match federal Public Assistance after federally-declared disasters. Eligible public costs are generally reimbursed by federal taxpayers at 75%, and the State of Vermont will contribute an additional 7.5% toward the costs. For communities that take specific steps to reduce flood risk the State will increase its contribution to 12.5% or 17.5% of the total cost:

12.5% funding for eligible communities that have adopted four mitigation measures:

1. National Flood Insurance Program participation;
2. Town Road and Bridge Standards;
3. Local Emergency Operations Plan; AND
4. Local Hazard Mitigation Plan

17.5% funding for eligible communities that also have:

1. FEMA's Community Rating System (CRS) participation; OR
2. Fluvial Erosion Hazard (FEH) or other river corridor/floodplain protection bylaw that meets or exceeds the Vermont Agency of Natural Resources FEH model regulations and scoping guidelines.

The town currently qualifies for 7.5% ERAF funding since it has completed these actions: Adopted the 2013 road and bridge standards, adopted the town's local emergency operations plan, and joined the National Flood Insurance Program.

Mitigation Actions and Projects

The town’s hazard mitigation committee discussed the mitigation strategy, reviewing projects from the last plan and considering new actions for the town to pursue from the following categories:

1. Prevention: Land use bylaws, open space preservation, building codes, etc.
2. Property Protection: Acquisition, relocation, elevation, flood-proofing, etc.
3. Public Education & Awareness: Website with maps, public outreach programs, real estate disclosures, etc.
4. Natural Resource Protection: Green storm water infrastructure, low impact development bylaws, protection of steep slopes, etc.
5. Emergency Services Protection: Protect critical facilities, warning capabilities, and infrastructure; generators for critical facilities; etc.
6. Structural Projects: Culvert upsizing, bridge upsizing, floodplain restoration, and stream embankment armoring.

The following mitigation actions and projects are future mitigation strategies identified for the community. Note that the municipality will make every effort to maximize use of future Public Assistance Section 406 Mitigation opportunities when available during federally declared disasters.

Mitigation Action Priority Scoring

Each potential project was considered regarding the benefits it would provide to the town, and the costs required for implementation– resulting in an overall Benefit-Cost Score which is included in the mitigation actions and projects table, with the highest scores indicating the most benefit and least cost. Mitigation actions and projects proposed in this plan should undergo more rigorous benefit-cost analysis by the town before action is taken.

Also, the priority levels indicated in the Mitigation Actions and Projects table take in to account the scores in the Benefit Cost Analysis table, as well as the determination by the hazard mitigation committee of the need for the project. The Benefit Cost analysis table was therefore used as a tool to analyze, discuss, and determine the need and suitability of each project. Therefore, a project may have received a low scoring number in the table, but the committee may have deemed the project important and granted it a high priority.

A project deemed to have a high priority is a project that the hazard mitigation committee identified as: physically possible in the timeframe noted, financially possible with the funding mechanisms noted, and of high importance with regard to hazard mitigation. Projects scored with a medium priority typically were missing one of the attributes identified above, and projects scored as low priority were missing enough attributes to be deemed either low possibility or of low importance.

Worksheet for Calculating Each Mitigation Action’s Benefit to Cost Ratio

Benefits

Benefits include protection of life and property; increase in public safety; and damage reduction / prevention.

- 3 = fulfills all benefits listed above
- 2 = mostly fulfills benefits listed above
- 1 = fulfills only 1 or 2 benefits listed above

Cost

- 3 = less than \$75,000
- 2 = \$75,000- \$500,000
- 1 = Over \$500,000

Implementation

Consider the technical feasibility as well as the social/political acceptance of the project.

- 3 = 6 months or less
- 2 = 6 months to a year
- 1 = over a year

Mitigation Actions and Projects

Vulnerability: Flooding of Bridges and Low Lying Areas

Stream Bank Stabilization.

Stabilize the banks of Mendon Brook

Because the upgrade will significantly increase the culvert’s ability to handle storm flows and decrease the likelihood of infrastructure failure/collapse, the upgrade will create a more resilient infrastructure, thereby improving long-term flood resilience.

Who: Select Board, Road Commissioner, Town Administrator, Director of Public Safety **When:** 2017-2021

How: VTrans Structures Grant, HMGP **Priority:** High

Woody Debris Removal.

Mendon brook experienced significant erosion in TS Irene, and the woody debris left behind from the storm has raised concern about the brook's future ability to handle storm flows. Creating and implementing an ecologically sound plan for the woody debris in Mendon Brook will allow the stream to handle storm flows and decrease the likelihood of future stream bank erosion, flooding, and infrastructure failure/collapse.

Who: Select Board, ANR **When:** May 2016-September 2018 **How:** HMGP **Priority:** High

Revise Zoning to Ensure New Development will not be Vulnerable to Flooding or Erosion.

This includes adopting State River Corridor Protection Language

Who: Planning Commission, Select Board **When:** 2018-2019 **How:** HMGP **Priority:** High

Table of the Benefit Cost Analysis for the Mitigation Actions

Project	Benefits
	<i>Benefits include protection of life and property; increase in public safety; and damage reduction / prevention.</i>
	3 = fulfills all benefits listed above
	2 = mostly fulfills benefits listed above
	1 = fulfills only 1 or 2 benefits listed above
Streambank Stabilization	3
Town Office Generator	2
Church Generator	2
Woody Debris Removal	3
Zoning Revision	3
Elevate Wheelerville Rd	2

Elevate Wheelerville Road .

Approximately 3-4 miles of Wheelerville Road were washed away in Tropical Storm Irene. Elevating the road will help prevent another washout of the road in a flooding event.

Who: Select Board, Road Commissioner, VTRANS, Town Administrator **When:** 2021-2023 **How:** HMGP
Priority: Low

Vulnerability: Power Outages to Homes and Critical Facilities

Generator for the Town Office. At present, the town does not have an Emergency Operations Center, and the town needs an EOC in the event of a flooding or power outage incident. Having an EOC will allow the Town to provide shelter and electricity (and all the accommodations that come with electricity) to vulnerable residents and anyone else in need. In order to create an EOC, the town would need a generator in one of its critical facilities. At present, the critical facility in which it would make the most sense to place a generator is the town office.

Who: Select Board, Town Administrator, Public Safety Director **When:** 2018 -2020 **How:** HMGP
Priority: High

Generator for Secondary Shelter.

The Town is working with the United Methodist Church to make the church a secondary shelter. Having an secondary shelter will increase the Town’s ability to provide shelter and electricity (and all the accommodations that come with electricity) to vulnerable residents and anyone else in need in the event of a flood or power outage.

Who: Select Board, Town Administrator, Public Safety Director **When:** 2021- 2023 **How:** HMGP
Priority: Medium

Cost

- 3 = less than \$75,000
- 2 = \$75,000- \$500,000
- 1 = Over \$500,000

Implementation

Consider the technical feasibility as well as the social/political acceptance of the project.

- 3 = 6 months or less
- 2 = 6 months to a year
- 1 = over a year

Score

1	1	5
3	3	8
3	3	8
1	1	5
3	3	9
1	3	6

7 Plan Maintenance Process

This hazard mitigation plan is dynamic. To ensure that the plan remains current and relevant, it is important that it be monitored, evaluated, and updated periodically.

Monitoring and Evaluation

The plan will be evaluated and monitored annually at an April Selectboard meeting along with the evaluation of the town's Local Emergency Operations Plan (LEOP). The town Emergency Management Director (EMD) will lead this effort. This meeting will allow the Selectboard and EMD, along with the public, to monitor the town's progress in implementing mitigation actions, identify future activities, and update the plan as needed; as well as evaluate the plan by discussing its effectiveness at accomplishing the mitigation goals identified in it. A large component of this meeting involves having the Selectboard and EMD check in with the lead agencies on each of the identified mitigation actions in this plan to fill out the Mitigation Action Tracker Table below in an effort to monitor the progress made on each project.

Updating

The State Hazard Mitigation Officer is available to work with the town on updating its plan. Town officials will work to incorporate elements of this hazard mitigation plan into other local planning mechanisms, such as the municipal plan, zoning regulations, flood hazard bylaws, etc. The mitigation actions will be mentioned in these aforementioned plans, and the Planning Commission and Selectboard will ensure that the Town Plan and Zoning bylaws do not negate the mitigation actions of this plan. This plan will be thoroughly updated at a minimum every five years in accordance with the following procedure, which will include revision of all aspects of the plan:

The Selectboard will appoint the EMD to convene a meeting of the hazard mitigation committee. The EMD will chair the committee, and other members should include local officials such as Selectboard members, fire chief, zoning administrator, constable/police chief, road commissioner, Planning Commission members, health officer, as well as representatives of other organizations such as businesses, historical society, etc.

Data needs will be reviewed by the committee, data

sources identified, and responsibility for collecting information will be assigned to members.

RRPC planners will coordinate with the planning commission and select board when the town rewrites its town plan. RRPC planners will ensure that the mitigation actions from this plan are referenced in the town plan.

Continued Public Participation

Maintenance of this plan and implementation of the mitigation strategy will require the continued participation of local citizens, agencies, neighboring communities, and other organizations. To ensure that all relevant parties have the opportunity and means to participate in the planning process, the town will take the below measures to increase citizen participation in hazard mitigation.

The plan will be posted on the town and RRPC websites, with directions to reach out to the town Select Board, town EMD, or RRPC planners with comments or questions.

The Mitigation Actions will be reviewed at Town Meeting, as a way to educate the residents on the hazard mitigation plan and to garner support for the budget for mitigation actions.

Mitigation Action Tracker Table

MITIGATION ACTION TRACKER							
Action	Information in Hazard Mitigation Plan			Current Status		Completion Goal	Other notes, Difficulties encountered
	Responsible Party	Timeline for Completion	Funding Source	Project Priority	Date Began		
1							
2							
3							
4							

APPENDIX A- Certificate of Adoption

CERTIFICATE OF ADOPTION
Town of Mendon, Vermont
Selectboard

A Resolution Adopting the Town of Mendon, Vermont Local Hazard Mitigation Plan

WHEREAS, the Town of Mendon has worked with the Rutland Regional Planning Commission to identify natural and human-caused hazards, analyze past and potential future damages due to disasters, and identify strategies for mitigation of future damages; and

WHEREAS, the Town of Mendon, Vermont Local Hazard Mitigation Plan analyzes hazards and assesses risks and vulnerabilities within the community; and

WHEREAS, the Town of Mendon, Vermont Local Hazard Mitigation Plan recommends the implementation of actions specific to the community to mitigate against damage from hazard events; and

WHEREAS, the Public Safety Director will be responsible for annually monitoring and evaluating the Plan, and updating this Plan at least every five years; and

NOW, THEREFORE BE IT RESOLVED that the Town of Mendon adopts the Town of Mendon, Vermont Local Hazard Mitigation Plan.

Duly adopted this 27 day of March 2017


Chair of Selectboard

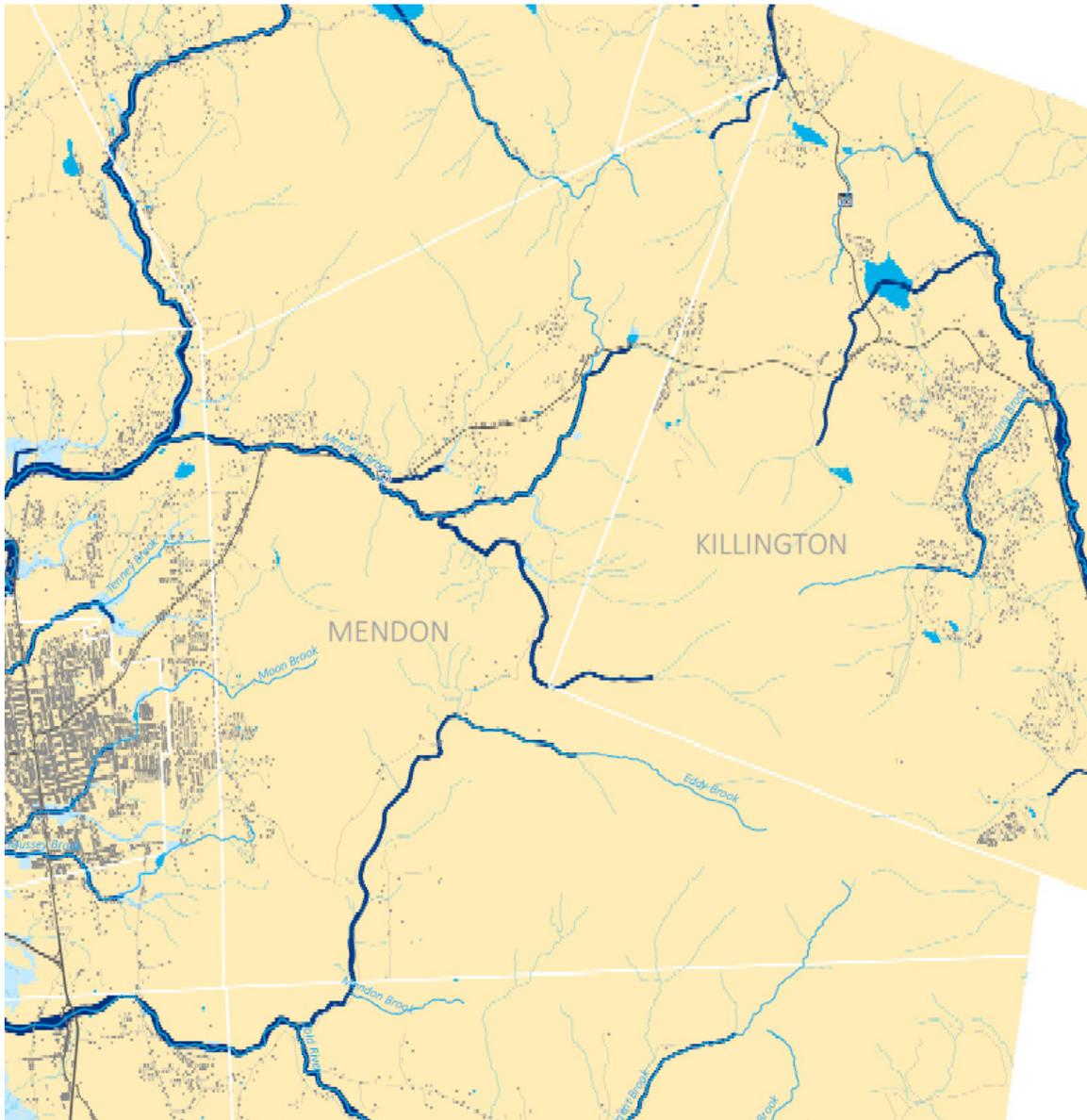

Member of Selectboard


Member of Selectboard

ATTEST


Town Clerk

Appendix B: Local Hazards and Vulnerabilities Map



- Special Flood Hazard Area
- Water Bodies and Rivers
- River Corridors

Appendix C: Public Participation Process

Mendon Local Hazard Mitigation Plan Committee

March 23, 2016

Sign in Sheet

Name	Affiliation(s)
LARRY Courcelle	Chair Selectboard
PHIL DOUGLAS	PLANNING COMMISSION / PUBLIC SAFETY DIR.
RICHARD WILCOX	SELECTBOARDS

Mendon Local Hazard Mitigation Plan Committee

Sign in Sheet

Name	Affiliation(s)
PHIL DOUGLAS	PLANNING COMMISSION / PUBLIC SAFETY DIRECTOR
LARRY Courcelle	Chair Selectboard
RICHARD WILCOX	SELECTBOARDS
Fred Baker	Planning Committ
Justin Lindholm	Planning Comm.

Local Hazard Mitigation Plan Committee

April 13, 2016

Sign in Sheet

Name	Affiliation(s)
Justin Lindholm	PLANNING COMMISSION
Phil Douglas	Planning Commission; Public Safety
RICHARD WILCOX	SELECTBOARDS
James Courcelle	Selectboard

NOTICE OF PUBLIC COMMENT

The Town of Mendon is in the process of drafting and updating its Local Hazard Mitigation Plan, a plan which will make the Town eligible to apply for Hazard Mitigation planning and equipment grants from FEMA. A public comment period on the draft plan is being held from April 20th, 2016 thru May 2nd, 2016.

The Committee has a draft plan ready for public comment, and it may be viewed in paper form at the Mendon Town Offices and the Rutland Regional Planning Commission office. It may also be viewed online at: The Mendon, VT webpage: <http://www.mendonvt.org/>
The Rutland Regional Planning Commission webpage: www.rutlandrpc.org

Comments on the plan may be submitted to Elysa Smigielski, Rutland Regional Planning Commission, at:
Email: elysa@rutlandrpc.org
Phone: 802 775 0871
Mail: PO Box 965, Rutland VT 05702

Appendix D: Deleted Mitigation Actions from the 2004 Plan

Incorporate proposed strategies into Annual Budget and Capital Improvement Plan

Status: In progress. This town does this on an annual basis.

Examine current Town Plan, bylaws, and development regs to ensure that identified hazard areas are addressed

Status: In progress. The town does this on an annual basis, and is currently, as of 2016, working on its town plan.

Upgrade Bridge 24 at Mendon Brook on Wheelerville Road to prevent damage during high water events.

Status: Complete.

Take steps to deal with erosion in the potential landslide area on Wheelerville Road.

Status: In progress. The town is investigating methods for performing this work.

Upgrade Bridge 22 on Notch Road to prevent damage during high water events.

Status: Removed. This action is no longer an issue.

Adopt permanent zoning regulations.

Status: Complete

E911 Update will occur summer of 2009.

Status: Complete

Generator needed for the Town Office. The Town has budgeted \$5,000 so far.

Status: In Progress. This is included as a mitigation action in Section 6.

Make motorists aware of the proper direction of third lane along Route 4. Especially where painted lines on the road aren't visible during winter weather.

Status: Removed. This is not deemed to be a hazard mitigation action

Establish a partnership with Killington Resort to limit the number of skiers who go off trail by increasing signage, etc.

Status: Removed. This is not deemed to be a hazard mitigation action

** Please note that the priority scores for these actions are not shown here, as the priority ranking system from the 2004 plan is not compatible with the ranking system used in this plan.*