Town of Granville, Vermont 2025 Local Hazard Mitigation Plan

Prepared by the Two Rivers-Ottauquechee Regional Commission and the Town of Granville

Date of Town Adoption:

Date of Final Approval by FEMA:

Table of Contents

I. Introduction

Natural and human-caused hazards may affect a community at any time. They are not usually avoidable; however, their impact on human life and property can be reduced through community planning. Accordingly, this Local Hazard Mitigation Plan (hereafter referred to simply as the Plan) seeks to provide an all-hazards mitigation strategy that will make the community of Granville more disaster resistant.

"Mitigation" is defined as any sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects. Previous Federal Emergency Management Agency (FEMA), State and Regional Project Impact efforts have demonstrated that it is less expensive to anticipate disasters than to repeatedly ignore a threat until the damage has already been done. While hazards cannot be eliminated entirely, it is possible to identify prospective hazards, anticipate which might be the most severe, and recognize local actions that can be taken ahead-of-time to reduce the damage. These actions, also known as 'hazard mitigation strategies' can (1) avert the hazards through redirecting impacts by means of a structure or land treatment, (2) adapt to the hazard by modifying structures or standards or, (3) avoid the hazard through improved public education, relocation/removal of buildings in the flood zone, or ensuring development is disaster resistant.

II. Purpose of the Plan

The purpose of this Plan is to assist Granville in identifying all hazards facing the town, ranking them, and identifying strategies reduce risks from known priority hazards.

The Town of Granville seeks to be in accordance with the strategies, goals, and objectives of the State Hazard Mitigation Plan.

The 2025 Granville Local Hazard Mitigation Plan is the third stand-alone mitigation plan drafted for the Town. Previously, the Town had a town-specific 2009 Annex in the Regional Pre-Disaster Mitigation Plan. In 2014 and 2019, the Town adopted the Plan as a single jurisdiction mitigation plan. This 2025 Plan is an update to the 2019 Plan.

Old assumptions have been challenged throughout and new information has been added to make the plan stronger and more useful for the Granville town officials and residents who will implement the hazard mitigation strategies in the future.

III. Community Profile

Granville, Upper and Lower, was first chartered as the Town of Kingston, August 2, 1781. The name was later changed to Granville in 1833. Town population rose to a high of around 1,100 in the mid-1880s. Since then, a steady decline has brought it to a low of about 200 in 1950 and a slow increase since then to a 2000 population of 303. As of the 2020 Census, Granville's population has remained steady at 301. In East Granville, a once-bustling railroad siding and manufacturing district is now a row of houses along Route 12A with no businesses at all. Approximately 46% of the total acreage of the Town is Green Mountain National Forest.

According to the U.S. Census data, there were 234 housing units in Granville in 2020, a decrease of 10 from the 244 housing units reported in 2010. Of the 234 housing units, 135 were considered occupied and 99 were considered vacant.

The Town lies within the service area of Green Mountain Power, which supplies electrical power to all sections of town.

Granville relies on a volunteer fire department of about 20 emergency personnel to provide fire protection, rescue, and HAZ-MAT. The fire station houses three fire apparatus and other firefighting equipment. The fire department also has mutual fire protection agreements with Hancock, Warren, Ripton, Waitsfield and Rochester. From the Granville fire station, the Granville Volunteer Fire Department also operates Valley Rescue Squad consisting of about 20 volunteers and one EMS vehicle. Valley Rescue Squad provides emergency medical first response to the three towns of Granville, Hancock, and Rochester. Ambulance services are provided by White River Valley Ambulance from Bethel. East Granville is served by the White River Valley Ambulance and by Randolph's fire departments.

The Vermont State Police is the primary law enforcement agent in the Town of Granville. A town elected First Constable functions in a supplemental role. A second Constable is also elected for East Granville but serves no law enforcement function.

The closest hospital is Gifford Medical Center, located in Randolph. Medivac services are available by the DHART helicopter.

IV. The Planning Process

A. Plan Developers

Kyle Katz, a Planner at the Two Rivers-Ottauquechee Regional Commission (TRORC), assisted the Town of Granville with updating its Hazard Mitigation Plan. Members who assisted with the revisions include:

Name	Role/Organization	How Participation Was Solicited
Mark Belisle	Granville Emergency Management Director	On 7/11/2024, TRORC contacted the Town of Granville to begin updating and developing their new Hazard Mitigation Plan. TRORC staff coordinated with Granville town officials to set up an introductory meeting. The first meeting was scheduled for 08/20/2024. TRORC's staff attended that meeting, followed by subsequent meetings in which participants revised and developed the HMP. See below for more meeting-specific details.
Dan Sargeant	Granville Fire Department, Fire Chief	
Cheryl Sargeant	Town Clerk	
Will Brokhoff	Granville Planning Commission Chair	
Mike Reiderer	Granville Planning Commission Member	
Tammie Beattie	Granville Planning Commission Member	

B. Plan Development Process

The 2024 Granville Hazard Mitigation Plan is an update to the single jurisdiction Hazard Mitigation Plan adopted by the Town in 2019. The changes to this plan include:

- **General**
  - Data updates: New hazard incidents for each top hazard have been added, including the addition of emergency declarations and mitigation actions;
  - Hazards have been reevaluated with the hazard ranking system used by Vermont Emergency Management;
  - Discussions on the ability of the Town to expand or improve upon existing mitigation actions, including how both development and mitigation work has impacted vulnerabilities within Granville;
  - Essential Services Map has been updated with the most recent geospatial data.
- **Hazards Analysis**
  - Severe Summer Weather, Flash Flood/Flood/Fluvial Erosion, and Extreme Cold/Snow/Ice Storm are still on the list of "top hazards," which reflects the local officials' belief that the Town is still vulnerable to these hazards;
  - Landslides/Mudslides/Rockslides and Hazardous Materials Spills have been removed from the top hazards in this Plan update, reflecting reduced prioritization compared to the last Plan.

- Invasive Species and Tropical Storm/Hurricane have been added to the top hazards, reflecting their increased prioritization since the last Plan.

The following represent the avenues taken to draft the Granville Hazard Mitigation Plan:

- **Activities ****Note: the meetings with an asterisk were publicized and open to the public.
  - *08/21/2024: TRORC staff met with the Granville LHMP committee members to introduce the plan update process, respond to any questions, and engage in a ranking exercise to determine "Top Hazards" in the Town. The plan development timeline and public outreach strategies were discussed. This meeting was open to the public and notice of the meeting was posted on the town website. No members of the public attended the meeting and no comments were received.
  - *10/15/2024: TRORC staff met with the Granville LHMP committee to review previous actions from the 2019 Hazard Mitigation Plan, review Town Capabilities for Implementation, and to begin developing new hazard mitigation strategies. A flyer advertising the meeting was put up at the Town Clerk's Office, Town Hall, US Post Office, and the Granville Country Store. The meeting was also noticed on the town website and the local front porch forum, and information of the meeting was relayed to town elected and appointed officials. The meeting was open to the public. No members of the public attended.
  - *11/13/2024: A draft review meeting was held in-person and on zoom to review the draft of the plan, finalize mitigation strategies, and discuss the survey results. A flier was posted at the Town Hall, Town Office, US Post Office, and the Granville Country Store on 10/30. The flier was also posted on the Town website. A notice for the meeting was also posted in the 11/07 issue of the White River Valley Herald, and on the Front Porch Forum on 10/30 and 11/09. The meeting was open to the public. No members of the public attended, and no comments were received.
  - **Local Hazard Mitigation Plan Survey:** A survey was prepared and distributed through outreach on posted fliers, the Town website, and Front Porch Forum. A total of 8 responses were received. The committee discussed the responses at the 11/07 meeting, and a summary of the survey is included in Appendix D.
  - Draft provided to Selectboard:
  - Draft provided to neighboring municipalities:
- **Review of existing plans, studies, reports, and technical information (*44 CFR 201.6(b)(3)*)**
  - Vermont State Hazard Mitigation Plan, 2023
    - This Plan was referenced for knowledge of the state's hazard mitigation planning processes and description of top hazards for the State of Vermont.
  - Granville Hazard Mitigation Plan (Adopted 10/23/2019)
    - This Plan was referenced extensively during the plan development process, especially in regard to the worst threats and mitigation action strategies identified in 2019.
  - Granville Town Plan (Adopted 11/13/2019)
    - The Town Plan provided TRORC's staff with background information on the

community, as well as more detail on their emergency services.

- Granville's Flood Hazard Bylaw (Adopted 07/27/2009)
  - The Flood Hazard Bylaw was referenced when drafting the Flash Flood/Flood/Fluvial Erosion and Severe Summer Weather sections of this Plan.
- US Census Bureau
  - US Census data was accessed for general demographic information for Granville.

C. Status Update on Mitigation Actions Identified in 2019

The following table outlines the mitigation actions that were proposed in Granville's 2019 Local Hazard Mitigation Plan.

Participants in the new Plan update process reviewed these actions and reported on the status of each:

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2024 – Status of Mitigation Actions
ALL HAZARDS				
Ensure that Granville's Local Emergency Management Plan (LEMP) is kept up-to-date and identifies vulnerable areas and references this Plan.	Selectboard, EMD	Before May 1st of each year.	Local resources	This action is completed. The LEMP is updated every year, and will therefore continue in the current plan.
Consistently document municipal infrastructure damage after weather events.	Selectboard, Road Commissioner	As needed following significant weather events.	Local resources	Not completed. This action will continue in this plan update.
HAZARDOUS MATERIAL SPILL				
Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum.	Fire Department	As needed	Local resources, state resources	This action is ongoing and will remain in the plan update. Emergency personnel complete trainings on a regular basis.
Compare identified locations of hazardous material storage tanks to flood hazard areas, and in areas of overlap, raise awareness on risk factors during floods through targeted outreach.	Selectboard, Fire Department	Year 2-4	Local resources	Not completed. This action is not feasible and will not continue in the plan update.
LANDSLIDES/MUDSLIDES/ROCKSLIDES				
Complete an inventory of locations where critical facilities, buildings, and infrastructure are vulnerable to landslides/ mudslides/rockslides.	EMD, Road Commissioner, Selectboard	Year 1-2	Local resources	Not completed. Existing critical facilities are not located in areas susceptible to landslides. This action will not continue in this plan update.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2024 – Status of Mitigation Actions
Identify specific project areas where bank stabilization is needed.	Road Commissioner, EMD, Planning Commission	Year 2-4	Local resources	Not completed. Bank stabilization is a priority for the Town. This action will remain in the plan update.
FLASH FLOOD/FLOOD/FLUVIAL EROSION/SEVERE WEATHER				
Maintain and update town bridge and culvert inventories. Regularly inspect and maintain town bridges and culverts; and develop a schedule to replace undersized culverts.	Road Commissioner, Selectboard	Annually/as needed	Local resources	A culvert inventory was completed in 2019. This action will continue in the current plan, as it is important to continuously maintain and inspect town culverts and bridges.
Revise and strengthen the Town's Flood Hazard Bylaw.	Planning Commission	Year 1-2	Local resources, TRORC/ Municipal Planning Grants	This action is currently underway, but will remain as an action in the current plan. The Planning Commission held a hearing on a revised draft of the flood hazard bylaw. The draft is now at the Selectboard.
Upgrade culverts on Town Line Road.	Road Commissioner, Selectboard	Year 1	Local resources, state resources (Better Backroads grants), FEMA, HMGP and PDM-C grants	Several culverts have been upgraded in the past five years. There are no plans to upgrade additional culverts in the near future.
Upgrade culverts on Maston Hill Road.	Road Commissioner, Selectboard	Year 2-4	Local resources, state resources (Better Backroads grants), FEMA, HMGP and PDM-C grants	Two culverts (#3 and #4) were replaced with 18"x40' culverts through the Grants in Aid program. This action will remain in the plan, since additional work may be needed on Maston Hill Road.
Identify areas of fluvial erosion that could benefit from river/stream corridor plantings.	Conservation Committee, Planning Commission	Year 2-4	Local resources, White River Partnership, TRORC	Not completed. Riparian buffer plantings are important for streambank stabilization. This action will remain in this plan update.
EXTREME COLD/SNOW/ICE STORM				
Clear and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained.	Road Commissioner, Selectboard, Tree Warden	On-going/As needed	Local resources	This action occurs on an ongoing basis. This action will continue in the plan update.
Plan for, budget and maintain roads for safe winter travel.	Road Commissioner, Selectboard	Annually during budget discussions.	Local resources	This action occurs on an ongoing basis. This action will continue in the plan update.
Identify populations that are vulnerable to extreme cold and make a plan to assist them, if necessary, in the	Resource Office, appointed by the	Annually	Local resources	This action occurs on an ongoing basis. This action will continue in the plan update.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2024 – Status of Mitigation Actions
event that it occurs.	Selectboard, Valley Rescue Squad			

The Town of Granville has 10 fewer homes in 2020 (234) than it did in 2010 (244), according to US Census Bureau data, indicating a lack of residential and commercial development occurring in the Town. The Green Mountain National Forest comprises about half of the land area of the Town to the west, and a foothill to the east isolates the villages of Granville and Lower Granville from East Granville, so existing development and any new development is/would be located in the Route 100 valley. However, there are no current plans for new development in the Town of Granville, including no new developments within the floodplain. In this regard, the lack of development means that no new vulnerabilities have been established.

The Town of Granville was hit hard by flooding associated with Tropical Storm Irene. In fact, Granville was one of a handful of towns that were isolated due to the flood damage. Understandably, this increased the awareness of Town officials and residents to Granville's flooding vulnerabilities. For example, after Tropical Storm Irene, many of the Town's culverts were upgraded to improve the culvert's capacity to pass greater quantities of water. The Town continues to upgrade additional culverts as funding becomes available.

Over the past 5 years, culverts have been upsized on North Hollow Road, Plunkton Road, Maston Hill Road, West Hill Extension and Town Line Road. This has reduced the overall vulnerability of these roads to flooding and erosional damage during heavy rain events. Another way the Town has reduced its overall vulnerability is through the completion of the Handly Road buyout. This property directly bordered the Third Branch of the White River in East Granville and flooding was an immense hazard as the property was directly in the floodplain. This buyout has reduced vulnerability by preventing further loss of property as well as the creation of additional flood storage space for the White River. The Town of Granville also decided to downgrade Buffalo Farm Road, which was prone to landslides, and use the money allocated to fixing the road elsewhere.

D. Existing Hazard Mitigation Programs, Projects & Activities

The Town of Granville is currently engaged in the following hazard mitigation programs, projects and activities:

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve On
	Program—Annual update of Granville's Local Emergency Management Plan (LEMP). Last updated and approved on 4/04/2024.	Volunteer time from the Selectboard and Emergency Management Director, and assistance from TRORC. Funding from Vermont DEMHS.	This document is reviewed and updated each year to ensure that the contact information of emergency response personnel is up-to-date. This information is then sent to Vermont Emergency Management for their records. There is no need to expand on this program at this time.

Community Preparedness Activities	Program—attendance/participation at the Regional Emergency Management Committee (REMC).	Volunteer time from the Granville E911 Coordinator. REMC administrative support is provided by TRORC and REMC activities are funded by VEM..	No need to expand or improve on attendance, as it is satisfactory.
	Fire Department	Volunteers	Continued outreach to residents.
	Ongoing Action—The Town of Granville has a website.	Time from the Town Office. Funding from local budgets.	Potentially incorporate VT Alert information and materials on the Town Website.
Insurance Programs	Authority/ Program—participation in National Flood Insurance Program (NFIP) The Town of Granville participates in and is compliant with the NFIP by enforcing its Flood Hazard Bylaw based on the 8/19/1991 FIRM. [Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).]	Time from Floodplain Administrator. Assistance from TRORC and Vermont ANR. Funding from local resources—annual budget.	The Town's Flood Insurance Rate Map (FIRM) was dated 8/19/1991 and has not been updated since this date. New FEMA FIRM maps are expected in the next several years and will be automatically adopted by the current flood regulations.
Land Use Planning	Policy/Program – Granville Town Plan (Adopted 116/136/20194).	Volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter.	The Town Plan is updated every eight years, as required by statute. The Planning Commission is currently in the process of updating the Town Plan and may expand or improve upon any section it deems necessary, or that is required by changes in state statute.
	Authority – Granville Flood Hazard Bylaw (Adopted 7/27/2009).	Volunteer time from Planning Commission, and assistance from TRORC and VT ANR.	The Town of Granville's Flood Hazard Bylaw is somewhat outdated and would benefit from an update. An update to the Flood Hazard Bylaws is currently underway. A draft of the bylaws has gone through a Planning Commission hearing and is now at the Selectboard. This action has been carried over into the 2019 Plan.

	Action – Road Erosion Inventory	Granville staff time with TRORC assistance. Funding from VTrans.	The Town applied for and received funding to complete a road erosion inventory, which it finished work on in 2018. The inventory analyzed town road locations that have experienced erosion. The Town can use the information collected in this inventory to prioritize road upgrades and infrastructure investments.
	Program – Vermont building codes	Granville does not enforce a local building code.	Vermont has adopted statewide residential and commercial building codes for safety and energy standards. Building codes are enforced by Vermont's Division of Fire Safety. Residential and Commercial Building Energy Standards are building energy codes that apply to all new residential and commercial construction in the State. The Town has limited financial and staff capacity to enact and enforce building codes. Building codes are enforced at the state level by the Vermont Division of Fire Safety.
Hazard Control & Protection of Critical Infrastructure & Facilities	Authority— Town Road and Bridge Standards (Adopted 072/118/201913)	Adopted by the Selectboard, implemented by the Road Commissioner. Funding from VTrans and the local budget to implement.	Specifies minimum construction standards for roadway, ditches, culverts and bridges and guardrails. VTrans updates the Town Road and Bridge Standards on a fairly regular basis. The Town has the authority to require above-and-beyond what is written in the policy.
	Policy/Program—Granville Hazard Mitigation Plan (Adopted on 1006/16/20194)	Volunteer time from Town officials; assistance from TRORC and VEM. Funding from FEMA; Vermont VEM; TRORC.	The 2025 Granville Local Hazard Mitigation Plan will replace the 2019 Plan.The 2019 Granville Local Hazard Mitigation Plan will replace the 2014 Plan. The 2019 LHMP has evolved from the 2014 Plan, including data updates and improvements to mitigation actions. Future iterations of the Town's LHMP will be updated by the Town at least every five years.
	Program/Action – Up-to-date culvert inventory.	Time from Road Commissioner; Funding from local budget.	The Town updates the culvert inventory on an as needed basis and uses this inventory to inform subsequent culvert upgrades. Most recent updates have included upsizing multiple culverts on North Hollow Road, Plunkton Road, Maston Hill Road and Town Line Road. The most recent culvert inventory was conducted in 2019.
Education/ Public Outreach	Action – Compare hazardous material storage tanks to flood hazard areas.	Volunteer time from town officials.	In areas of overlap between hazardous material storage and flood hazard areas, the Town can expand upon their efforts by raising awareness on risk factors during floods through targeted outreach.

	Action – Use the town website to provide information to residents on hazardous weather conditions and available resources during hazard events.	Volunteer time from town officials and the Emergency Management Director	The Town can improve outreach through the website and other methods, including notifying residents of the VT Alert system.

E. Plan Maintenance

This Plan (the Granville Local Hazard Mitigation Plan) will be regularly monitored, updated and evaluated annually at a Selectboard meeting, along with the review of their Local Emergency Management Plan (LEMP). The Plan will be updated and evaluated by discussing its effectiveness as well as the need to make any revisions in the update process. The Selectboard will monitor the implementation of the hazard mitigation strategies outlined in this Plan by noting which have been completed and by discussing how to accomplish the remaining strategies. This meeting will constitute an opportunity for the public and other town officials to hear about the town's progress in implementing mitigation strategies and to give input on future activities and Plan revisions through an opportunity to comment during the meeting. The Plan Maintenance process is outlined in Appendix C.

The Plan will be evaluated by determining the status of mitigation strategies and how this status aligns with the timeframes provided in the mitigation actions table. Adherence to the strategies outlined in this Plan will determine the degree of effectiveness. The Town will also evaluate the status of vulnerabilities mentioned in this Plan and will make any necessary changes. Granville's Emergency Management Director will be the principal point of contact and will take primary responsibility for the monitoring, evaluation, and update process described here. They will bring the Plan's maintenance activities to the Selectboard's agenda and discussions.

Updates and evaluation of this Plan by the Selectboard and the local EMD will also occur within three months after every federal disaster declaration. The Town will monitor, evaluate, and update this Local Hazard Mitigation Plan at an April Selectboard meeting and after every federally declared disaster directly impacting the Town according to the graphic in Appendix C. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

The Two Rivers-Ottauquechee Regional Commission (TRORC) will help with Plan updates if assistance is requested by the Town of Granville and if funding is available. The Town will reach out to TRORC, ideally, a year before the current plan expires in order to request assistance and begin the update process. If TRORC is unable to assist the Town, then Granville's Town Clerk, Administrative Assistant, EMD and/or Selectboard will update the Plan, or the Selectboard may appoint a committee of interested citizens (including the current local EMD) to draft changes. Ultimately, it will be the Town's responsibility to initiate and update the Local Hazard Mitigation Plan.

The process of evaluating and updating the plan should take place a year before the expiration of the Plan and will include continued public participation which will be advertised through public notices posted on the municipal website, notice within the municipal building, notice in The White River Valley Herald and the TRORC newsletter. Additional stakeholders may be invited to the meeting; these include: White River Valley Ambulance, Inc., the National Forest Service, and the Vermont Agency of Natural Resources (VT ANR). VT ANR will be invited because they can provide assistance with NFIP outreach activities in the community, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard areas, and other applicable initiatives. These efforts will be coordinated by the Town Clerk.

Updates may include changes in community mitigation strategies; new town bylaws, zoning and planning strategies; progress on the implementation of initiatives and projects; effectiveness of implemented projects or initiatives; and evaluation of challenges and opportunities. If new actions are identified in the

interim period, the plan can be amended without formal re-adoption during regularly scheduled Selectboard meetings.

Granville shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2013 Vermont Legislature passed a law requiring all towns to incorporate flood resiliency elements into their town plans as of July 2014. To do so, flood hazard and fluvial erosion hazards needed to be identified, and strategies and recommendations will be provided to mitigate risks to public safety, critical infrastructure, historic structures and public investments. There is a flood resiliency element incorporated into the most recent Granville Town Plan, which was adopted in 2019. This element will be maintained in future iterations of the Town Plan.

The Town should review and incorporate elements of the Local Hazard Mitigation Plan into updates of the municipal plan and flood hazard regulations. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard regulations will also be considered after declared or local disasters. During the municipal plan update process, the Planning Commission will review and consider incorporating mitigation actions and priorities described in this Plan into the municipal plan. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

V. Community Vulnerability by Hazard

A. Hazard Identification

Mitigation efforts must be grounded in the rational evaluation of hazards to the area and the risks these hazards pose. This is done through a process, which in essence asks and answers three basic questions:

- What bad things can happen, given the town's vulnerabilities?
- How likely are they to occur?
- How bad could they be?

This process, which is laid out in the table below, is an attempt to inventory the known hazards, establish the likelihood of them occurring in the future, and then assess the community's potential vulnerability to each. In performing this analysis, we are then able to prioritize actions that are designed to mitigate the effects of each of these disaster types and ultimately make Granville a safer place.

It is important that we learn from the past in order to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Granville, the larger region, and the State of Vermont can give us good information about what types of disasters we can expect in the future and what kinds of damage they might cause. However, while this historical data can inform our perspective of what might happen in the future, it is by no means a prophecy. While Granville might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never be affected in the future.

Indeed, the advance of climate change means that old weather patterns may not hold. For instance, in recent years, Vermonters have seen an increase in the number and severity of storms, especially rainfall

events. Armed with historical data and a healthy respect for climate change and the unknown, we have tried our best to identify hazards and prepare for the future.

A significant change between this Plan and the 2019 Plan is the way in which hazards are assessed. This Plan follows closely the hazard assessment approach taken in the 2018 and 2023 State Hazard Mitigation Plans. The table below displays the ranking criteria used to score both the potential impact and the frequency of occurrence. The Hazard Mitigation Planning team evaluated the probability of hazard events occurring in the future.

The following table reflects the hazards that we believe can be expected, or are at least possible, in the central Vermont area. We have considered factors such as frequency of occurrence and potential community impact to rank each and determine which hazards pose the greatest threats to life and property in Granville. The most significant threats (bolded in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan. It should be noted that hazards assigned with the same "Hazard Score" are not in order and their placement in the table should not be assumed to reflect their potential to create hazards for the town.

Table: 2024 Hazard Assessment							
	Probability	**Potential Impact**					
Hazard Impacts		Infrastructure	Life	Economy	Environment	**Average:**	**Score:**
Fluvial Erosion*	4	4	1	2	3	2.5	10
Inundation Flooding/Flash Flooding*	4	3	2	2	2	2.25	9
Severe Summer Weather*	3	3	2	2	2	2.25	6.75
Invasive Species*	4	1	1	1	3	1.5	6
Ice and Snow Storms*	3	1	3	2	1	1.75	5.25
Tropical Storm/Hurricane*	3	3	2	1	1	1.75	5.25
Extreme Cold*	3	2	3	1	1	1.75	5.25
Infectious Disease	2	1	4	4	1	2.5	5
Landslides	2	2	2	3	2	2.25	4.5
Extreme Heat	2	2	3	1	2	2	4
Hazardous Materials Spills	1	2	3	3	3	2.75	2.75
Ice Jams	2	2	1	1	1	1.25	2.5
Wildfire	1	2	1	2	3	2	2
Drought	1	1	1	2	3	1.75	1.75
Dam Failure	1	2	2	1	1	1.5	1.5
Tornado	1	2	2	1	1	1.5	1.5
Structural Fire	1	2	2	1	1	1.5	1.5
Water Supply Contamination	1	1	2	1	2	1.5	1.5
Earthquakes	1	3	1	1	1	1.5	1.5
High Winds	1	2	1	1	1	1.25	1.25
Hail	1	2	1	1	1	1.25	1.25

*Top Hazards

See Appendix A to view the Hazard Ranking Methodology that was used by the Hazard Mitigation Committee in determining the ranking in the preceding table.

The LHMP team discussed the results of the hazard ranking activity and decided to focus on hazards that scored highest in probability of occurrence and potential impact.

Several of the top hazards have changed since the last iteration of the Plan. Landslides and Hazardous Materials Spill did not score as high as other hazards in the 2024 hazard assessment, and are no longer included in the top hazards. Invasive Species scored higher in the hazard ranking assessment, reflecting a higher prevalence of this hazard and likelihood of invasive species becoming more problematic in the future. Tropical Storms and Hurricanes also scored higher in the hazard assessment, reflecting an increased concern for this hazard in the future. Given the overlapping of events and similarity of hazards, Severe Summer Weather, Tropical Storms, Hail and High Winds are combined as a single hazard profile. Likewise, Flash Flood/Flood/Fluvial Erosion will remain as a combined hazard profile in this Plan update. Finally, Extreme Cold/Snow/Ice Storm remains a top hazard due to consistent occurrences within the Town. Due to low probability and/or small potential impact, the mitigation committee chose not to detail the following hazards in this LHMP: hazardous materials spill, drought, water supply contamination, earthquakes, ice jams, dam failure, tornadoes, wildfire, structural fire and landslides.

After engaging in discussions using their best available knowledge, the Town of Granville identified the following “top hazards” (based on frequency of occurrence and potential impact) which they believe their community is most vulnerable to:

- Flash Flood/Flood/Fluvial Erosion
- Severe Summer Weather/Tropical Storm/Hurricane
- Extreme Cold/Snow/Ice Storm
- Invasive Species

Each of these “top hazards” will be discussed in the following sections. Within each section, previous occurrences of each hazard will be listed, including the County-wide FEMA Disaster Declarations (DR-#), where applicable. Hazards information was gathered from local sources (ex. town history book), the National Climatic Data Center’s (NCDC’s) Storm Events Database (1950-2019 and 2006-2019), the Spatial Hazard Events and Losses Database for the United States (SHELDUS) 1960-2012, and Special Reports produced by the National Weather Service in Burlington, Vermont. Often data was only available at the county level. Though when available town-specific data was used. This section also includes a description of each “top hazard” and a hazard matrix that will also include the following information (please see each hazard profile for a hazard-specific matrix):

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Type of hazard.	General areas in community that may be vulnerable to the hazard.	Community structures systems, populations, or other assets as defined by the community that are susceptible to damage and loss from hazard events.	The strength or magnitude and details of the most notable event(s).	Financial impact from an event and/or the number of structures that are impacted.	Occasionally: 1–10% probability of occurrence per year, or at least one chance in next 100 years Likely: >10% but <100% probability per year, at least 1 chance in next 10 years Highly Likely: 100% probable in a year

B. Hazard Profiles for "Top Hazards"

1. Flash Flood/Flood/Fluvial Erosion

Flooding is one of the worst threats to Granville's residents and infrastructure. Past instances of flooding in Granville have included rain and/or snowmelt events that cause flooding in the major rivers' floodplains and intense rainstorms over a small area that cause localized flash- flooding. Both kinds of events can be worsened by the build- up of ice or debris, which can contribute to the failure of important infrastructure (such as culverts and bridges).

The worst flood disaster to hit the Town of Granville, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by nearly 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. Eighty-four Vermonters, including the Lieutenant Governor, were killed. The flooding in the White River valley was particularly violent, with an estimated 120,000 to 140,000 cubic feet/second (cfs) flowing out of the White River at West Hartford, Vermont. Like many towns in the region, the Town of Granville received heavy precipitation.

A more recent flooding event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as hundreds of millions of dollars of home, road and infrastructure damage. Due to the strong winds, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over a week. Despite the damage wrought, the flooding caused by Tropical Storm Irene is considered to be the second greatest natural disaster in 20th and 21st century Vermont, second only to the Flood of 1927.The Town of Granville suffered major damage to property and infrastructure during Tropical Storm Irene, although no lives were lost. It is estimated that Tropical Storm Irene dropped 6-7 inches of rain over the Town of Granville in a very short span of time, some of the highest precipitation totals in Addison County (which averaged 3-5 inches over its land area). It is thought that the flooding that occurred as a result of the storm was close to being or was a full-fledged 500-year flood.

Many of Granville's roads were damaged by the storm, including parts of: Buffalo Farm Road (the majority of the road), Butz Road, Handly Road, Kennedy Road, Maston Hill, North Hollow Road, Old Stage

Road, Plunkton Road, Post Office Hill, Town Line Road, West Hill Extension, and West Hill Road and Route 100. The county-wide damage for Addison County totaled over $3.5 million. Following the flood damage, the State of Vermont and FEMA have been coordinating on the home buy-out process across the state. There have been three buyouts in Granville; two on Route 100 and one on Handly Road.

Most recently, Granville experienced flooding as a result of the Great Vermont Flood of 10-11 July, 2023 (DR-4720). Precipitation data from South Lincoln, VT, just west of Granville, shows total rainfall of over 4.5" between July 10 and 11. This event lead to severe flooding and flash flooding across the State, with state damage estimates ranging between $400 and $500 million. Granville was not as heavily impacted by the flooding as elsewhere in Vermont, but a portion of Plunkton Road washed out and several basements were flooded.

If a major flooding event causes the White River to overflow onto RT-100, traffic is often redirected onto Granville's town-owned roads such as Town Line Road and North Hollow Road.

Unfortunately, flooding is very common across the region, with many events impacting the Town of Granville specifically. Flooding is one of the worst threats to Granville's residents and infrastructure. The following list indicates the history of occurrence with regard to this hazard in Addison County (given the small population of Granville, town-specific data is limited); an asterisk "*" denotes the few instances in which town-specific data is available, and federal disaster numbers are listed where appropriate. Detailed data was not available for fluvial erosion damage in terms of numbers of acres lost or amount of fill that was used to compensate for fluvial erosion following each flood event.

History of Occurrences:

Date	Event	Location	Extent
Period of 07/11/2024-07/12/2024 (DR-4810)	Flash Flood, Flood	Statewide	The remnants of TS Beryl brought heavy precipitation to much of Vermont, leading to heavy showers and storms across the region. Both FEMA Individual Assistance and Public Assistance were available in Addison County following the event. Damage totals for Granville are not known. According to NOAA, over 3.3" of rain fell in nearby Lincoln, VT.
08/03/2023	Flash Flood	Addison County	A cluster of showers and thunderstorms brought heavy rain, leading to flash flooding in some areas. 3"-6" of rainfall was reported. Specific damage and rainfall data for Granville are not known. Property damage is estimated at $1.3 million in Addison and Windsor Counties.
Period of 07/09/2023-07/11/2023 (DR-4720)	Flood, Flash Flood	Statewide	The July 10-11 heavy rain event brought flooding to much of Vermont. In nearby Lincoln, total precipitation was recorded at 4.5". Individual Assistance was available in Addison County following the event. Damage totals for Granville are not known, however according to NOAA, between July 7 and July 21, State estimated damage was between $400 and $500 million, with damage to businesses and homes across the state.
08/26/2021	Flash Flood	Lower Granville	A nearly stationary thunderstorm caused heavy localized rainfall in Granville, with radar estimates of between 2" and 5" of rain. The event caused a large road washout on Texas Fall Road. Estimated damage was around $10,000.

11/01/2019	Flash Flood	Addison County; Northern Vermont	A heavy rain event lead to flash flooding and inundation flooding in portions of northern Vermont and Addison County. The precipitation gage in nearby Lincoln measured 2.77" of rain. Eastern Addison County had an estimated $75,000 in property damage. Infrastructure damage across the state was estimated at over $5 million. Damage to property in Granville is not known.
Period of 6/20/2019-6/21/2019	Flooding	Addison County; Central Vermont	A slow moving storm caused heavy precipitation and occasional, localized flash flooding in areas of central Vermont. Nearby South Lincoln experienced 3.1" of rain on June 21st. Property damage across the state was estimated at $135,000. Damage to property in Granville is not known.
Period of 10/29/2017-10/30/2017 (DR-4356 VT)	Flooding	Addison County; Northern Vermont	Event caused significant damage to utilities. Specific extent data regarding flooding is not available.
10/1/2017*	Severe Flash Flooding; Fluvial Erosion	Town of Granville; Neighboring towns of Hancock and Ripton.	Flash flooding caused local roads to be damaged and wash out. This caused approximately $150,000 in property damages. Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.
Period from 6/29/2017-7/1/2017 (DR-4330 VT)*	Severe Flash Flooding; Fluvial Erosion	Town of Granville; County/region-wide	Flash flooding caused local roads to be damaged and wash out. This caused over $150,000 in property damages. Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.
6/9/2015 (DR-4232 VT)	Flooding; Fluvial Erosion	Addison County	Flooding caused county-wide damage to roads and bridges. Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.
06/2013—07/2013*	Flooding; Fluvial Erosion	Town of Granville, Granville Gulf, East Granville	Culvert on Plunkton Road washed out. Handly Road in East Granville was flooded and a culvert washed out. Vermont 100 in the Granville Gulf washed away and was closed for several days; people were trapped on the road until the water receded. Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.
05/29/2012 (DR-4066 VT)	Flooding; Fluvial Erosion	Addison County; Lamoille County	This event also included a severe storm and tornado. Major damage to roads and bridges. The estimated amount of storm total rainfall was 3 to 5 inches. Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.

Period from 08/27/2011—09/02/2011 (DR-4022 VT)*	Severe Flash Flooding; Fluvial Erosion	Granville, County/region-wide	Tropical Storm Irene. Widespread rainfall amounts of 3-5 inches occurred across Vermont with 5 to 7+ inches across much of southern, central Vermont. Devastating flash flooding occurred across much of central and southern Vermont mountain valleys with substantial and some record-breaking flood stages on larger rivers. This flood event will likely rank second to the November 1927 flood in the scope of meteorological and hydrological conditions/impacts as well as loss of life (84 in 1927), but likely first in monetary damage [approx. $500 million statewide vs $350 million (1927 in 2010 dollars)]. There were nearly 2,400 roads, 800 homes/businesses, 300 bridges and a half dozen railroad tracks destroyed or damaged from the flooding caused by Irene. Over $208 million dollars of Public Assistance funds were approved statewide for this event alone. It is reported that 6-7" of rain fell in in Granville. The Town recorded $584,240.59 in damage, according to FEMA's Public Assistance Database (captures at least 70% of the total damage). Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.
Period from 04/23/2011—05/09/2011 (DR-1995 VT)	Flooding	Addison County	Event also included severe storms. Roads and bridges were primarily impacted.
10/01/2010*	Flooding; Fluvial Erosion	Lower Granville, Town of Granville, County-wide	Runoff from rainfall continued to affect Addison County as the earlier flash flood event transitioned to a flood event. In Granville, tributaries to the White River flooded a barn along Route 100, stranding livestock, and Route 100 was flooded near North Hollow Road. Specific extent data in terms of the physical size of most significantly eroded area is not available for this event.
Period from 07/21/2008—08/12/2008 (DR-1790 VT)	Flooding	Addison County	Event also included severe storms. Roads and bridges were primarily impacted.
Period from 06/14/2008—06/17/2008 (DR-1778 VT),	Flooding	Addison County	Event also included severe storms, including excessive rainfall. Damage to road systems reported.
Period from 08/12/2004—09/12/2004 (DR-1559VT)	Flooding	Addison County	Rainfall across Addison County averaged between 1 to 2.5 inches.
Period from 07/14/2000—07/18/2000 (DR-1336 VT)	Flooding	Addison County	Heavy rain was reported across the eastern two-third of Addison County. Several bridges throughout the county were washed out.
Period from 06/17/1998—08/13/1998 (DR-1228 VT)	Flooding; Fluvial Erosion	Addison County	Heavy and prolonged rainfall during this period. Consistently saturated soil conditions caused rivers and streams to remain at or above flood stage while additional rain occurred. Numerous roads were washed out throughout the county. Portions of Route 12A were flooded in and around East Granville. It was reported that local sources of drink water became contaminated. Specific extent data in terms of physical size of most significantly eroded area is not available for this event.

10/21/1996*	Flooding	Granville, County-wide	Rainfall storm totals were generally between 2" to 4.5," with the heaviest rain along and east of the Green Mountains. The White River flooded portions of Route 100 to a depth of several inches in the Granville, VT area (eastern Addison County) between 9:15 AM EST and 3 PM EST.
10/21/1995*	Flooding; Fluvial Erosion	Granville, County-wide	Flooding was reported in Addison County, Vermont in Granville (White River). Numerous road washouts with road closures and local state of emergencies declared. Specific extent data in terms of physical size of most significantly eroded area is not available for this event.
11/3/1927—11/7/1927 "The Great Flood of 1927"	Severe flooding, landslides	Region-wide	Considered to one of VT's most devastating events, the flood took out 1285 bridges, miles of roads and railways, and countless homes and buildings. 84 people were killed, including Lt. Gov. S. Hollister Jackson. Rainfall totaled 4-9" statewide, following a month with 150% the normal amount of rain. Specific extent data in terms of physical size of most significantly eroded area is not available for this event.

The Granville Flood Hazard Area Regulations prohibit new structures in the floodplain and places restrictions on other types of activities within the floodplain. It also specifies land, area and structural requirements in the Granville Flood Hazard Area Regulations.

There are approximately 37 structures, including 31 houses and 6 businesses that are located within mapped flood hazard areas in Granville. The majority of these buildings are located in Granville's villages. There are no critical facilities located in the floodplain. The flooding that occurred as a result of Tropical Storm Irene is considered to be greater than a 100-year flood and likely closer to a 500-year flood.

Across Vermont, most child and elder care facilities are not registered with the State. Most child day care is private in-home care in Granville, and there are no licensed or registered facilities. There are no elder care facilities in the Town of Granville. Finally, low income housing is not registered with the State, and there are no mobile home parks located in Granville that are registered with the state.

Recent studies have shown that the majority of flooding in Vermont is occurring along upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. These areas are often not recognized as being flood prone and property owners in these areas are not typically required to have flood insurance (DHCA, 1998). It should be noted that, while small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Maps), flooding along these streams is possible, and should be expected and planned for. Flash flooding in these reaches can be extremely erosive, causing damage to road infrastructure and to topographic features including stream beds and the sides of hills and mountains. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountainside undercutting. Furthermore, precipitation trend analysis suggests that intense, local storms are occurring more frequently. There are three residential structures, two industrial structures, and two commercial structures located in the fluvial erosion hazard zone.

A fluvial erosion hazard delineation shapefile and map have been created for Granville as part of the Vermont Agency of Natural Resources' charge to create river corridor maps for the state of Vermont.

Granville maintains an up-to-date list of culverts and culvert condition, and has engaged in culvert upgrading since the 2009 Granville Annex was drafted. The process of upgrading culverts is currently in process. No development projects are planned in Granville in areas that would be vulnerable to flooding. No properties in the Town of Granville meet the NFIP definition for repetitive loss or severe repetitive loss. However, two single-family residential properties meet the Flood Mitigation Assistance definition for repetitive loss.

Following a significant damage event (whether it be from flooding or other hazard), the Administrative Officer (AO) is required to make Substantial Improvement or Substantial Damage determinations for damaged structures in the Special Flood Hazard Area. This will involve the AO reviewing the damaged property as soon as possible following the event, and determining the estimated cost of work, along with the structure's market value. The AO has several options available for estimating damage, including FEMA's Substantial Damage Estimator Tool and qualified estimates made by town officials, contractors or engineers. The AO may request technical assistance from VT ANR and the Regional Floodplain Managers on how best to evaluate for substantial damage, as not all events will require the same approach. If a structure is determined to have been substantially damaged (no matter the cause), it is required to be brought into compliance with Bradford's Flood Hazard Area Bylaw. The AO is required to maintain a record of all Substantial Improvement/Substantial Damage determinations.

The Town of Granville has discussed whether to maintain portions of Buffalo Farm Road, which experienced three slides during/after Tropical Storm Irene. Buffalo Farm Road is vulnerable to more slides in the future, especially in the presence of flooding conditions. The Granville Selectboard voted not to rebuild the damaged middle section of Buffalo Farm Road, leaving only the two ends of the road passable. The virtual abandonment of Buffalo Farm Road is a way by which the Town is reducing its vulnerability to flooding hazards.

The Town maintains an up-to-date culvert inventory, and its work to upgrade culverts remains in process. In addition, the virtual abandonment of Buffalo Farm Road (discussed above) is another way the Town is reducing its vulnerability to severe weather hazards, particularly those with heavy precipitation.

Along with a culvert inventory, the Town should also consider maintaining a formal maintenance and inspection plan. This plan would include grading and shaping all gravel roads and patching potholes, as well as inspection of guard rails, culverts and bridges, and brush cut sections along the highway and roadway as needed. Included in the summer duties would be resurfacing gravel roads per gravel plan as well as ditching and culvert replacement. Preparation for summer maintenance of Town properties, sweep village and development sidewalks, mowing and checking storm drainage systems. The highway department would prepare for the winter months in September by stockpiling winter sand/salt/gravel.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Flash Flood/ Flood/ Fluvial Erosion	Route 100, Butz Road, Handly Road, Kennedy Road, Maston Hill, North Hollow Road, Old Stage Road, Plunkton Road, Post Office Hill, Town Line Road, West Hill Extension, and West Hill Road	Culverts, bridges, road infrastructure. 31 residential and 6 commercial/ industrial/public structures in the 100- year floodplain.	Tropical Storm Irene- 5-7" across county (6-7" in Granville).	From TS Irene: $1,145,041.2 Public Assistance grant funding was available for Granville from FEMA's Public Assistance database.	Highly likely

2. Severe Summer Weather (Thunderstorm, Lightning, High Winds, Hail, Flooding), Tropical Storms and Hurricanes

Severe weather typically consists of severe thunderstorms, and often occur in Vermont the summer months. These storms are associated with lightning, high winds, hail and tornadoes, and can cause flooding as noted in the Flash Flood/Flood/Fluvial Erosion section above. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. 434 hail events were recorded between 2008 and 2018 in the state, making hail a regular annual occurrence in at least some part of the state. Approximately 15% of these events had hail equal to or greater than 1.5 inches in size. The largest hail during the period was 3.3-inch hail that fell in Chittenden County in 2009 (NCDC). Tennis ball-sized hail was reported in the town of Chittenden during a storm in the summer of 2001. Thunderstorms can generate high winds, such as hit the region on July 6, 1999, downing hundreds of large trees in a few minutes.

In Granville, severe weather is quite common, typically in the late spring and summer months when the region experiences high temperatures. Severe thunderstorms tend to bring other hazards, such as high winds, hail, and lightning, and flooding. These hazards are often experienced in combinations that create many unique weather and emergency management situations. Over the years, Granville has been hit with high winds that have downed and uprooted numerous trees, and knocked out electricity to residents in the Town. Town-specific wind data could not be found, but the "Remarks" section of NCDC Database helps to illuminate the impact strong winds can have on the Town of Granville. Sizeable hail has also accompanied storms moving through the Town and region.

While hurricanes (storms with sustained winds greater than 74 mph) and tropical storms rarely reach as far inland as Vermont, they can be as or more destructive than a more commonly occurring severe weather event. Typically, they will manifest themselves in Vermont as tropical storms. In either case, the high winds, heavy rains, and large affected areas from hurricanes or tropical storms can make these rare events major disasters. The most infamous example of this was the disastrous hurricane of 1938. On September 21, 1938 a very fast moving hurricane hit Vermont in the early evening, but was moving so fast that wind damage was more severe than damage from rain in places. However, there was severe flooding, as over 4 inches of rain accompanied the storm and followed upon the heels of preceding storms that had saturated the ground and raised river levels. Buildings were lost, power lines were downed, and many trees were felled. Tropical Storm Floyd in September 1999 caused flooding and wind damage in parts of Vermont, as well as one fatality, and resulted in a federal disaster declaration.

The most recent tropical storm to impact Vermont was the remnants of Tropical Storm Beryl (DR 4810), which moved through Vermont between July 9-11 of 2024. TS Beryl brought heavy rain, flooding, and landslides to much of northern and central Vermont. Beryl did not lead to the same impacts that Vermont experienced following Tropical Storm Irene, or the Great Vermont Flood of 10-11 July 2023. However, the difficulty in determining the amount of precipitation, windspeed, and location of impact of tropical storms, coupled with Vermont's mountainous topography and rural development pattern, places much of the state at high vulnerability to the hazard impacts associated with tropical storms and hurricanes.

While precipitation data is not available for Granville, over 4.5" of rain was recorded in nearby Lincoln, VT between July 10-11, 2024. The following list indicates the history of occurrence with regard to this hazard in Addison County (given that small population of Granville, town-specific data is limited); an asterisk "*" denotes the few instances in which town-specific data is available, and federal disaster numbers are listed when appropriate. In an attempt to capture the individual hazards that may arise, and the different circumstances caused by the hazards in concert, the separate hazards are documented in the table below.

History of Occurrences:

Severe Weather Date	Event					Location	Extent
	Thunderstorm/ severe storm	Flooding	Hail	High Winds	Lightning		
07/13/2023-07/14/2023	✓			✓		Addison County	Scattered thunderstorms brought torrential rains to portions of Addison and Rutland Counties. Flash flooding and road washouts were reported in several areas, including South Lincoln, Middlebury and Ripton.
Period of 07/10/2023-07/11/2023 (DR-4720)	✓	✓				Statewide	The July 10-11 heavy rain event brought flooding to much of Vermont. In nearby Lincoln, total precipitation was recorded at nearly 2" on July 10 and 2.6" on July 11. Public Assistance was available in Addison County following the event. State estimated damage was between $400 and $500 million.
05/16/2022	✓		✓	✓		Granville, Warren, Hancock	Scattered thunderstorms developed, producing strong winds between 50 and 60 mph and localized 1" hail. Over 1" of rain fell in nearby Lincoln. Estimated damage was $65,000.
08/26/2021	✓	✓				Lower Granville	A strong thunderstorm brought between 2-5" of rain to parts of Granville, resulting in a flash flood and a washout on Texas Falls Road.
07/20/2021	✓			✓		Grand Isle, Chittenden, Addison, Washington, Windsor, Orange counties	Strong thunderstorm wind brought wind speeds of over 50 mph. Rainfall in nearby Lincoln was 1.6".
05/26/2021	✓			✓		Addison, Washington, Caledonia, Windsor Counties	Strong thunderstorms formed over Vermont, leading to strong winds knocking down trees and utility poles, creating power outages. 20,000 customers lost power throughout the State. Property damage was estimated

Severe Weather Date	Event					Location	Extent
	Thunderstorm/ severe storm	Flooding	Hail	High Winds	Lightning		
							at over $300,000.
08/04/2020	✓			✓		Addison Rutland, Washington, Orange, Windsor, Orleans, Essex, Franklin, Chittenden, Lamoille, Caledonia, Grand Isle	Tropical Storm Isaias brought strong winds and moderate rainfall to much of Vermont. Wind speeds ranged between 35 and 45 mph, with localized gusts of over 50 mph. Rainfall across the state was between 1.5″ and 2.5″. Nearby Lincoln Vermont received just over 2″. Statewide power outages were around 20-25,000.
Period of 10/29/2017 – 10/30/2017 (DR-4356)	✓	✓				Addison, Washington , Orange, Grand Isle, Franklin, Orleans, Essex, Lamoille, Chittenden and Windham Counties	A severe storm and subsequent flooding caused damages to utilities. The total public assistance cost estimate was approximately $3,716,421.
Period of 6/29/2017 – 7/1/2017 (DR-4330)	✓	✓				Addison, Washington , Caledonia, Orange, Windsor, Rutland and Bennington Counties	A severe storm and subsequent flooding caused damages to roads and bridges. The total public assistance cost estimate was approximately $4,834,837.
06/6/2015 (DR-4232)	✓	✓				Addison and Chittenden Counties	A severe storm and subsequent flooding caused damages to roads and bridges. The total public assistance cost estimate was approximately $1,344,742.

Severe Weather Date	Event					Location	Extent
	Thunderstorm/ severe storm	Flooding	Hail	High Winds	Lightning		
Period from 06/25/2013 – 07/11/2013 (DR-4140)*	✓	✓				Granville; Orange, Washington and Windsor Counties	This disaster declaration did not apply in Addison County; however, the Town of Granville is one of the few towns in Addison County that is located on the eastern side of the Green Mountain National Forest. As a result, the Town experiences weather patterns more similar to the towns in Orange, Washington and Windsor County than it does with most other towns in Addison County. This disaster declaration included Orange, Washington and Windsor Counties. The damage that occurred as a result of these storms included: culvert on Plunkton Road washed out, VT Rt. 100 washed out and closed for several days, Handly Road was flooded and a culvert washed out.
05/29/2012 (DR-4066 VT)	✓	✓				Addison County	Significant damage to roads and bridges in both Addison and Lamoille County. A tornado was also reported with this event, but it is unclear whether it was in Addison County.
05/29/2012 (DR-4066 VT)	✓	✓				Addison County	Significant damage to roads and bridges in both Addison and Lamoille County. A tornado was also reported with this event, but it is unclear whether it was in Addison County.
08/21/2011*	✓			✓		Granville, County-wide	Several trees downed by thunderstorm winds and power outage. Property Damage: $5,000. Wind at 50 kts. (*This weather system produced 70-90 mph straight-line winds in Rutland County.)
Period from 04/23/2011— 05/09/2011 (DR-1995 VT)	✓	✓				County-wide	Addison County was granted both Public and Individual Assistance for this disaster declaration.
10/01/2010*		✓				Granville, Lower Granville, County-wide	Runoff from rainfall continued to affect Addison County as the earlier flash flood event transitioned to a flood event. In Granville tributaries to the White River flooded a barn along Route 100, stranding livestock,

Severe Weather Date	Event					Location	Extent
	Thunderstorm/ severe storm	Flooding	Hail	High Winds	Lightning		
							and Route 100 was flooded near North Hollow Road.
07/18/2008*	✓			✓		Granville, County/ region-wide	An area of thunderstorms moved across central Vermont with pockets of significant damage across Addison, Washington and Orange counties. Several trees down along Route 100 in Granville." Property Damage: $10,000. Winds at 50 kts.
08/24/1998*	✓			✓		Granville, County-wide	Numerous trees and power lines were blown down in Granville. $10,000 in damages.
10/21/1996*		✓				Granville, County-wide	Rainfall storm totals were generally between 2-4.5" with the heaviest rain along and east of the Green Mountains. The White River flooded portions of Route 100 to a depth of several inches in the Granville, VT area (eastern Addison County) between 915 AM EST and 3 PM EST.
10/21/1995		✓		✓		Granville, County/ region-wide	Strong gusty winds preceded and accompanied this front as areas of low pressure moving north along the front enhancing rainfall rates. Flooding was reported in Addison County Vermont in Granville (White River). Numerous road washouts with road closures and local state of emergencies declared.

The main hazard caused by severe weather throughout the Town is flooding. Prior to the flooding from Tropical Storm Irene, the spring of 2011 was particularly wet, and a pre-Memorial Day storm caused some flooding throughout Addison County. More widespread flooding was reported in the surrounding counties of Orange, Washington and Windsor. The road and infrastructure in Granville damaged during this flooding event included flooding on a property on Route 100 that was caused by an ice jam.

The spring and early summer of 2013 brought numerous severe storms and flooding to much of the State of Vermont. The Town of Granville was not eligible for any assistance, as the disaster declaration (DR-4140 VT) did not apply in Addison County. However, the Town of Granville is one of the few towns in Addison County that is located on the eastern side of the Green Mountain National Forest. As a result, the

Town experiences weather patterns more similar to the towns in Orange, Washington and Windsor County than it does with most other towns in Addison County. This disaster declaration included Orange, Washington and Windsor Counties. The road and infrastructure damaged during this flooding event was located on: Plunkton Road, Route 100 through the Granville Gulf, and Handly Road.

The summer of 2017 also brought a string of severe storms and flooding to Addison County and the greater central Vermont region. In this case, the Town of Granville was eligible for assistance, as Addison County was included in the disaster declaration (DR-4330). This also made Hazard Mitigation Grant Program assistance available statewide. The per capita impact for Addison County totaled to $3.96. The roads and infrastructure impacted by this event included Maston Hill Road and Post Office Hill Road. The total damage the Town sustained from this event totaled to over $500,000.

Severe weather events are likely to get more severe as a result of climate change. The Vermont Climate Assessment (VCA) of 2021 indicates that changes in Vermont's climate are making the state more vulnerable to natural hazards, such as flooding. According to the VCA, Vermont is getting wetter, increasing the likelihood of heavy rainstorms leading to flooding and infrastructure damage. Climate change is also likely playing a role in stronger hurricanes and tropical storms, which account for some of the severe summer weather (i.e. TS Irene) and which occasionally bring heavy rain and strong winds to Vermont.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood / Probability
Severe Summer Weather	Town-wide for wind, hail, high winds, lightning and thunderstorm impacts; for flooding: Route 100, Butz Road, Handly Road, Kennedy Road, Maston Hill, North Hollow Road, Old Stage Road, Plunkton Road, Post Office Hill, Town Line Road, West Hill Extension, and West Hill Road.	Town and private buildings, utilities; culverts, bridges, road infrastructure.	**Thunderstorm / Severe Storm:** During Tropical Storm Irene, 3-7" of rainfall across Vermont. 6-7" in Granville. **Flooding:** More than 5" of rain lead to flooding during TS Irene. Over half a million dollars in estimated damage for Granville. **Hail:** 1" in diameter has been reported. Hail can damage structures, vehicles, and other infrastructure. **High Winds:** During severe storms, wind gusts of up to 60 mph have been reported. Strong winds can down trees and damage power lines, homes, and other structures. **Lightning:** Lightning can damage structures and down trees. Lightning can be life-threatening for those outside during severe storms.	Often minimal, but severe weather has the potential to cause significant damage. From TS Irene: $584,240.59 for Granville from FEMA's Public Assistance database (captures at least 70% of total damage).	Highly likely

3. Extreme Cold/Snow/Ice Storm

Winter storms are a regular occurrence in Vermont. However, severe winter storms can cause serious damage, including collapse of buildings due to overloading with snow or ice, brutal wind chills, downed trees and power lines and stranded vehicles. People can be at risk of freezing in extended power outages if they lack wood heat or backup power, and individuals shoveling large accumulations of snow can also be at risk from frostbite, hypothermia and heart attacks due to cold and overexertion. While snow removal from the transportation system is standard fare in Vermont winters, extreme snow or ice can close rail and road systems, further jeopardizing any stranded persons that are in danger of freezing or needing medical assistance.

Severe winter storms include a blizzard on February 15-17 in 1958, which dumped over 30 inches and resulted in 26 deaths in New England. On December 26-27 in 1969, another blizzard left 18-36 inches of snow in northwestern Vermont and a whopping 45 inches in Waitsfield. A string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6th (later declared a federal disaster), 10-30 inches on the 22nd, and 10-20 inches on the 30th. Recent years have seen wet snow storms that have leveled trees and caused widespread power outages.

The worst winter storm in terms of damage to hit the state recently was not a snow storm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more than three inches of ice in spots, closing roads, downing power lines, and snapping thousands of trees. This storm was estimated as a 200-500 year event. Power was out up to 10 days in some areas and 700,000 acres in of forest were damaged in Vermont. Amazingly, there were no fatalities in Vermont, unlike Quebec where 3 million people lost power and 28 were killed. The Town of Granville was impacted by this ice storm.

The most recent significant winter storm to hit Vermont began on April 3rd, 2024, and lasted through April 5th. Strong winds of 50-60 mph led to over 13,000 outages across the state. A wintry mix of rain, sleet, and snow in the evening of April 3rd transitioned to a heavy, wet snow overnight on April 4th. Snow accumulation in nearby Lincoln, Vermont included 5 inches on April 4th and 8.8 inches on April 5th. Impacts of the storm across the state also included hundreds of motor vehicle accidents, school closings, and 35,000 power outages as a result of weighted trees on power lines.

Over the past few winters, Granville has received numerous snow storms that have dropped significant amounts of snow over a day or two-day period. However, the details of these events and the damage they caused are overshadowed by winter weather events of the past. This is not to say such extreme events will not repeat themselves. It should be assumed that extreme winter weather events will occur at some point in the future. The following table documents the occurrence of extreme cold/snow/ice storms in the Town of Granville and in Addison County.

History of Occurrences:

Date	Event	Location	Extent
04/03/2024-04/05/2024	Winter Storm	Addison County; State-wide	Strong winds of 50-60 mph led to over 13,000 power outages across the state. A wintry mix of rain, sleet, and snow on April 3rd transitioned to heavy, wet

			snow on April 4th. Snow accumulation in Lincoln was recorded at approximately 14" over three days. Impacts of the storm included motor vehicle accidents, school closings, and 35,000 power outages due to weighted trees on power lines.
03/23/2024	Winter Storm	Addison County; State-wide	A late winter storm brought high snowfalls to much of central Vermont. Over 16" was recorded in Lincoln, VT over a two-day period. The impacts of this storm were primarily travel-related.
03/09/2024-03/11/2024	Winter Storm	Addison County; State-wide	A wet winter storm led to rain and wet snowfall throughout Vermont. The heavy wet snow resulted in tree damage, more than 30,000 power outages, and travel disruptions state-wide. Strong wind gusts of over 40 mph led to delays in power restoration. Total snow accumulation of over 14" was recorded in Lincoln, VT.
01/16/2024	Winter Storm	Addison County; State-wide	A winter storm brought 4-7" of accumulation to much of Vermont, resulting in hazardous travel conditions.
01/10/2024	Winter Storm	Addison County; State-wide	A strong winter storm brought high winds and heavy, wet snow to much of Vermont. Wind gusts of over 60 mph were reported in parts of Vermont. Snow accumulation of up to 6" also occurred at higher terrain. Over $1 million in damage estimates across the state and an estimated 80,000 power outages.
5/18/2023	Frost/freeze	Addison County; State-wide	While not extreme cold, temperatures in the mid-low 20s in much of Vermont so late into May resulted in substantial damage to crops across the state. $100,000 in crop damage was estimated for eastern Addison County. Over $7 million in estimated damage statewide.
03/13/2023-03/14/2023	Winter Storm	Addison County; State-wide	A winter storm brought heavy snow and high wind gusts to much of the region. Many areas saw snowfall rates of 1-2 inches per hour. Nearly 17" was recorded in Lincoln over the two day period. The heavy snow and strong wind led to power outages, with 90,000 customers losing power throughout the State. Many roads were closed due to accidents. Many schools were closed as well.
12/16/2022-12/17/2022	Winter Storm	Addison County; State-wide	A winter storm brought heavy, wet snow to much of Vermont, resulting in numerous power outages. Over 14" was recorded in Lincoln Vermont over the two days. More than 100,000 power customers were impacted by the storm. Estimated damage costs are not known.
04/19/2022	Winter Storm	Addison County; western Vermont	A storm system brought moisture and freezing temperatures, resulting in accumulation of heavy wet snow. Just over 5" was recorded in Lincoln, Vermont. The heavy snow caused tree damage and loss of power to an estimated 30,000 customers. Property damage was estimated at $50,000 for eastern Addison County.
02/03/2022-02/04/2022	Winter Storm	Addison County; State-wide	An arctic front moved across Vermont on the morning of February 3rd, bringing light rain that changed to snow. The front continued in the region through February 4th, with heavy snow, freezing rain, and sleet. Total snowfall in nearby Lincoln was over 17".
01/20/2022-01/22/2022	Extreme Cold	Addison County; State-wide	An arctic airmass brought extremely cold temperatures to much of the state. Wind chill ranged from 20-30 below. Actual air temperatures ranged from 10-20 below zero. -19 degrees was reported on January 21st, with -22 and -20 recorded on January 22nd and 23rd respectively.
01/17/2022 – 01/18/2022	Winter Storm	Addison County; State-wide	A strong winter storm brought heavy snowfall, occasionally at rates of 1-2 inches per hour. In nearby Lincoln, VT, total snowfall was 13" between January 17-18. Strong winds of over 50 mph were also reported along the western slopes of the Green Mountains.

02/07/2020	Winter Storm	Addison County; State-wide	On February 6th, a winter storm brought snow, freezing rain, and wet conditions through much of central and southern Vermont. February 7th brought steadier snowfall, with over 10" reported in nearby Lincoln, VT on February 8th. This storm created hazardous travel conditions and resulted in school closings and early closings of businesses and state government. An estimated 10-20,000 people lost power across the state.
3/22/2019	Winter Storm	Addison County	Snowfall totals of 6 to 18 inches across Addison County.
2/12/2019	Winter Storm	Addison County	Widespread 5 to 10 inches of snowfall mixed with freezing rain at times.
1/19/2019	Winter Storm	Addison County	12 to 18 inches of snowfall across Addison County.
1/8/2019	Winter Storm	Eastern Addison County	Snowfall totals ranged from 4 to 15 inches.
11/26/2018	Winter Storm	Eastern Addison County	Heavy wet snow resulted in downed tree limbs and power outages. Snow generally accumulated 5 to 10 inches.
11/15/2018	Winter Storm	Addison County	4 to 8 inches of snowfall.
3/13/2018	Winter Storm	Addison County	Long duration snowfall event that resulted in 8 to 15 inches across Addison County.
2/7/2018	Winter Storm	Addison County	6 to 12 inches across Addison County. At times, 1 to 2 inches of snowfall per hour was observed.
12/22/2017	Winter Storm	Addison County	5 to 8 inches of snowfall.
12/12/2017	Winter Storm	Eastern Addison County	5 to 12 inches of snowfall. Neighboring town Hancock reported 12 inches of snowfall.
3/14/2017	Winter Storm	Eastern Addison County	Snowfall totals ranged from 12 to 30 inches. Neighboring town Hancock reported 15 inches. 20 to 30 mph winds contributed to white-out conditions.
2/12/2017	Winter Storm	Addison County	5 to 10 inches of snowfall.
11/20/2016	Winter Storm	Eastern Addison County	6 to 12 inches reported.
2/2/2015	Winter Storm	Addison County	5 to 8 inches across Addison County.
1/7/2015-1/8/2015	Extreme Cold	Eastern Addison County	In the evening of 1/7/2015, temperatures were 0-10° F with winds of 15-30 mph which created wind chills below -20° to -30° F which lasted overnight into 1/8/2015. Morning temperatures on 1/8/2015 were - 10° to -20° F across Addison County.
12/9/2014 – 12/12/2014 (DR-4207 VT)	Winter Storm	Addison County / Region-wide	Noted damage to utilities.
12/11/2011	Snow Storm	Granville; County/Region-wide	3-6" of snow in Granville.
03/06/2011 — 03/07/2011	Snow Storm	Granville; County/Region-wide	Approximately 10-20" of snow in Granville.
02/07/2011	Winter Storm	Addison County	Specific extent data regarding storm event unavailable.
12/13/2010	Winter Storm	Addison County	Specific extent data regarding storm event unavailable.
10/15/2010	Winter Strom	Addison County	Specific extent data regarding storm event unavailable.
1/14/2009	Extreme Cold	Eastern Addison County; State-	Daytime maximum temperatures in the single digits to below zero while the nighttime minimum temperatures ranged from -10° to -30° F.

		wide	
12/09/2009	Winter Storm	Addison County/Region-wide	Snowfall accumulations of approximately 6 to 12 inches east of the Green Mountains.
02/22/2009 — 02/23/2009	Winter Storm	Addison County/Region-wide	Snowfall accumulations of approximately 10 to 18 inches across central Vermont.
12/21/2008	Winter Storm	Addison County/Region-wide	Snowfall accumulations of approximately 10 to 18 inches across central Vermont.
02/06/2008 — 02/07/2008	Winter Storm	Granville; County/Region-wide	Approximately 10" of snow in Granville.
12/16/2007 — 12/17/2007	Winter Storm	Granville; County/Region-wide	Approximately 12" of snow in Granville.
04/04/2007	Winter Storm	Granville; County/Region-wide	Combined snow and sleet accumulations ranged from 4-12" with the higher amounts in the higher elevations. This caused some hazardous travel as well as some scattered power outages due to fallen tree limbs and branches. 7" of accumulation in Granville.
03/17/2007	Snow Storm	Granville; County/Region-wide	8-10" of snow in Granville.
3/9/2007	Extreme Cold	Eastern Addison County	Morning minimum temperatures on 3/9/3007 were -10° to -34° F.
3/6/2007	Extreme Cold	Eastern Addison County; State-wide	Temperatures dropped below zero after midnight on 3/6/2007 and dropped even further to -5° to -20° F at dawn. High winds of 15 to 30 mph created wind chills of -20° to -40° F which lasted through the day. Winds subsided on 3/7/2007 but the extreme cold remained through the morning of the 7th at -10° to -30° F.
02/14/2007	Snow Storm	Granville; County/Region-wide	25-30" of snow in Granville.
1/25/2007 – 1/30/2007	Extreme Cold	Eastern Addison County; State-wide	Temperatures began at 0° to -25° F on the morning of 1/25/2007 with a wind chill of -25° to -40° F. This cold front continued through 1/26/2007, rose slightly from 1/27/2007-1/29/2007, but then dropped again to -10° to -30° F on 1/30/2007.
03/13/2005	Snow Storm	Granville; County/Region-wide	6-8" of snow in Granville.
01/23/2005	Snow Storm	Granville; Region- wide	6-8" of snow in Granville.
12/15/2003	Snow Storm	Granville; County/Region-wide	Approximately 17" of snow fell in Granville.
11/13/2003 — 11/14/2003	Snow Storm	Granville; Region- wide	13" of snow reported in Granville.

01/04/2003	Snow Storm	Granville; County/Region wide	Approximately 12-18" of snow in Granville (more snow on the western side of the Town).
Period from 03/05/2001 — 03/07/2001 (EM-3167)	Snow Storm	County/Region-wide (Addison, Rutland, Windsor Counties)	Specific extent data regarding emergency declaration unavailable.
Period from 01/06/1998 — 01/16/1998 (DR-1201)	Ice Storm	County/Region-wide (Addison, Orange, Windsor Counties)	Specific extent data regarding disaster declaration unavailable.

The Town of Granville is no stranger to winter weather and the hazards that it brings. Depending on the event, although particularly with heavy, wet snow or ice, electricity may be knocked out for a few hours or days. The utility company currently serving the Town of Granville, Green Mountain Power, has followed a regular tree-trimming schedule. Granville town officials believe this is satisfactory to mitigate damage and the power outages caused by downed trees and tree limbs during a heavy, wet snow or ice event. In the event of an extended power outage, the Town would open its emergency shelter. This process has not been formalized yet, but the Town is working to create such a policy.

Heavy, wet snow or large quantities of snow may also leave structures vulnerable to roof collapse. Roof collapse occurs when the structural components of a roof can no longer hold the weight of snow. Flat roofs are most vulnerable to collapse because they do not drain well and the snow on the roof soaks up water like a sponge, increasing the weight that the roof must bear. More common, it seems, is the collapse of barns commonly used for livestock sheltering and other agricultural purposes.

Unfortunately, livestock in the barn are often killed and equipment stored in the barn may be damaged or ruined. It is difficult to determine whether a residential structure or a barn would be rebuilt after a roof collapse, because the decision to rebuild would likely depend on the extent of damage. The collapse of a barn roof is likely to be a total loss, and the collapse of a house roof may be a 50% loss. While roof collapse has not occurred in Granville recently, very heavy snow in the region on February 14, 2007 resulted in the partial or total collapse of 20 or more barn roofs, and led to the deaths of more than 100 cattle.

In general, winter weather is most hazardous to travelers. Icy and snow-covered roads present multiple examples of dangerous driving conditions and situations. In Granville, the mountainous terrain, steep slopes, and remoteness of some roads further complicate travel. The Town relies on Travel Advisories issued by the State of Vermont Department of Emergency Management Homeland Security and the National Weather Service to alert residents of dangerous travel weather. Despite this, it is difficult to prohibit people from driving during winter weather events. As a result, emergency services personnel must always be prepared to provide assistance to stranded drivers or to those who have been in an accident.

Climate change will also likely play a role in the future impacts of this hazard. A warming climate will likely lead to more mixed winter precipitation, and possibly fewer extreme cold events. Mixed precipitation, or

heavier, wetter snow, could result in more downed trees, power lines, road closures, and traffic accidents. Vermont is also already experiencing more intense and prolonged mud seasons due to early spring snowstorms and warmer temperatures. This can make rural roads difficult to travel and can complicate access to many parts of town. The probability of winter flooding events may also increase as well. Proactive action to improve road safety and reduce the likelihood of road and infrastructure damage will need to account for these potential changes.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Extreme Cold/Snow/ Ice Storm	Town wide	The entire Town is vulnerable, including road infrastructure, town and privately owned buildings, utility infrastructure. Isolation and possible loss of power for vulnerable populations.	Snow fall has varied, from a few inches to over a foot or more. Heavy snow and wind downed trees and power lines. Snow/ice contributed to hazardous driving conditions.	For roof collapse: monetary damages will depend on each structure but, collapse of barn roof is often a total loss. This does not include the loss of livestock. Collapse of a house roof may be at a 50% loss. For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle. Health impacts could vary significantly.	Highly likely

4. Invasive Species

Infestations by invasive insect and plant species can ruin crops or forests. While most of Vermont does not have to deal with these occurrences, a historical invasion of "worms" occurred in 1770 in the Connecticut River valley. It seems that an untold number of "worms" originated near Lancaster, New Hampshire, beginning in late July of 1770, and streamed down the valley all through August. These "worms" were most likely the army worms (actually a type of caterpillar) that caused over $8 million dollars in damage to the 2001 hay crop, again largely along this valley. Forests are also threatened by such insects as the woolly adelgid (hemlock) and spotted beetle (maple and ash).

The National Invasive Species Council defines an invasive species as one that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. The State of Vermont divides invasive species into two camps: Class A and Class B. Class A species are those that are listed on the Federal Noxious Weed List but are not currently known to be present within the confines of Vermont. Class B species, in contrast, are known to occur within state boundaries and are deemed a threat to residents and the environment.[1]

Up to date information on all Vermont invasive species can be found on VTINVASIVES.ORG. Invasive species do not, by their nature, have boundaries. This concept was clearly demonstrated during Tropical Storm Irene, when floodwaters uprooted Japanese knotweed plants along Vermont's waterways. Years later, the fight to eradicate the knotweed has become even more protracted as it spreads along stream banks and areas beyond, choking out native plant communities and destabilizing banks.

The presence of invasive species will likely only increase as a result of climate change. Warming global temperatures may result in a greater prevalence of invasive plants, which can outcompete native plants destabilize local ecosystems. Warmer temperatures will also likely result in the spread of the Emerald Ash Borer (EAB), which has decimated ash populations throughout much of the US. The Town of Granville is located in the area of concern on the EAB map hosted by the Agency of Natural Resources.
Invasive species can also affect Granville's susceptibility to wildfire and flooding. Warming temperatures can increase stress on native tree species, reducing their defense mechanisms and making them more susceptible to attack from invasive pests. In turn, a higher tree mortality rate can lead to more woody debris on the forest floor, which can increase the likelihood of wildfire.

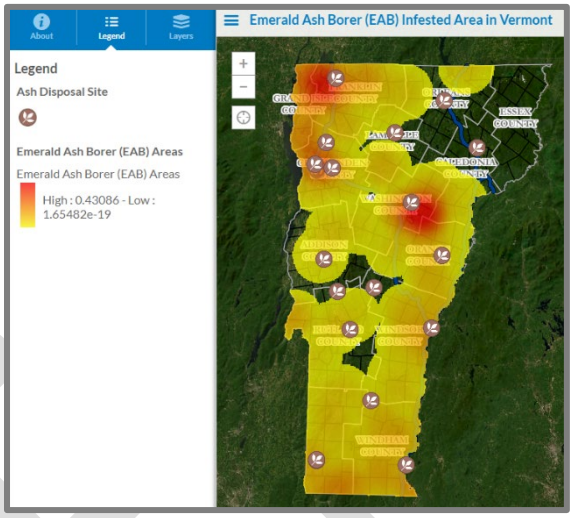
Along rivers, Japanese knotweed can outcompete native plant species due to its rapid growth and ease of propagation, leading to a loss of biodiversity. With its shallow root systems and thick cover, Japanese knotweed can make Vermont river and streambanks more susceptible to erosion during flood events, as the knotweed is less capable of holding the soil in place than many native species that it has displaced.

Reduction and eradication of Japanese knotweed is extremely difficult. The plant spreads via rhizome, so often uprooting and moving the plant will cause it to take root and spread elsewhere. While the plant itself dies back in the fall, the root system survives over the winter, and the fast rate of growth allows it to take over areas and outcompete beneficial plant species in the spring. The two most effective methods for eradication include smothering and foliar or stem-injected herbicides.[2] Heavy plastic may be used to smother the plants. However, it is often necessary to leave the plastic barrier in place for 3-5 years, and it may be necessary to continue to monitor the site for years after the plastic is removed. Herbicides can also be used to target knotweed infestations. Use of herbicides may be the faster and more effective

[1] See the 2023 Vermont State Hazard Mitigation Plan
[2] For knotweed control methods, see https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd529922.pdf

treatment, but it is more labor-intensive and costly. It also requires individuals knowledgeable in the use and application of herbicides.

Invasive species are already present in Granville, although the precise location and extent of proliferation and/or damage is not always easily defined, given that pockets of infestation are not always necessarily mapped or accounted for. The Vermont Forest Health Program recently launched the Interactive Invasive Pest Status Map.[3] This map provides residents with up-to-date information on the status of several invasive species. It also provides information on how to report sightings of invasive species. According to this map, Granville does not yet have a known infestation of Beech Leaf Disease, Elm Zigzag Sawfly, Elongate Hemlock Scale, Emerald Ash Borer, and Hemlock Woolly Adelgid. However, Brookfield to the East, Middlebury and Bristol to the West, Fayston to the North and Chittenden to the South have all documented infestations of EAB in recent years. It is likely only a matter of time before an EAB infestation is detected in Granville.



The yellow and orange-red areas represent 10 mile radii around a known EAB infestation. The darker red denotes a higher severity of infestation.

For the purposes of this Plan, the LHMP Committee has focused on the invasive species and infestation hazards that Granville is most concerned with. All invasive species provided on the list below are either currently or likely present in Granville, and all are of high concern. Chervil and knotweed are present throughout town, while other invasive species are more localized.

Species	Present in Town	Extent of Impact	Removal/Prevention Method
Wild Chervil (*Anthriscus sylverstris)*	Yes	Wild chervil is most commonly found along roads, but will spread into fields and their shaded fringes. Seeds are easily spread by mowers and wind over great distances. The plant's sap can burn skin. The plant's white flowers bloom in May and June.	Treatment of this plant is easiest before it establishes a root system. Mowing the plants early prior to the plants going to seed can reduce their spread. Do not mow after June when the plant has seeded, and clean equipment after using to prevent spread. Eradication is difficult, and would likely require grazing, pulling, tilling, or native replanting. Successful herbicide treatments have not yet been determined.
Wild parsnip (*Pastinaca sativa)*	Yes	Wild parsnip is a heavily toxic plant specimen that has photoreactive sap that causes severe burns to exposed skin. It does not tend to grow well in shaded areas, and also does not	Because of the plant's noxious properties, eradication can be a delicate process. Manual pulling should be done with thick gloves and long sleeves. Early mowing before the plant seeds in early July can reduce the spread. Mowing should be

[3] https://vtinvasives.org/news-events/news/vermont-forest-health-program-launches-interactive-invasive-pest-status-map

		tend to grow in dense stands. The plant flowers in late spring to early summer.	repeated once per year for three to five years. Glyphosate chemical foliar low volume spraying can be used as a control in late summer (mid-July).
Giant Hogweed (*Heracleum mantegazzianum)*	Yes	Giant hogweed is a noxious weed that has cropped up in some places in the region. Similar to wild parsnip in appearance, it is also a phototoxic plant, causing painful, scarring blisters. The plant flowers in late spring to early summer.	Removal of giant hogweed plants is the same as wild parsnip (see above). Extreme care must be taken with this plant, too, to avoid any contact with skin or risk injury.
Japanese Knotweed (*Polygonum cuspidatum)*	Yes	Japanese knotweed is one of the most widely spread invasive species in the region, most commonly cropping up along river edges in direct sunlight. The plant rhizomes root and spread easily, and are hard to eradicate once established. Ditch maintenance and traveling down waterways are two main ways the plant spreads. Its lacy white flowers bloom in August.	Repeated mowing or cutting, using loppers or a lawn mower once per month over the plant's growing season (spring through fall) may be the best way to eradicate knotweed plants. Eradication must continue every year for about five years. A drip technique chemical control, using glyphosate concentrate application on plant stems in August, can be combined with mechanical cutting. Pulled stems should be contained in bags to rot for one year. If bagging is not possible, then plants should be stockpiled and covered with a tarp for decomposition. Do not replant native plant species until knotweed has been fully eradicated.
Glossy and Common Buckthorn *(Frangula alnus) (Rhamnus cathartica)*	Yes (common buckthorn)	Buckthorn grows in two similar varieties, and can drastically change the composition of forested areas. Buckthorn has red berries, which are easily visible in fall and act as an innutritious laxative to animals. Buckthorn increases the nitrogen content in soil and has a longer growing season than native plants, which changes habitat suitability for native plant species.	Mechanical buckthorn control can consist of hand pulling small plants (including roots) or cutting stumps of larger, woodier plants at any time of the year. Glyphosate can also be applied to stumps within one hour. Larger plants may require a weed wrench. Plants may be burned after uprooting.
Hemlock Woolly Adelgid (HWA) (*Adelges tsugae)*	No	HWAs prey on deciduous eastern hemlock trees, and originate from southern Japan. Hemlocks desiccate, lose needles, and fail to generate new growth, severely weakening, if not outright killing, trees. Hemlocks are the 7th most prevalent tree in Vermont, and are critical for stream bank armoring and serving as a shelter and food source for wildlife.	HWAs have been confirmed in Windham, Bennington, and Windsor Counties per the Vermont Forest Invasive Pest Status Map. The HWA egg sacs are found on branches and hatch in the spring, feeding on tree sap. Vigilance is needed to keep an eye on HWA spread, and insecticide treatments may help contain it.
Asian Longhorned Beetle (ALB)	No	Large stands of deciduous trees are target species of the beetle.	The beetle has been identified in nearby states, namely Massachusetts (a large outbreak occurred

(*Anoplophora glabripennis)*		These trees are especially critical to the health of our forests, slopes, carbon sequestration, and the local economy (e.g., sugar maples). According to the Forest Service, if ALBs became established across the U.S., they could kill a third of all urban trees at a compensatory cost of $669 billion.[4]	in central Massachusetts in 2008) It has not yet been detected in Vermont at the time of this report. Vigilance for signs of presence around hardwood trees (sawdust at base of tree, oozing from bark) can alert their presence in the tree, and can prompt containment efforts. Uninfected host tree species may be treated with insecticide after the winter thaw in a quarantine area to prevent spread.
Emerald Ash Borer (EAB) (*Agrilus planipennis)*	It is possible that EAB is present in town	Seven-percent of trees (around 150 million trees) in Vermont are ash, making virtually every community vulnerable to ash stand decline. Damaged trees can pose a hazard, particularly in close proximity to sidewalks, roadways, and private property. EABs generally infiltrate new host areas when they are transported in firewood and other wood products.	EAB colony establishment can take years to be visible on trees, but makes trees brittle and weak. Bare bark exposed by woodpeckers reveals intricate pathways created by the EAB. Infestations have been identified in many towns throughout Orange County and elsewhere in Vermont. Preventing the importation of firewood from outside of Vermont is one key tactic to stop the spread. Quarantine efforts have been met with mixed success, and biological and microbial control agents may prove effective containment methods.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Invasive Species	Town-wide, although dependent on host plant for insect pests, or soils/ available sunlight and water for plant infestation.	The entire town is susceptible to invasive species proliferation, depending on the species and place-dependent characteristics that allow for growth and and spread of problem species.	Throughout town. Less invasive species are in more remote areas of town. Invasive species are highly localized and each species extent varies throughout town.	Insect pests can ravage local silvicultural operations, value-added market product production (e.g., maple syrup industry), and tourism. Invasive plants and insects may destroy or crowd out key native species and habitat, and some cause physical harm.	Highly likely

VI. Mitigation

A. Goals

[4] See https://www.uvm.edu/albeetle/research/impact.html

1. To reduce injury and losses from the natural hazard of landslides/mudslides/rockslides
2. To reduce injury and losses from the natural hazard of flash floods/floods/fluvial erosion.
3. To reduce injury and losses from the natural hazard of severe summer weather.
4. To reduce injury and losses from the natural hazard of extreme cold/snow/ice storm.

B. Excerpted Town Plan Goals & Objectives Supporting Local Hazard Mitigation

- Avoid or minimize the loss of life and property, the disruption of commerce, the impairment of the tax base, and the extraordinary public expenditures and demands on public services that result from flooding related inundation and erosion (page 29).
- Ensure that all aspects of development in hazard areas are safe and accomplished in a manner that is consistent with public wellbeing, does not impair stream equilibrium, flood plain services, or the stream corridor (page 29).
- Manage all flood hazard areas designated pursuant to 10 V.S.A. Chapter 32 § 753, the municipal hazard mitigation plan; and make the Town of Granville, its citizens, and businesses are eligible for federal flood insurance, federal disaster recovery funds, and hazard mitigation funds as may be available (page 29).
- To provide regular maintenance and upgrades to Town roads (Class 2 and 3 Highways) provided that the costs do not put an undue burden on the citizens of Granville, and to ensure that future development does not unnecessarily or unreasonably impact the public investment in Town and regional transportation systems or facilities, including highways, bikeways, trails, and rail (page 12).
- To maintain a road system that is safe, efficient, meets the needs of residents, and complements the other goals and policies of this Plan (page 12).
- Retaining storm water run-off, reducing flood peaks and thereby reducing flooding (page 8).
- Improving surface water quality through storage of organic materials, chemical decomposition and filtration of sediments and other matter from surface water. (page 8).
- Protect existing and future housing from flood damage (page 27).
- To ensure, through sound planning, no net loss of flood storage capacity in order to minimize potential negative impacts such as loss of life and property, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage (page 30).
- To protect municipal infrastructure and buildings from potential flood damage (page 30).
- The Town of Granville shall maintain its Flood Hazard Bylaw and Local Hazard Mitigation Plan, updating and re-adopting each as needed (page 30).
- Granville prohibits all new fill and construction of buildings in mapped floodways (mapped areas, unless amended by FEMA) (page 30).
- Granville's emergency services, power substations, and municipal buildings shall not henceforth be built in the Special Flood Hazard or River Corridor Areas (page 31).

The Granville Town Plan was updated and adopted on November 13, 2019 and has an 8-year lifespan. The Town of Granville has no intentions, at this time, to take steps to enroll in the NFIP's Community Rating System (CRS).

C. Hazard Mitigation Strategies: Programs, Projects & Activities

Vermont's Division of Emergency Management & Homeland Security encourages a collaborative approach to achieving mitigation at the local level through partnerships with Vermont Agency of Natural Resources, VTrans, Vermont Agency of Commerce and Community Development, Regional Planning Commissions, FEMA Region 1 and others. That said, these agencies and organizations can

work together to provide assistance and resources to towns interested in pursuing hazard mitigation projects.

With each mitigation strategy, general details about the following are provided: local leadership, possible resources, implementation tools, and prioritization. The prioritization category is based upon the economic impact of the action, Granville's need to address the issue, the cost of implementing the strategy, and the availability of potential funding. The cost of the strategy was evaluated in relation to its benefit as outlined in the STAPLEE guidelines (includes economic, political, environmental, technical, social, administrative, and legal criteria). A range of mitigation strategies were discussed during the Plan review process, and those that were determined to be feasible are included in the table below.

Strategies given a "High" prioritization indicate they are either critical or potential funding is readily available, and should have a timeframe of implementation of less than two years. A "Medium" prioritization indicates that a strategy is less critical or the potential funding is not readily available, and has a timeframe for implementation of more than two years but less than four. A "Low" prioritization indicates that the timeframe for implementation of the action, given the action's cost, availability of funding, and the community's need to address the issue, is more than four years.

Estimated costs are also accounted for in mitigation strategy considerations. Potential costs are given a range, and are presented as "high", "medium", or "low" in the mitigation strategies table. The cost range is the following:

Low = less than $50,000
Medium = $50,000-$100,000
High = more than $100,000

The Town of Granville understands that, in order to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria. The Town must have a FEMA-approved Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Granville's long-term land use and development planning documents. In addition, the Town will review and incorporate elements of this Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

Hazard Mitigation Action	Benefit	Cost	Local Leadership	Prioritization	Possible Resources	Time Frame
All Hazards						
Ensure that Granville's Local Emergency Management Plan (LEMP) is kept up-to- date and identifies vulnerable areas and references this Plan.	This action helps ensure local preparedness during an emergency.	Low	Selectboard, Emergency Management Director (EMD)	High	Local Resources	Annually
Provide information about VT Alert and encourage residents to sign up.	This action will assist residents in being better informed when hazards are likely to occur.	Low	EMD, Selectboard, Town Clerk	High	Local Resources; VT Alert; VEM	Summer, 2025
Flash Flood/Flood/Fluvial Erosion/Severe Summer Weather/Tropical Storm/Hurricane						
Maintain and update town bridge and culvert inventories. Regularly inspect and maintain town bridges and culverts; and develop a schedule to replace undersized culverts.	A continuously maintained culvert inventory can help ensure upgrades occur when needed, thus reducing the potential for future flooding and road damage.	Low	Road Commissioner, Selectboard	High	Local resources	Annually / as needed
Revise and strengthen the Town's Flood Hazard Bylaw.	Adopting higher flood regulation standards will better protect future development from flood risk.	Low	Planning Commission/ Selectboard	High	Local resources, TRORC/ Municipal Planning Grants	Spring, 2025
Explore the need to upsize culvert 15 on Buffalo Farm Road.	Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Medium	Road Commissioner, Selectboard	Medium	Local resources, state resources (Better Backroads grants), FEMA, and HMGP grants	Summer, 2027
Plan for, budget and maintain roads for safe travel.	Adequately maintained roads help improve road safety and travel, reducing the likelihood of accidents during or following severe weather events.	High	Road Commissioner, Selectboard	High	Local resources	Occurs annually
Explore the need to upsize bridge 12 on VT 12 A to better accommodate flood waters.	Upsizing bridges make infrastructure more resilient and improve capacity during flood and storm events.	High	Road Commissioner, Selectboard	Medium	Local resources, state resources (Better Backroads grants), FEMA, and HMGP grants	Summer, 2027
Identify areas of fluvial	Incorporating stream or	Low	Planning	Low	Local	Summer,

Hazard Mitigation Action	Benefit	Cost	Local Leadership	Prioritization	Possible Resources	Time Frame
erosion that could benefit from river/stream corridor plantings.	river corridor plantings in strategic areas can help alleviate impact of peak flows and reduce the loss of property during flooding.		Commission		Resources, White River Partnership, TRORC	2029
Invasive Species						
Identify the most critical areas impacted by Japanese knotweed and identify potential partners to develop a plan to reduce its impact.	Successful removal of Japanese knotweed can improve stream and river bank stability, reducing erosion and flood impacts and allowing for reestablishment of native species.	Low	Planning Commission	High	Vermont Youth Conservation Corps, The Knotweed Project, The Forest Service	Summer, 2026
Extreme Cold/Snow/Ice Storms						
Clear and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained.	Routine maintenance of utility corridors helps prevent damage to utilities and town infrastructure, and minimizes utility outages during storm events.	Low	Road Commissioner, Selectboard, Tree Warden	High	Local resources	Ongoing
Plan for, budget and maintain roads for safe winter travel.	Adequately maintained roads help improve road safety and travel, reducing the likelihood of accidents.	High	Road Commissioner, Selectboard	High	Local resources	Occurs annually
Develop a plan to reach out to vulnerable populations prior to winter weather events (CARE).	A well-coordinated plan to reach vulnerable populations prior to winter weather events can reduce hazard impacts to these populations.	Low	Selectboard, Emergency Management Director	Medium	Local resources	Winter, 2027

Appendices

Appendix A: Hazard Ranking Methodology

Score	Frequency of Occurrence: Probability of a plausibly significant event.	Potential Impact: Severity and extent of damage and disruption to population, property, environment, and the economy.
1	Unlikely: Less than 1% probability of occurrence per year.	Negligible: Isolated occurrences of minor property and environmental damage, potential for minor injuries, minor economic disruption.
2	Occasionally: 1% through 10% probability of occurrence per year, or at least one chance in next 100 years	Minor: isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption.
3	Likely: between 10% to 75% probability per year, at least 1 chance in next 10 years.	Moderate: severe property and environmental damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: 75% or greater probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Appendix B: Outreach Materials

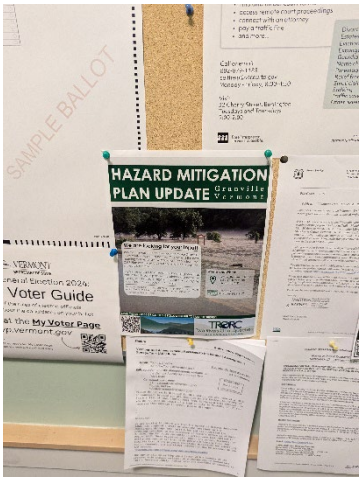


Figure 1 The flier above was posted in the Town Office, Town Hall, US Post Office, and Granville Country Store to publicize the 10/15 LHMP meeting

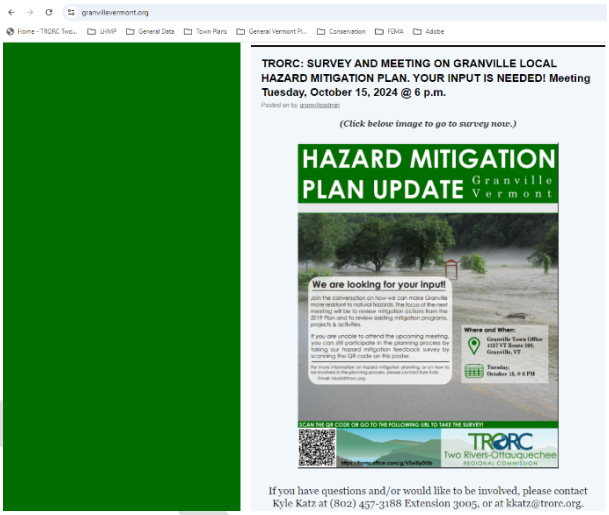


Figure 2 Poster advertising the 10/15 meeting on the Granville, VT website.

Hazard Mitigation Planning Meeting & Survey

Mike Reiderer • Town Line Rd, Granville

Announcement
Event

When: **Nov 13, 2024, 6 to 7:30 PM**

Looking for final survey responses to the Granville Local Hazard Mitigation Plan update!

The Granville Local Hazard Mitigation Plan (LHMP) Committee is looking for final survey responses prior to Friday, November 8th. A draft review and mitigation strategies meeting is scheduled for Wednesday, November 13th, at 6:00 PM at the Granville Town Office and on Zoom. The meeting is open to the public. If you have not had a chance to fill out the survey, we would greatly appreciate your feedback. The survey takes about 10 minutes, and will help to inform and provide guidance for the LHMP process. You can access the survey here!

Local Hazard Mitigation Plans are part of an effort by the Federal Emergency Management Agency (FEMA) to reduce damage from foreseeable natural and human-caused hazards. Examples of projects in local plans include increasing culvert sizes, regulating flood hazard areas, stabilizing landslides, and tree trimming near power lines.

For questions or comments on the LHMP update process, please reach out to Kyle Katz at kkatz@trorc.org

Join Zoom Meeting
https://us06web.zoom.us/j/84470353399?pwd=uKyqbzJbqG5W0DsBccurya8gWY5387.1

Meeting ID: 844 7035 3399
Passcode: 899901

Dial by your location
646 518 9805
646 558 8656

Email Author | Reply to Forum

Figure 3 Notice for the 11/13 meeting posted in the Front Porch Forum on 10/30

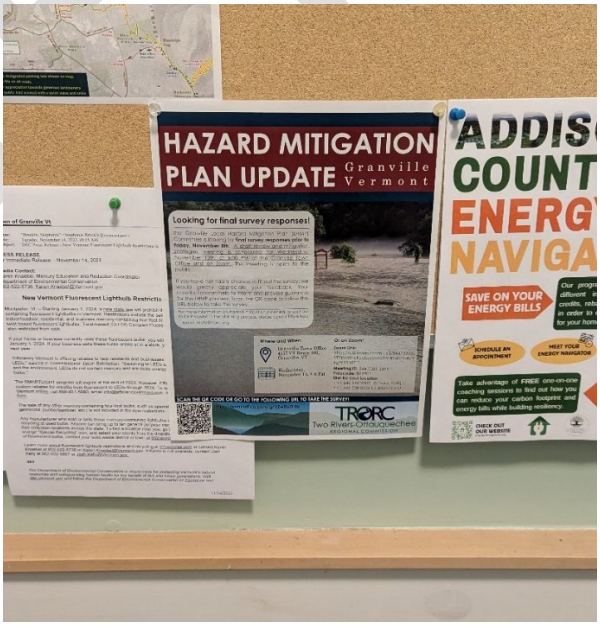
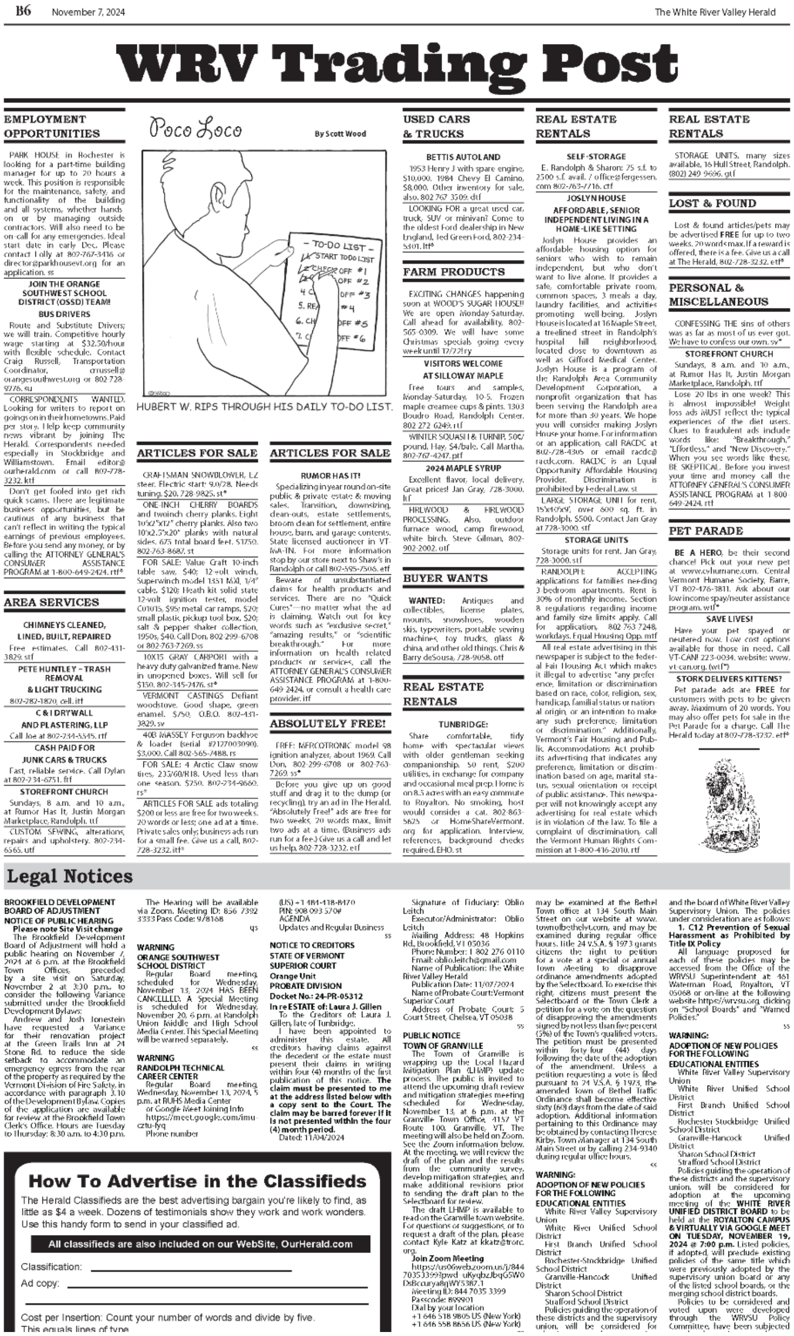


Figure 4 The flier above was posted at the Town Hall, Town Clerk's Office, US Post Office, and Granville Country Store on 10/30. Flier was also posted on the town website.


B6 November 7, 2024 The White River Valley Herald

WRV Trading Post

Legal Notices

PUBLIC NOTICE
TOWN OF GRANVILLE

The Town of Granville is wrapping up the Local Hazard Mitigation Plan (LHMP) update process. The public is invited to attend the upcoming draft review and mitigation strategies meeting scheduled for Wednesday, November 13, at 6 p.m. at the Granville Town Office, 4157 VT Route 100, Granville, VT. The meeting will also be held on Zoom. See the Zoom information below. At the meeting, we will review the draft of the plan and the results from the community survey, develop mitigation strategies, and make additional revisions prior to sending the draft plan to the Selectboard for review.

The draft LHMP is available to read on the Granville town website. For questions or suggestions, or to request a draft of the plan, please contact Kyle Katz at kkatz@trorc.org.

Join Zoom Meeting
https://us06web.zoom.us/j/84470353399?pwd=uKyqbzJbqG5W0DsBccurya8qWY5387.1
Meeting ID: 844 7035 3399
Passcode: 899901
Dial by your location
+1 646 518 9805 US (New York)
+1 646 558 8656 US (New York)

Figure 5 Notice of draft review meeting posted in the WRV Herald on 11/07

Appendix C: Five-Year Review and Maintenance Plan

Five-Year Local Hazard Mitigation Plan Review/Maintenance

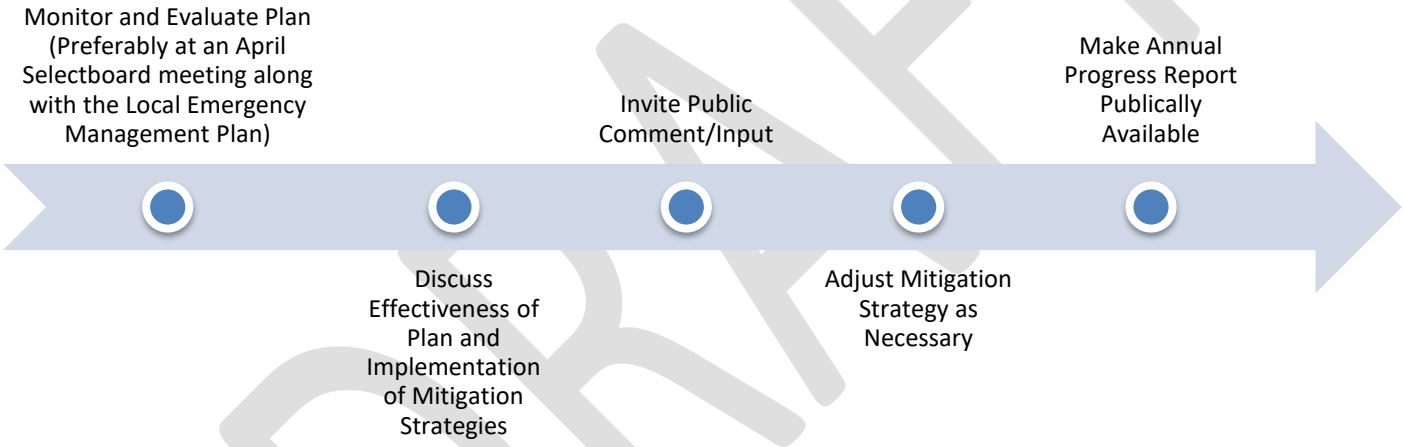
- Brief local leadership on plan approval
- Formally adopt plan
- Publicize plan approval and adoption
- Celebrate success

- Confirm/clarify responsibilities
- Integrate mitigation actions
- Monitor & document implementation of projects and actions
- Estblish indicators of effectiveness or success

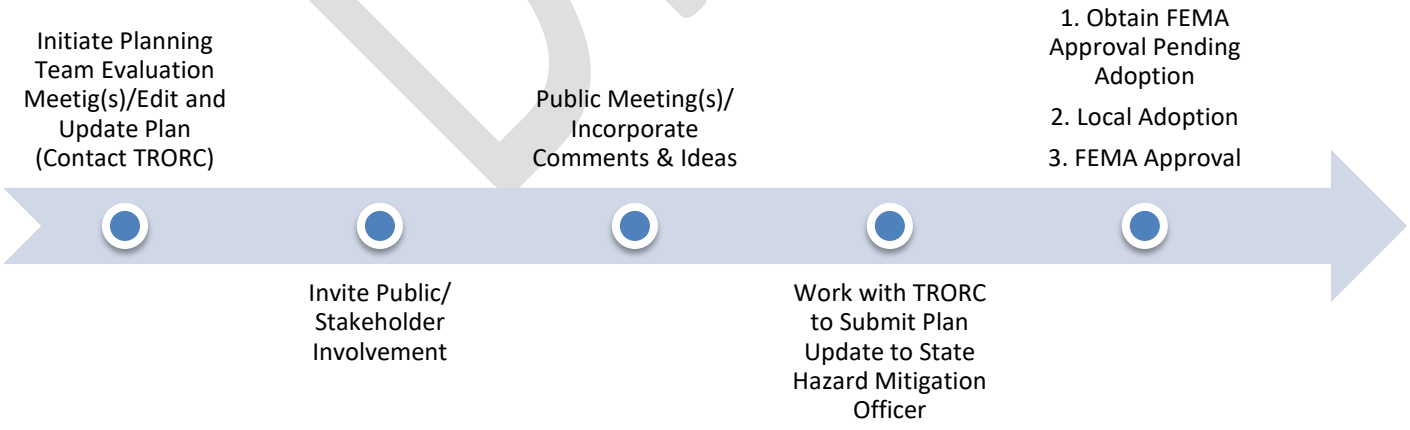
- Effectiveness of planning process
- Effectiveness of actions
- Document success & challenges of actions
- Update and involve community
- Celebrate successes

- Review factors affecting community's context
- Analyze findings; determine whether to revise planning process or strategy
- Incorporate findings into the plan

After Plan Adoption—Annually
Implement & Evaluate



Fifth Year, and After a Major or Federally Declared Disaster Directly Impacting the Town
Evaluate and Revise



Appendix D: Survey Results Summary

Summary of Survey Responses and Priorities

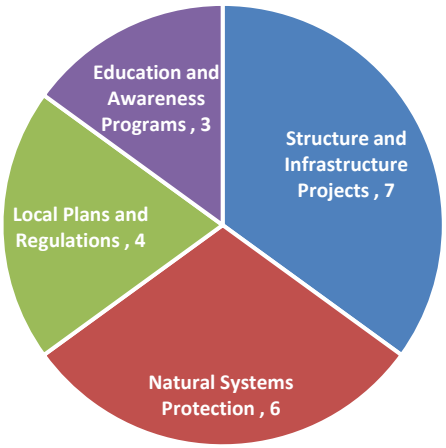
The following is a summary of responses to the Granville Hazard Mitigation Plan survey. There was a total of 8 responses. This summary does not capture all of the feedback from the survey responses, but instead attempts to include the key comments and concerns provided by survey respondents.

Key Takeaways:

Survey respondents made the following observations:

- The continued threat of flooding and flash flooding is a significant concern.
- Climate change is a significant threat, leading to more unpredictable weather patterns including more frequent mud seasons and high temperatures in the summer.
- Power outages are occurring more frequently. Access to consistent, reliable, communication channels, including cell phone reception, can improve communication to residents during emergencies.
- Invasive species are a persistent threat, Japanese knotweed in particular.
- Granville residents are aging, leading to changing needs when it comes to hazards.
- Some residences are being converted to short-term rentals. Communicating hazard information to these properties during an emergency may be difficult.

What types of mitigation actions would you like to see the community prioritize?



Critical assets for community recovery:

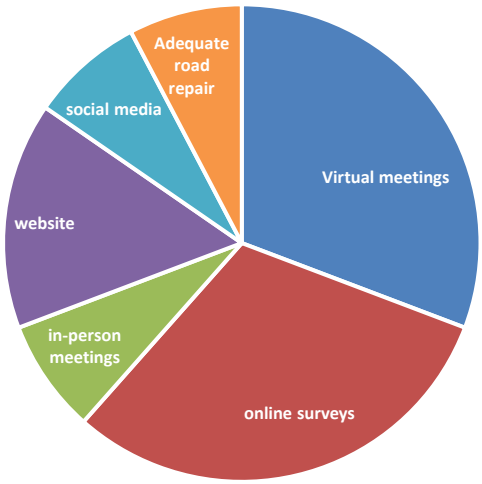
- Better care and maintenance of town roads and culverts
- Continued school bus service for children to nearby schools
- Law enforcement officers
- Failure of Bridge 12 on Rte. 12A would impact the local community
- Road plowing and clearing from local contractors and town services
- Access to clean water and energy
- Town-owned ambulance/EMTs to respond during emergencies
- Flooding impacting the town parking area
- Knotweed on stream and river banks
- Cell phone service

- Municipal Complex and Playground
- Granville Country Store
- The Granville Mfg.
- Community along VT. Route 100
- Fire Station
- The Corner School
- The Glass Blowing/Crafts Center

Priorities:

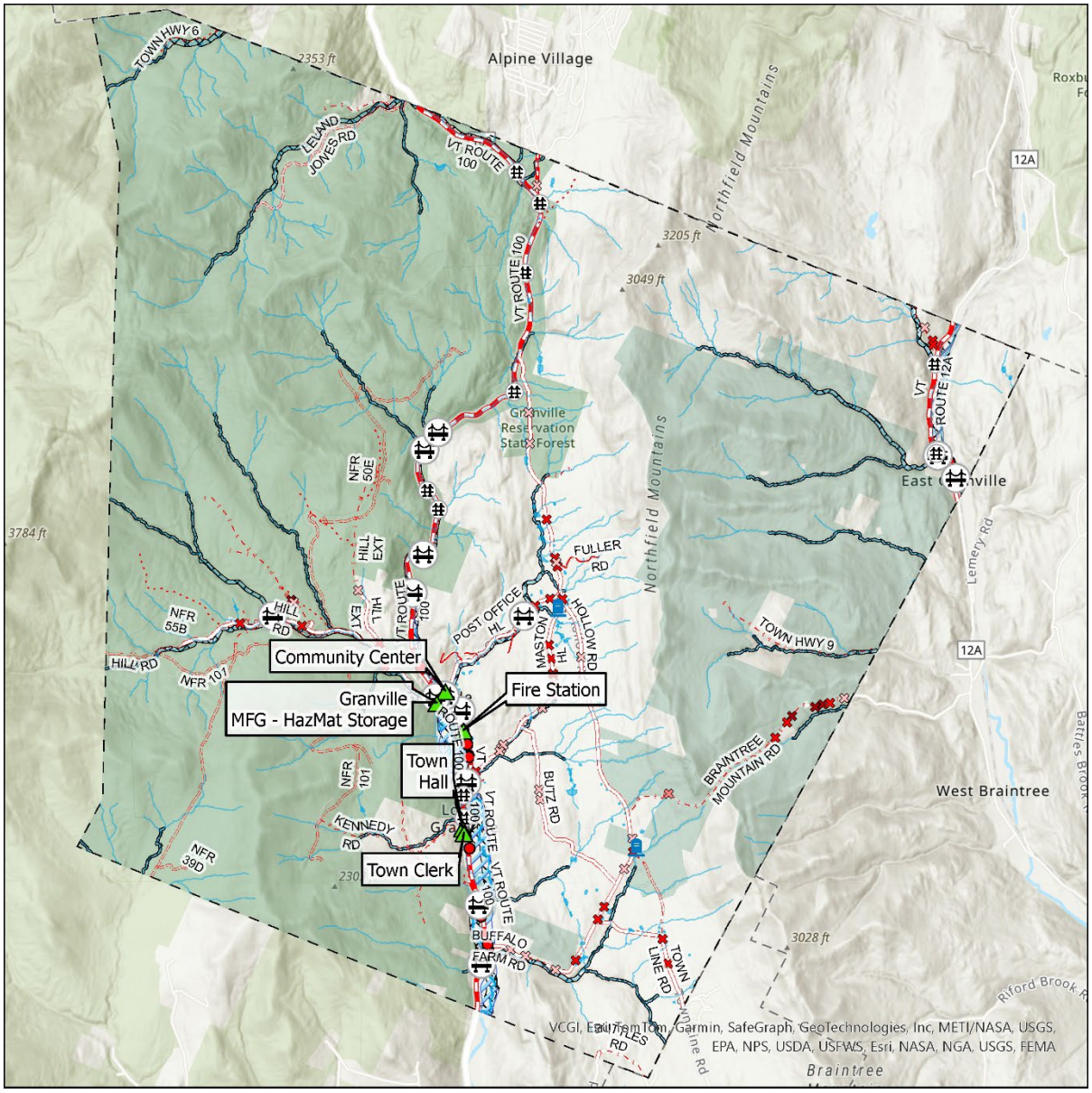
- Improved road grading/removal of problematic berms
- Culvert 15 on Buffalo Farm Road keeps getting blocked, threatening the road.
- Land erosion issues on Thatcher Brook
- Knotweed is spreading
- Flooding at the Town Park and on Route 100, including from Granville Manufacturing to the bridge on VT 100 at the intersection of Maston Hill.
- Bridge 12 on VT-12A – multiple issues including extensive spalled concrete from water infiltration and rebar rust expansion. The bridge also is periodically blocked by upstream debris, leading to overflowing, including flooding of nearby structures and homes during Irene.
- Culverts at north end of Gene's Road are holding back water.
- Improve grading of town roads to prevent water drainage and erosion issues on those roads.
- Increased line of sight is needed on road rights-of-way to improve shoulder visibility, as well as snow and ice clearing and to minimize impacts during mud season.
- Road conditions during more frequent mud season are an annual issue.

Best ways to involve residents in the process:



Attachments

Attachment A: Map of Granville



2025 Local Hazard Mitigation Plan
Critical Facilities and Essential Services Map
Granville, Vermont

0 0.5 1 2 Miles

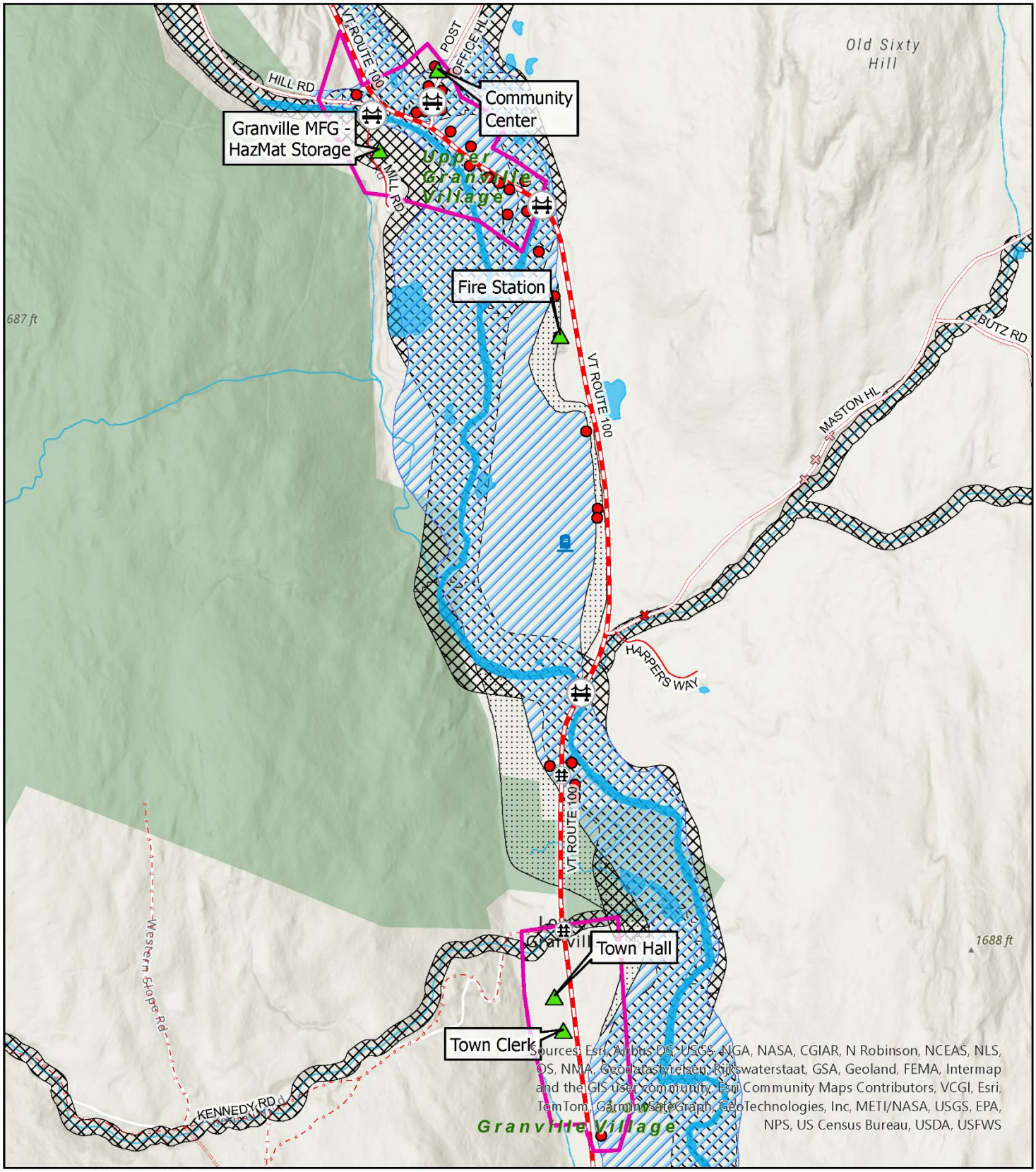
N

- Critical Facility
- Short Bridges
- Long Bridges
- e911 in SFHA
- Cemetery

Roads
- cls 2 TH
- VT route
- cls 3 TH;
- cls 4 TH
- cls 4 TH primitive
- cls 4 TH impassable
- US forest hwy
- 6,6
- trail
- private;
- 96,9
- River Corridor
- Conserved Land

Special Flood Hazard Area
- Zone A
- Zone AE
- Zone X

Granville Critical Culverts
- Closed
- Critical
- Urgent
- Poor



2025 Local Hazard Mitigation Plan
Village Areas Map
Granville, VT

0 0.13 0.25 0.5 Miles

N

Critical Facility
Short Bridges
Long Bridges
e911 in SFHA
Cemetery
Designated Village
River Corridor
Conserved Land
Special Flood Hazard Area
Zone A
Zone AE
Zone X
Granville Critical Culverts
Closed
Critical
Urgent
Poor