Town of Waltham, Vermont



Single Jurisdiction All-Hazards Mitigation Plan DRAFT

Final Plan Adoption Date: / /2026 *FEMA Approval Date: / /2026*



Waltham 2026 LHMP Executive Summary

The Town of Waltham developed its All-Hazards Mitigation Plan in 2026. Town officials and citizens worked with the Addison County Regional Planning Commission to conduct a hazards inventory and risk assessment matrix, identify locations where hazards are known to the community, and identify potential mitigation projects associated with the hazards identified.

The committee identified the following hazards as their **HIGHEST** vulnerabilities, based on probability, warning time, geographic impacts, property damage, and other concerns:



- **High Winds (9.60)**
- **Flash Flooding & Fluvial Erosion (9.60)**



The following hazards were identified as **HIGH** vulnerabilities:




- **Invasive Species (8.00)**
- **Severe Ice Storm (6.60)**
- **Highway Accidents (6.00)**
- **Drought (6.00)**




The following hazards were identified as **MODERATE** vulnerabilities:




- **Lightning Storm (5.40)**
- **Severe Snow Storm (4.20)**
- **Extreme Heat (4.20)**
- **Extreme Cold (4.20)**
- **Structure Fire (3.60)**
- **Infectious Disease (3.60)**
- **Tornado (3.20)**
- **Wildfire (3.20)**
- **Severe Hail Storm (2.80)**
- **Insect-borne Illness (2.80)**
- **Inundation Flooding (2.50)**











For each hazard type, the committee considered previous occurrences and extent, current vulnerability, and future probability. The committee set these overall mitigation goals and objectives:

Goal 1: Increase Community Awareness of Waltham's Vulnerability to Natural Hazards

Objective: Inform and educate the community about the types of hazards the Town of Waltham is exposed to, where they occur, how to prepare, and recommended responses

Goal 2: Reduce Vulnerability of People, Property, and the Environment to Natural Hazards

Objective: Provide mechanisms to enhance life safety
Objective: Reduce impacts to critical facilities and services
Objective: Reduce impacts to existing buildings and infrastructure to the extent possible
Objective: Reduce impacts to future development and infrastructure to the extent possible
Objective: Reduce impacts to the town's natural and historic resources
Objective: Reduce impacts to public health

Goal 3: Increase Interagency Capabilities and Coordination to Reduce the Impacts of Natural Hazards

Objective: Continue to collaborate and coordinate with other agencies on planning, projects, hazard response, and funding opportunities

The committee also developed a prioritized list of future mitigation actions and projects, with care taken to include only those projects which could be considered reasonable and feasible based primarily on capacity, cost, and political feasibility. The highest priority actions include:

Hazard	Future Mitigation Actions
All Hazards	Provide community information on Preparation Kits and Go-Bags Encourage residents to sign up for statewide VT Alert and the CARE Registry systems
	Obtain a back-up generator or solar panels + storage battery for the Town Hall and Office Support installation of residential energy storage/generators
High Winds	Remove dead and dying trees from town rights of way as part of normal maintenance- especially central portion of Route 66 Support GMP efforts to maintain rights of way and bury power lines
Flash Flooding	Update town zoning Flood Hazard Area language and adopt FEMA FIRM in order to enroll in National Flood Insurance Program Evaluate and replace high flood-risk culverts on town-owned roads and rights-of-way
Invasive Species	Follow state recommendations for roadside mowing to prevent seed production of Poison Parsnip Provide education and monitoring of Ash Trees and Emerald Ash Borer damage.
Severe Ice Storm	Support GMP efforts to maintain rights of way and bury power lines Manage vegetation in town ROW's to minimize/allow space for powerlines
Highway Accident	Maintain contract with Addison County Sheriff for limiting speeding and parking enforcement on Route 66 Support lower speed limit on portions of Route 17
Drought	Provide education to residents about water conservation measures
Lightning Storm	Provide lightning-mitigation education materials on the Town website
Severe Snow	Identify appropriate shelters for people who may need to evacuate due to loss of electricity, isolation, cold temperatures Work with private landowners to encourage construction of wind/blow rows
Extreme Heat	Work towards Town Hall capacity as emergency cooling shelter with back-up power Develop and implement a Hot Weather-Cooling Shelter plan
Extreme Cold	Encourage residents to sign up for the CARE registry and set up a process to check on vulnerable populations during severe cold events
Structure Fire	Continue financial and personnel support of Vergennes Fire Dept
Infectious Disease	Develop and maintain continuity planning and agreements for potential town staff shortages.
Tornado	Encourage residents to sign up for VT-Alert to receive early weather warnings
Wildfire	Require outdoor burn permits prior to any outdoor burning.
Severe Hail Storm	Provide hail-safety education materials on the Town website
Insect-borne Illness	Provide mosquito-safety educational materials on the use of appropriate repellants and behavior patterns to reduce the mosquito bites
Inundation Flooding	Update Town Zoning to meet National Flood Insurance Program (NFIP) standards and adopt new FEMA Flood Insurance Rate Maps

A Hazard Mitigation Plan is dynamic and should not be static. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The hazard mitigation plan should be reviewed by all new town officials and revised and updated in its entirety every 5 years.

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1. Planning Process

Requirement 44 CFR § 201.6(c)(1)
(Document the planning process)

1.1. Current Plan Development Process

The Town of Waltham received a Hazard Mitigation Assistance grant from FEMA in 2022. The town issued a Requests for Proposals on September 14, 2022 and selected the Addison County Regional Planning Commission (ACRPC) as a consultant to update the Local Hazard Mitigation Plan and submit it to FEMA for approval.

The Town of Waltham Selectboard confirmed their intent to work through the process of writing an All-Hazards Mitigation Plan at a meeting of the Town Selectboard. After the confirmation of funding availability, the Selectboard further showed their support of the plan by appointing the following residents of Waltham to a mitigation planning committee:

- Dan Morris– Waltham Selectboard
- Cookie Steponatis- Assistant Town Clerk
- Darcy Torte– Waltham Planning Commission and Development Review Board
- Paul McMahon- Waltham Emergency Management Coordinator (EMC)
- Chris LaPete- Road Foreman

The committee met **February 19, 2026** to review the Hazard Mitigation Plan components and requirements and develop a strategy for outreach to public and other community stakeholders. At a **March 19, 2026** meeting, the committee completed a hazards inventory and risk assessment matrix to determine highest vulnerability hazards and locations. Following the February meeting, the committee reviewed Previous Hazard Mitigation Actions (from the 2018 plan) and posters were placed at Town Meeting Day for citizen input and feedback. ACRPC reached out to other Waltham officials and Emergency Responders in Vergennes for additional feedback on the hazards inventory and risk assessment. The committee met again on **April 16, 2026** to set overall mitigation goals, review existing policies, programs and resources, and to develop potential mitigation projects associated with the hazards identified.

The final plan draft was sent to the Town Selectboard for their **July 2026** regular meeting. Input on the draft plan was requested from the Town Selectboard and Planning Commission during open meetings. The town also made the plan available on its website www.walthamvt.org to reach a broader distribution. A copy of the draft plan was sent via e-mail to the town clerks of the surrounding municipalities of Vergennes, New Haven, Weybridge, Addison, and Panton for distribution to appropriate town officials on **July 1, 2026** with a request for review and edits by **July 28, 2026**. No comments were received.

Based on comments from the complete public process, the draft plan was further edited and forwarded to Vermont's State Hazard Mitigation Officer for comments and preliminary approval on **July 29, 2026**. Suggested edits were identified by the SHMO on **XXX XX 20XX**.

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on **XXX XX 20XX**. Upon completion of this draft, the plan was returned to FEMA for Approval Pending Adoption (APA) status. Upon receipt of the FEMA APA, the resulting document was adopted by the Waltham Selectboard on **XXX XX 20XX**.

1.2. Opportunities for Public Involvement

Multiple opportunities for public comment were made available during the planning process:

- A planning committee was appointed from volunteers and town officers at an open meeting of the Town Selectboard.
- A set of posters with overview information about the Hazard Mitigation Plan and an interactive chart for communities to rank their own vulnerability priorities was displayed at Town Meeting, March 7 2023 (Appendix 1)
- A copy of the draft plan was made available along with a comment sheet at the Town Office on 23 July 2026. The Town Clerk was asked to encourage the public to read and comment on the draft plan. (No comments received)
- Meetings of both the Town Selectboard and the Town Planning Commission were open for public comment throughout the planning and draft phases of this plan. (No comments received)

Requirement 44 CFR § 201.6(b)(2) (Stakeholder Involvement)

1.3. Opportunities for Additional Comment

Additional opportunities for regional and state-level comments in the draft stage were provided throughout the planning process.

- A copy of the draft plan was posted on the ACRPC website www.acrpc.org for regional review and notice was given during the **May 2026** ACRPC full commission meeting as to its availability. Commissioners were asked to review and pass along comments to (Andrew L'Roe) at ACRPC. No comments received.
- The **July 2026** ACRPC newsletter included an announcement that a draft plan was available for public review and comment. That draft was posted in the ACRPC office and was available for public input during normal business hours with a comment sheet attached. No comments received.
- The neighboring Town Clerks of Vergennes, New Haven, Weybridge, Addison, and Panton were notified of the posting via e-mail on **July 1, 2026**. The clerks were instructed to share the notice with the select boards, planning commissions and the general public. Comments were requested to be sent to Andrew L'Roe at ACRPC. No comments were received.
- A copy of the draft plan was provided to the State Hazard Mitigation Office for comments on July 29, 2026. Comments were received on XXXXXXXDATE
- An updated copy was sent to DEMHS for submission to FEMA on XXXXXXXDATE
- FEMA Region 1 staff was sent a draft for comment on XXXXXXXDATE
- FEMA reviewers returned the draft plan XXXXXXXDATE for further edits which were completed and the edited plan sent back.

Requirement 44 CFR § 201.6(b)(3)
(Review of existing plans)

1.4. Extent of Review

Throughout the plan development process information from the following documents and sources were incorporated into the plan either as data or to inform the committee's prioritization process:

- 2026 Local Emergency Management Plan
- 2024 Waltham Town Plan (support for the committee's prioritization process and section 2 narrative)
- 2026 Addison County Regional Plan (Goals related to public safety and Flood Resilience, as well as energy and transportation resilience)
- 2023 State of VT Hazard Mitigation Plan (provided a listing of statewide hazard concerns)
- 2025 Report of the State Fire Marshall (provided data to inform structure and wild fire risks)
- Federal Emergency Management Agency, www.fema.gov (provided official data on declared disasters)
- The Vermont Weather Book by David Ludlum (provided historic accounts of disasters for Section 4.3
- National Climatic Data Center website (provided information for Section 4.3)
- FEMA Flood Insurance Rate Map dated 1986 (incorporated into maps)
- Flood Insurance Study (FIS) dated August 5, 1986
- VT Center for Geographic Information data layers (incorporated into map products)
- State of Vermont Tier II reports, 2020-2022 (reviewed for Section 4.3)
- Waltham Annual Town Reports 2013-2023

2. Local Background

2.1. Community Background

Waltham is a small, rural town in west-central Vermont, bordered by Otter Creek to the west and centered around Buck Mountain, the primary topographic feature rising over 800 feet. Much of the town is composed of open farmland (61%) and forestlands (30%). The town's landscape includes Broad valley lands along Otter Creek, largely in floodplain, Steep, rocky, forested interior slopes on Buck Mountain, and in several areas it has Clayplain forest communities, one of Vermont's rarest natural community types.

Waltham's surface waters drain primarily into Otter Creek, a major regional waterway that provides habitat, recreation, and floodplain storage. Smaller unnamed tributaries drain toward Little Otter Creek. Much of the Otter Creek corridor in Waltham is floodplain, helping buffer the town from development impacts. The town has extensive floodplain soils along Otter Creek that also serve as prime agricultural land. It has some wetland areas, especially on the eastern side of town that retain and slow water.

Waltham 's position on the Champlain valley floor substantially influences its climate. The western section of the town is only five miles from the eastern foothills of the Adirondacks, and within 20 miles of the Green Mountains. The town's most prominent upland feature, Buck Mountain, rises over 800 feet in the center of town. Buck Mountain's steep, forested slopes influence drainage and runoff patterns, and the town's varied elevations—from flat agricultural soils to rugged uplands—affect how water moves through the landscape, shaping its vulnerability to flood damage, erosion, and seasonal road impacts. These features create a landscape where valley areas, especially the Otter Creek floodplain, are naturally prone to flooding and fluvial erosion.

The moderating influence of the Lake's warmer temperatures in fall keeps the valley floor more temperate, extending the growing season to over 150 days, which is almost a month longer than that of the upland areas of the state and spans from April to October in some years, adding to the areas' appeal as an agricultural setting. The United States Department of Agriculture Hardiness Zone Map (the map on which plant hardiness ratings are base) has put Waltham in Zone 5, which has an average annual minimum temperature of between 15-20 degrees Fahrenheit. The Green Mountain range to the east induce orthographic cooling, creating frequent cloud cover in the region and often signal weather changes associated with changing frontal systems of low and high pressure.

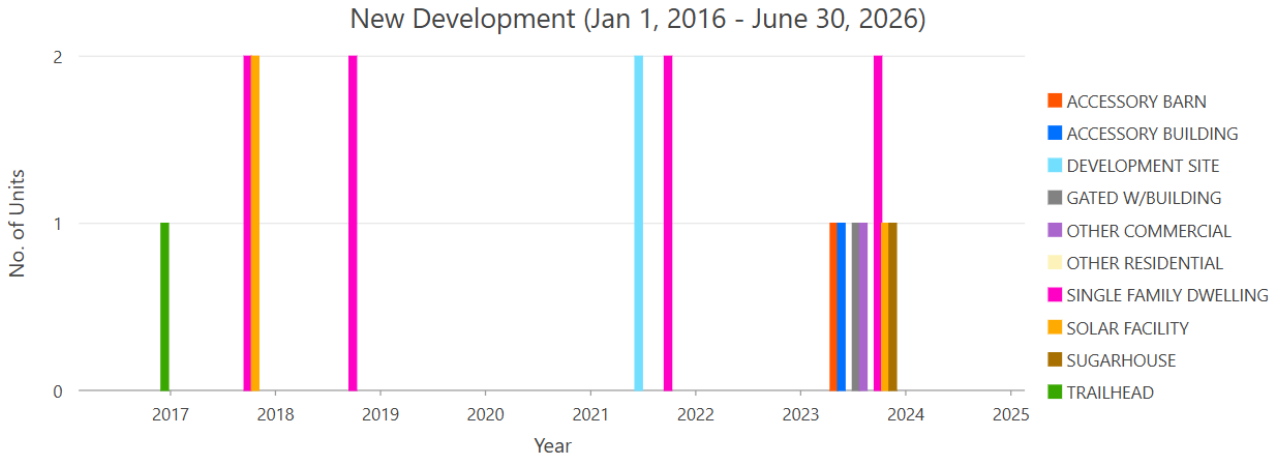
Population

Waltham has an estimated population of 440 people. The town experienced its first population decline since 1960 between 2010 and 2020, dropping from 486 to 446 residents (a loss of 40 people). Between 2020 and 2022, the population fell again from 446 to 440. The decline contrasts with past decades—between 1960 and 1990, the town's population more than doubled. Waltham's population is aging rapidly, with a growing share of seniors and a decreasing share of children. The town's demographic changes can be attributed to limited housing options and smaller household sizes, an aging population aging in place, out-migration of young adults, declining birth rates, consistent with statewide trends, and most jobs located outside the town, making it a "bedroom community" with fewer employment opportunities locally.

Housing

Waltham's housing stock is primarily single-family homes with limited rental and multi-unit options. There are an estimated 249 housing units in town, primarily clustered along Maple Street and Green Street, with newer homes set back from roads on long driveways. Higher-density residential clusters exist in the Northern Residential Area near Vergennes. Two manufactured home communities, High Manor Park (23 units, established 1970s) and McKnight Lane (14 net-zero manufactured homes, created in 2016). Over 50% of homes in Waltham were built between 1970–1990, mirroring periods of population growth..

Housing cost burden is significant for both homeowners and renters. Zoning reforms since 2018 aim to encourage more affordable and diverse housing through higher density and flexible designs. Between 2016–2024, 26 new building permits were issued (averaging 2–3 homes per year), primarily from the construction of McKnight Lane's units, and 11 new subdivided lots created.



Public Infrastructure & Emergency Shelter

Waltham maintains a small set of public facilities, including its Town Hall, public roads, a town-owned parcel on Otter Creek, and shared solid-waste and recycling services. The Town Hall functions as the central municipal facility and community gathering space, with ongoing improvements funded in part by ARPA. The town's Local Emergency Management Plan (LEMP) outlines emergency procedures, contacts, and *potential shelters* for use during disasters, though the Plan does not identify a dedicated, permanently established emergency shelter within Waltham.

Emergency Response Providers & Service Coverage

Waltham does not operate its own police, fire, or rescue departments. Instead, emergency services are provided regionally: **Vergennes Fire Department** covers fire protection for the town, while the **Vergennes Area Rescue Squad** supplies ambulance and medical emergency response. Police services are provided by the **Vermont State Police**, primarily from the New Haven barracks, with additional support from the **Addison County Sheriff's Department** as part of countywide service availability. The town maintains an annually updated Local Emergency Management Plan to coordinate these agencies during emergencies.

Communication Utilities

Wireless phone service in Waltham is spotty. The main coverage is AT&T and Verizon. There are no cell tower locations within Waltham, and the nearest transmitters are located in Vergennes, along Route 7 in New Haven, and on Route 17 East in Addison.

Waltham's communication and telecommunication services have significantly improved in recent years due to its participation in the **Addison County Communications Union District (ACCUD)**, a regional collaborative established to expand reliable, affordable, high-speed broadband across Addison County. As a member of ACCUD, the town is now fully served by **Maple Broadband**, a community-based, not-for-profit fiber-optic network that offers high-speed internet to all homes and businesses in Waltham. This fiber buildout supports remote work, home-based businesses, education, and emergency communication capacity. To protect the town's scenic and rural character—especially viewsheds associated with Buck Mountain—Waltham has also adopted a **restrictive Telecommunications Ordinance** aimed at preventing the construction of telecommunications towers on prominent ridgelines. Together, these efforts give residents access to modern broadband infrastructure while preserving the community's landscape and ensuring future communication upgrades fit local aesthetic and environmental priorities.

Table. Community Assets

Community Assets		Potential Hazard Vulnerabilities																
Category	**Assets**	Heat	Cold	Wind	Snow	Ice	Infectious Disease Outbreak	Invasive Species	Structure Fire	Fluvial Erosion	Drought	Highway Accident	Inundation Flooding	Wildfire	Lightning	Hail	Landslides	Earthquake
People																		
Underserved Communities	Older Residents	X	X		X	X	X											
	People with Disabilities	X	X		X	X	X											
Socially Vulnerable Communities	Agricultural Workers	X	X				X											
	Short-term Visitors	X	X	X	X	X	X					X			X			
	Route 7 travelers				X	X						X						
	Mobile Home Park residents	X	X		X	X	X											
	Ark Preschool																	
Town Workers	Town Staff						X											
	Contracted Road Maintenance																	
Structures Facilities	Town Office and Hall								X									
Critical Infrastructure																		
(Major culverts)	Maple Street									X								
	S. Middlebrook Rd-Green St									X								
(Major State Roads)	US Route 7/ Ethan Allen Hwy											X						
(Major Town Roads)	VT Rte 17									X		X						
	Green Street									X		X						
	Maple Street									X		X						
	Route 66									X								
	S Middlebrook Rd									X								
	Plank Road																	
Private Residential Roads	Burnham, Crosby Rd																	
Future	New Residential Buildings								X									
Systems Networks	Powerlines			X	X	X												
Capabilities	Broadband Internet lines																	

(Community Assets table, continued)

Community Assets		Potential Hazard Vulnerabilities																
Category	**Assets**	Heat	Cold	Wind	Snow	Ice	Infectious Disease Outbreak	Invasive Species	Structure Fire	Fluvial Erosion	Drought	Highway Accident	Inundation Flooding	Wildfire	Lightning	Hail	Landslides	Earthquake
Natural, Historic, and Cultural Resources																		
Natural Resources	Farms	X	X					X			X					X		
	Buck Mountain							X		X				X	X			
	Green Street Wetlands										X							
	Otter Creek										X							
	Forest block and wildlife area																	
Historic Resources	Sunset View Cemetary																	
	Chipman Cemetary																	
	Historic register buildings and barns																	
Cultural Resources	Small Agricultural Producers																	
	Town Hall Events & Picnic																	
Activities that have value to the community																		
Outdoor Recreation	Buck Mountain Trails														X			
	Bike routes																	
	Otter Creek Access																	

Requirement 44 CFR § 201.6(c)(3)
(existing land use and development ordinances)

Zoning Regulations

The town of Waltham enforces a set of Zoning Regulations, most recently adopted on July 11, 2017. The Town of Waltham Zoning Regulations are intended to provide for orderly community growth and to further the purposes established in the 2024 Waltham Town Plan. The regulations require that dwellings comply with all applicable State and Federal health and safety regulations. Where these regulations impose a greater restriction upon the use of a structure or land than are required by any other statues, ordinances, rules, regulation, permit, easement or agreement, the provisions of these regulations shall control.

The Development Review Board (DRB) and Planning Commission (PC) are responsible for establishing zoning regulations. The DRB/PC also reviews subdivision requests and decides on exceptions to those regulations in the form of variances and conditional and special use permits.

Like most municipalities in Vermont, Waltham does not have residential building codes that control how a building is constructed. NFIP compliance requires local policy that regulates where homes are built. Builders work with the designated building inspector and floodplain administrator in your community to document building code and NFIP compliance. The State of Vermont has adopted building codes for commercial building safety and energy standards. The Zoning Administrator receives, reviews, and issues standard building applications, and may only issue a required Certificate of Occupancy following inspection when a structure is completed.

The Zoning Regulations contain a **Flood Hazard Overlay** and a set of Flood Hazard Area Regulations in order to promote the public health, safety, and general welfare, to prevent increases in flooding caused by the uncontrolled development of lands in areas of special flood hazard, and to minimize losses due to floods. These regulations apply to all lands in the Town of Waltham identified as areas of special flood hazard on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), dated September 18, 1986, and any revisions. At the writing of this plan, July 2026, the Town of Waltham was not participating in the National Flood Insurance Program but is working towards that goal but adding additional language to the zoning bylaws to meet NIP requirements.

There are no critical or public structures located within the mapped Special Flood Hazard Areas (SFHA) of Waltham, which are along Otter Creek and Mud Creek. A comparison of E-911 locations in Waltham and a digitized flood map found a total of 0 residential structures located in the current (1985) FEMA mapped SHA floodplain.

Requirement 44 CFR § 201.6(c)(2)(ii)
(NFIP Repetitive Damage)

Requirement 44 CFR § 201.6(c)(3)(ii)
(NFIP Participation and Compliance)

Land Use and Development Ordinances

Three distinct areas within the town have been identified in the Town Plan and Zoning with concomitant guidelines for future planning in these areas. These Future Land Use Areas include the:

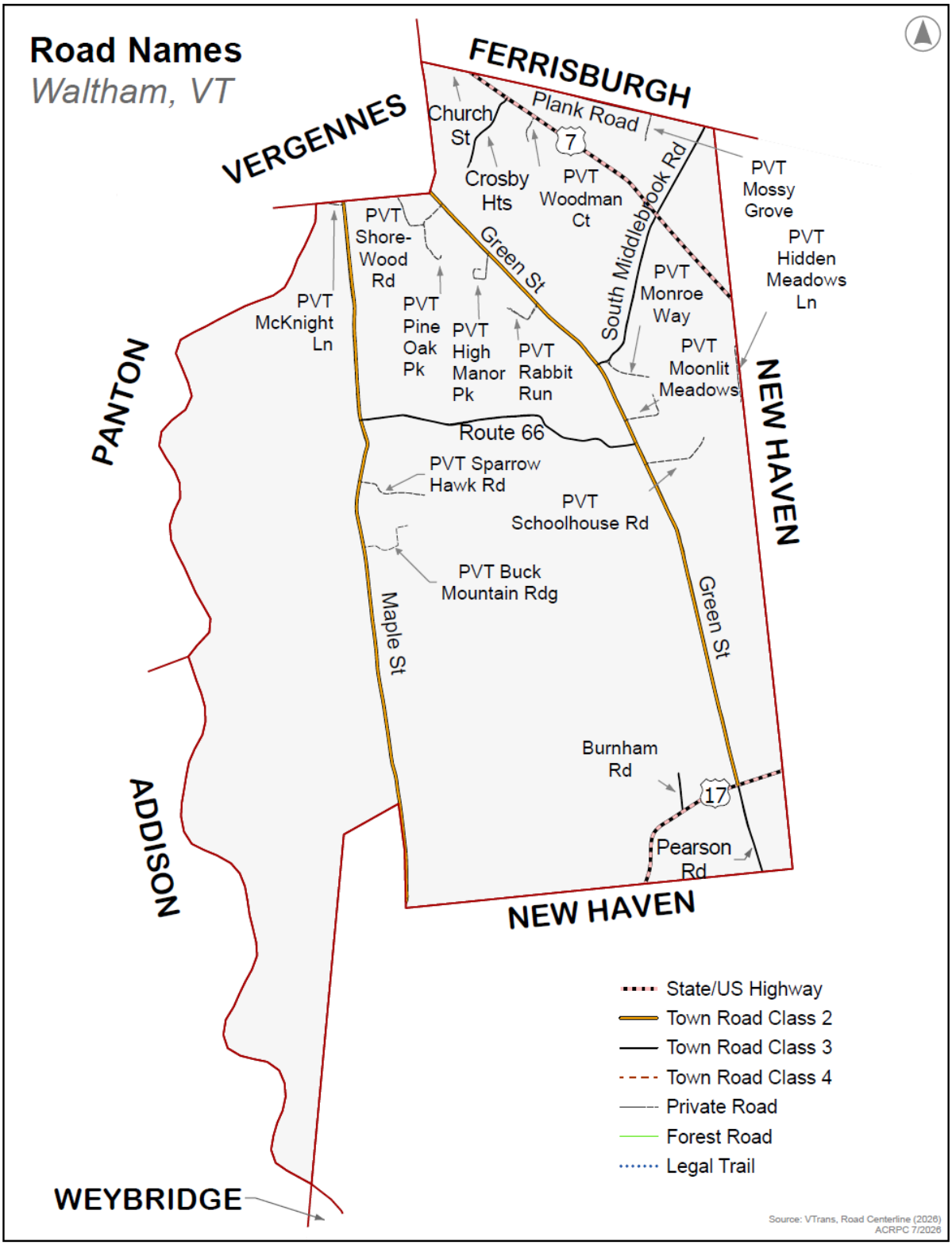
1) **Northern Residential Region** located adjacent to Vergennes and constitutes the best area for residential and other new developments. Over half of the town's housing is located here.

2) **Mountain/Forested Section** comprises most of the higher elevation, steeper and forested land in the central and southern portions of the Town. Most of this land is steep, rocky, and forested and a significant large wetland on the east side of Green Street. The purpose of the Mountain/Forested Land Use Section is to protect regionally significant valuable wildlife habitat and travel corridors and to preserve the economic, recreational and scenic resource value of Waltham's limited forested lands.

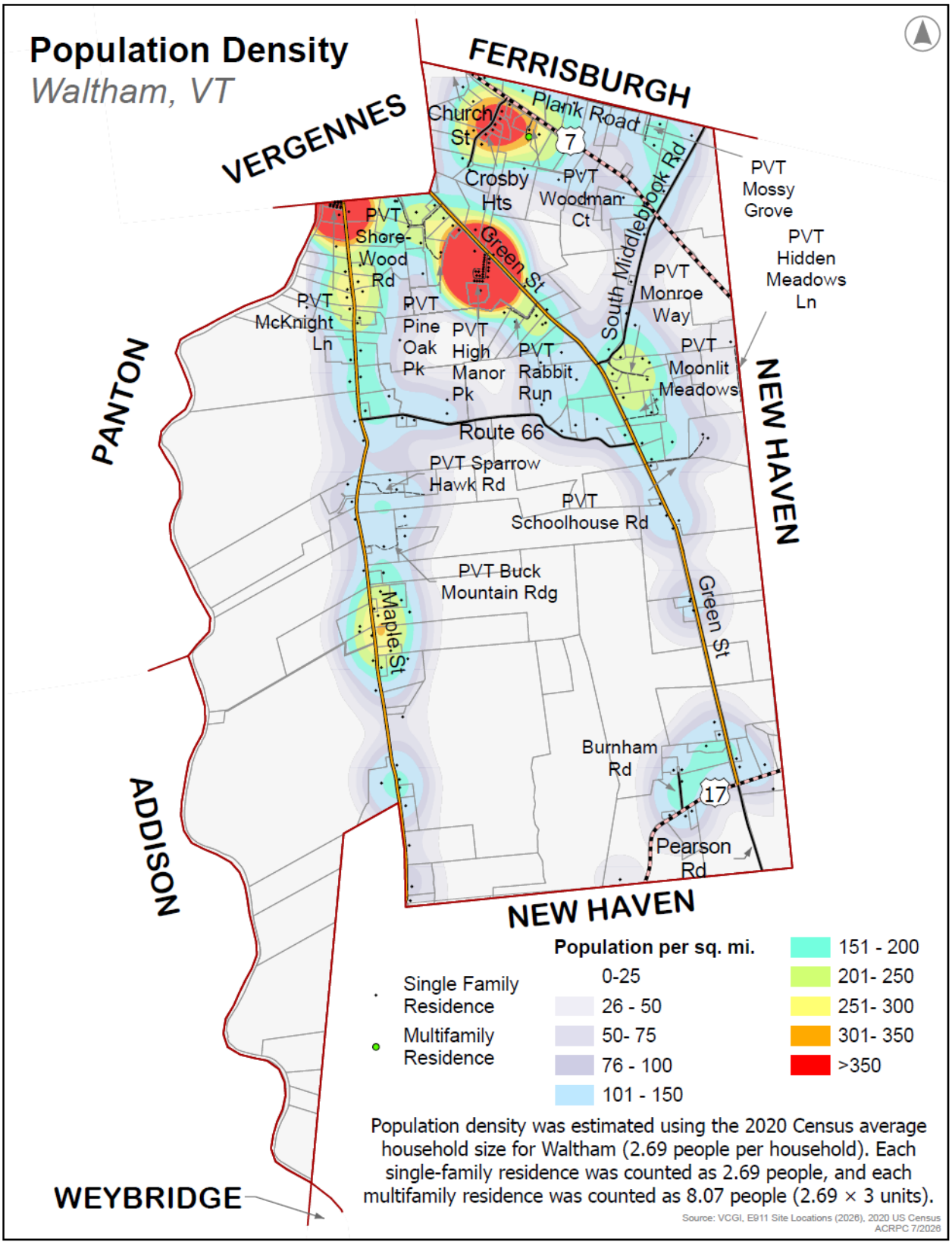
3) **Agricultural/Residential Region** comprises the remainder of the Town in the southern portion of the town and surrounding the central Mountain/Forested Section. It contains the majority of the town's farmland. Much of the land is flat, fertile, and well suited for agriculture. The purpose of the Agricultural/ Residential Land Use Section is to preserve traditional rural and agricultural uses and the outstanding scenic quality of the Champlain Valley visible from Buck Mountain overlooks while accommodating low-density residential development.

2.2. Community Maps

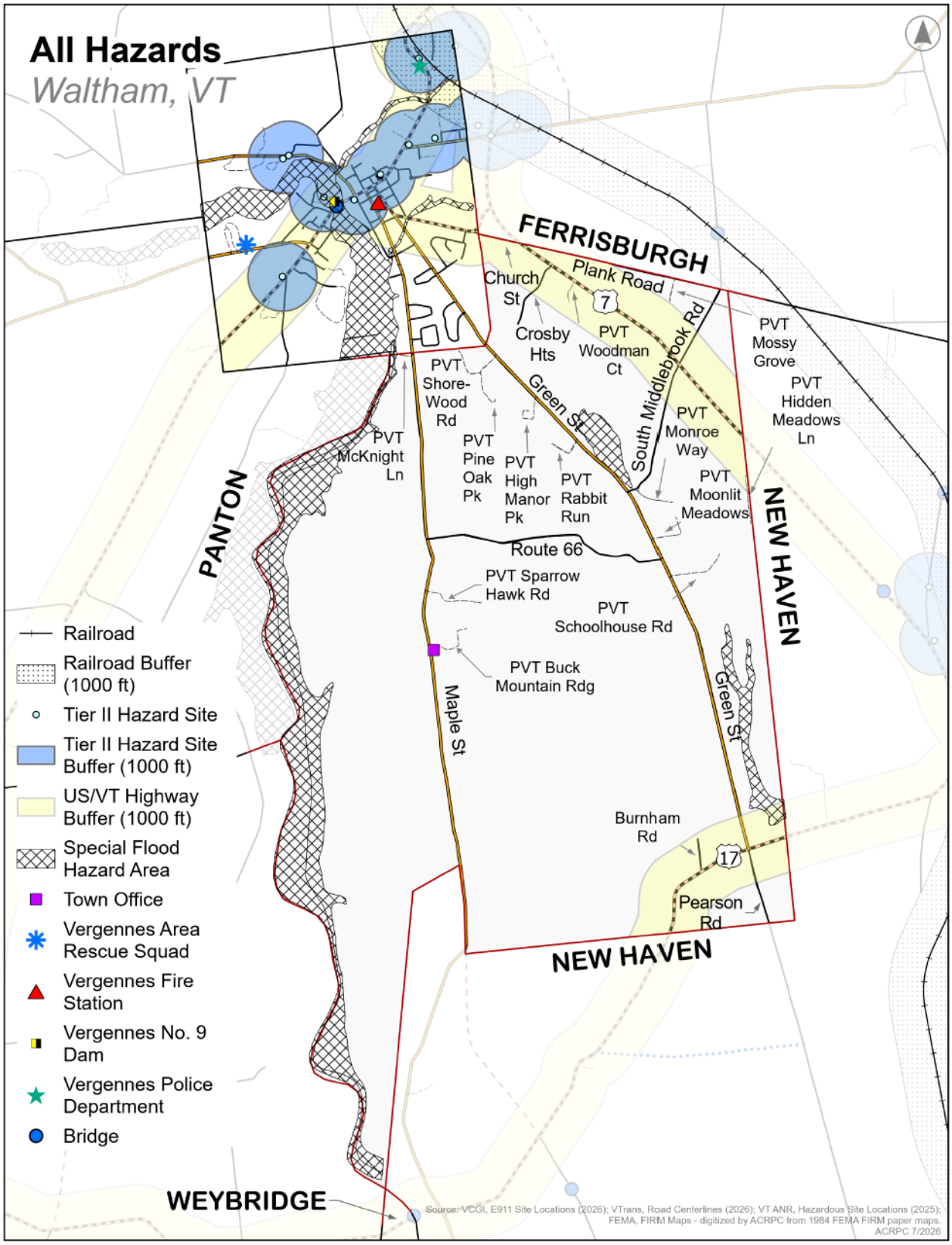
2.2.1. Municipal Road Names Map



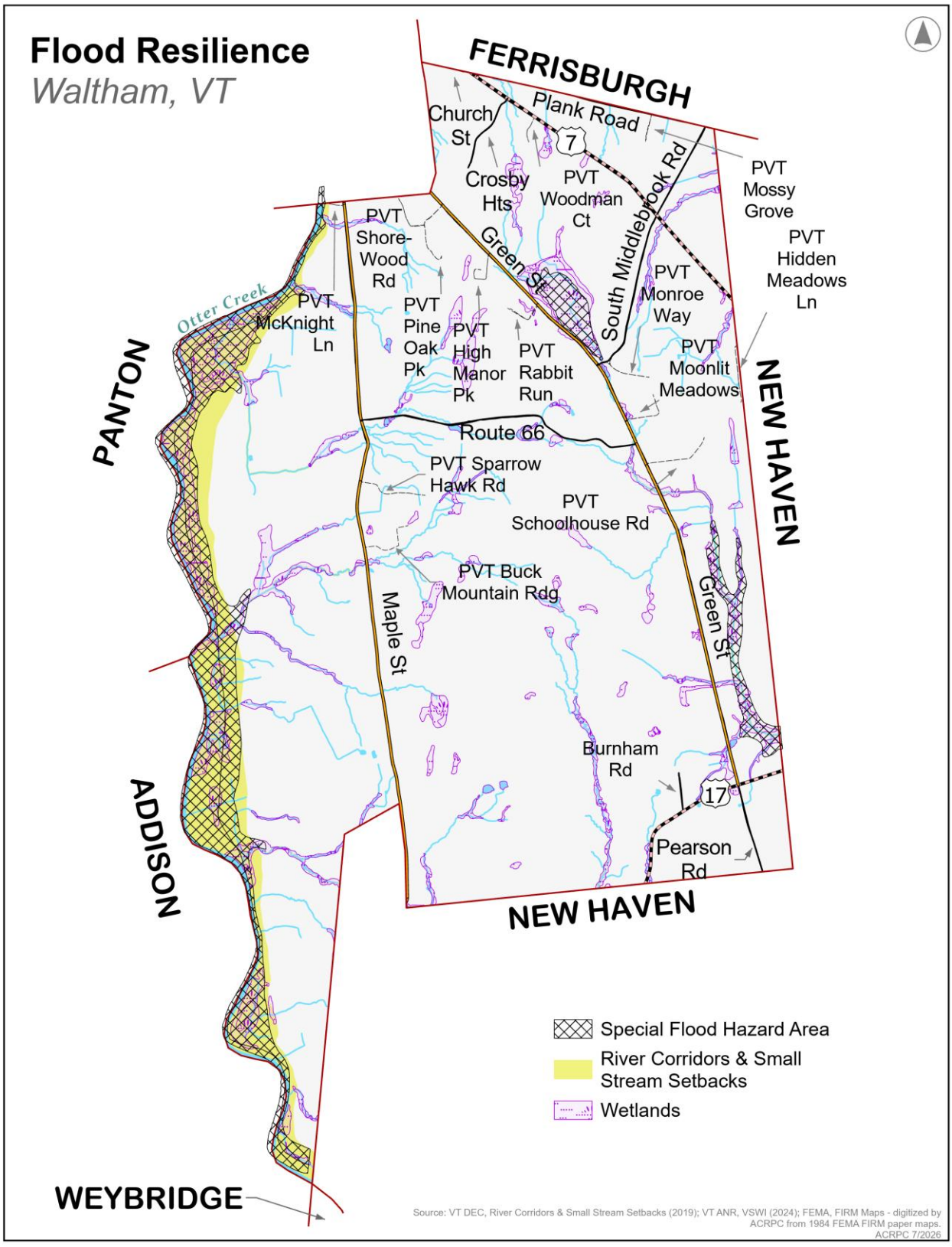
2.2.2. Population Density Map



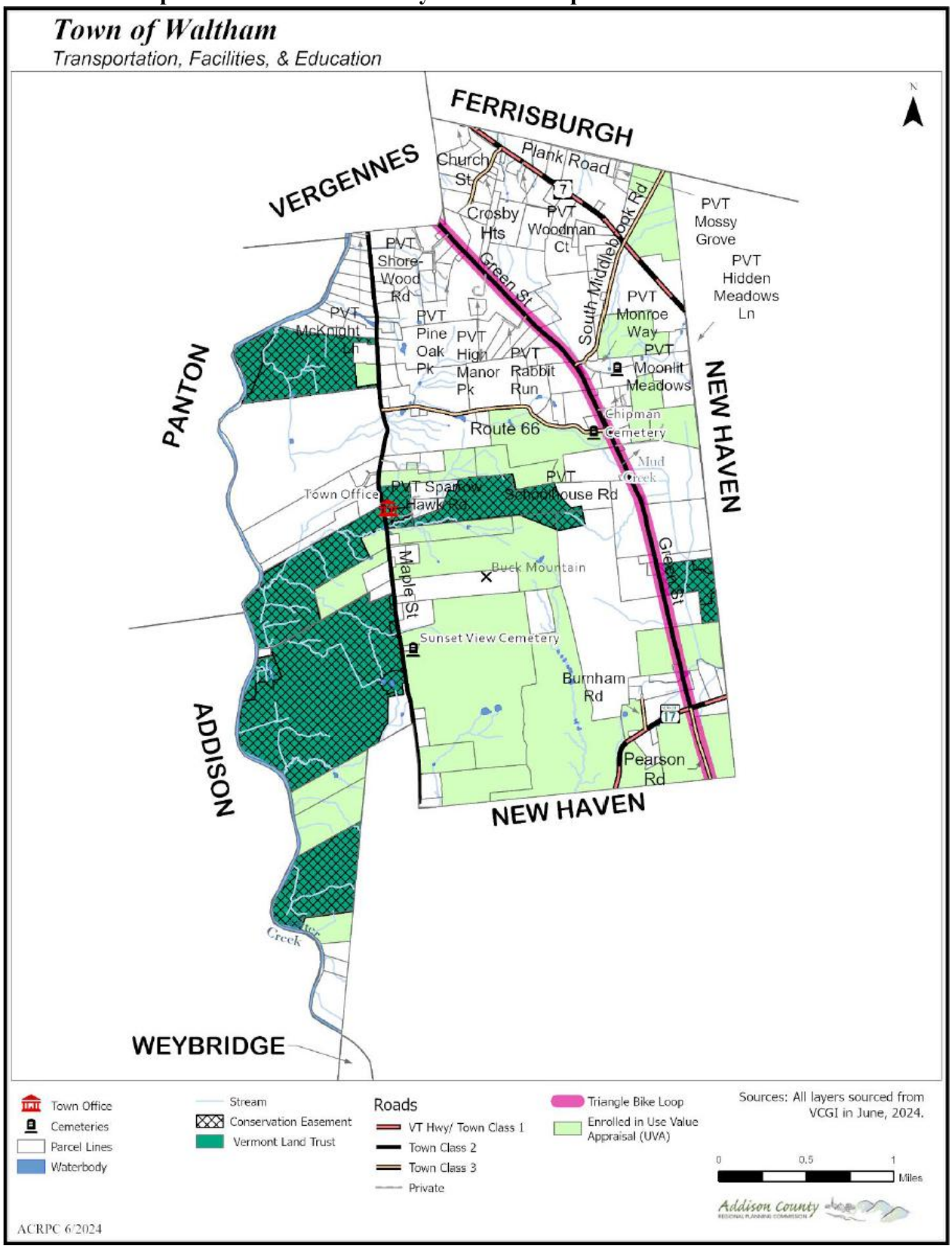
2.2.3. All-Hazards Planning Map



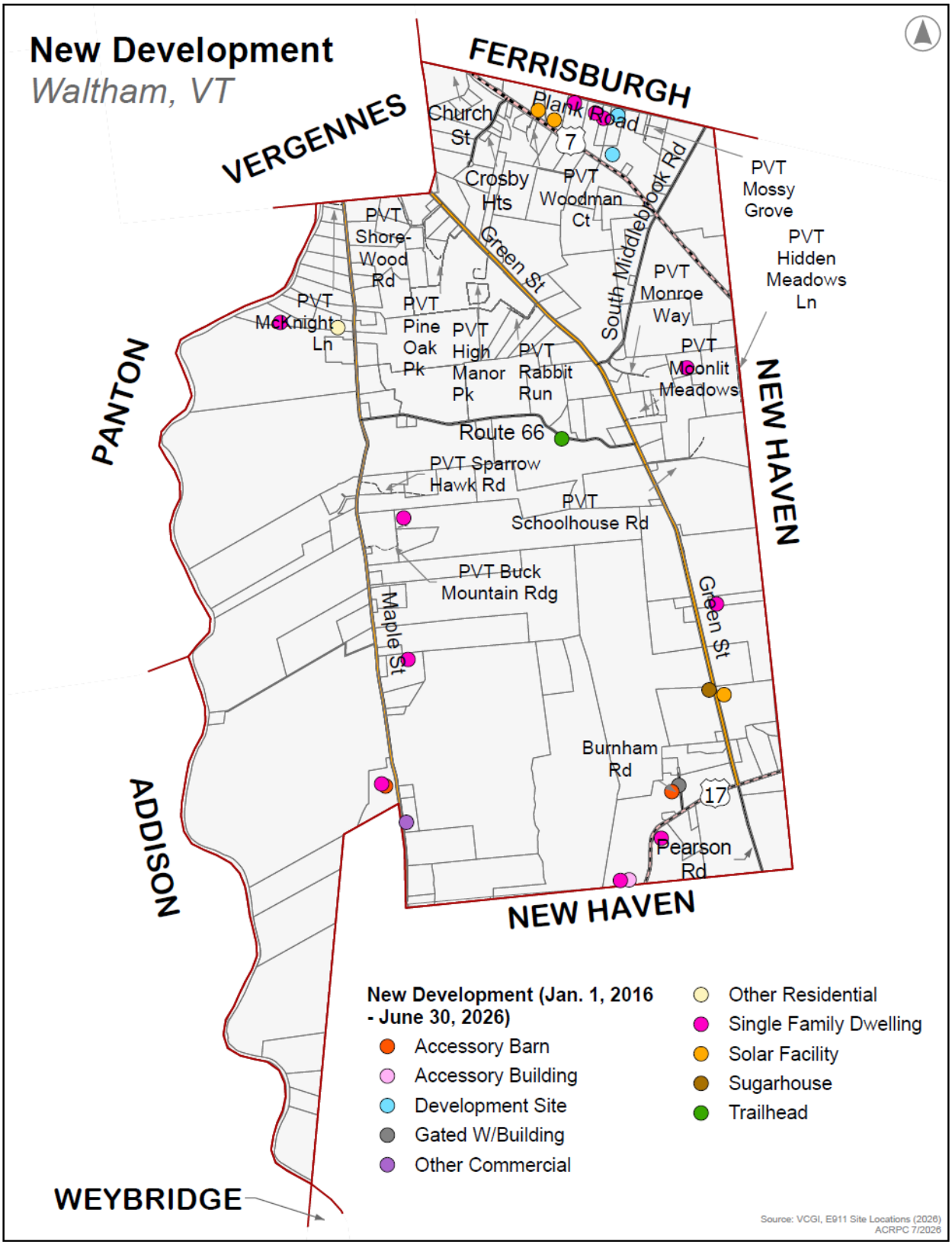
2.2.4. Flood Resiliency Map



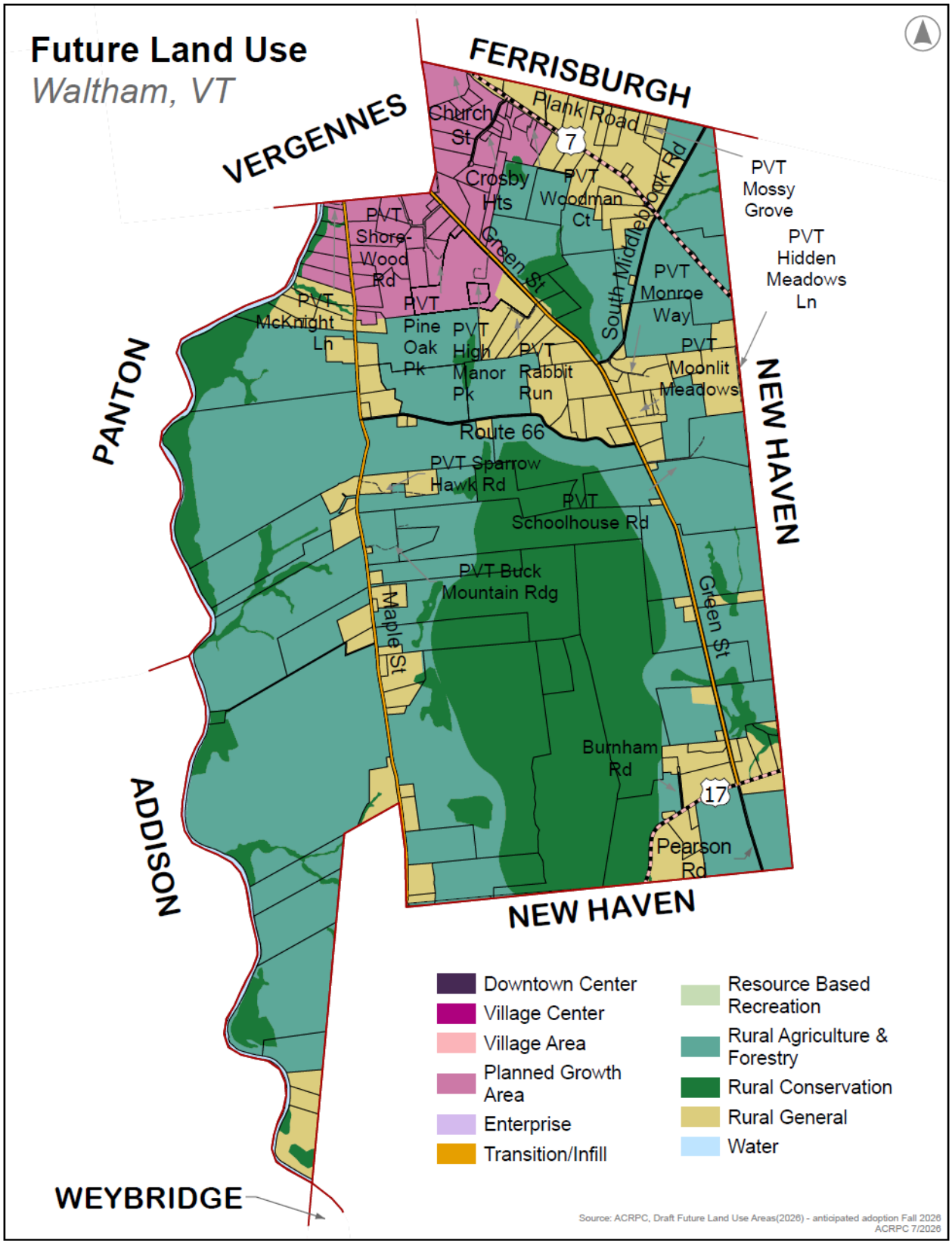
2.2.5. Transportation and Community Facilities Map



2.2.6. New Development (2018-2025) Map



2.2.7. Future Land Use Map



3. Existing Adopted Plans Which Support Hazard Mitigation

3.1. 2026 Waltham Local Emergency Management Plan

Adopted annually and before May 1st each year and includes all required elements:

- Emergency Management (EM) Planners
- Municipal Emergency Operations Center (EOC)
- Municipal Resources
- Public Information and Warning
- Vulnerable Populations
- Shelters
- Local and Regional Contacts

Also includes several additional voluntary annexes:

- Emergency Services Personnel Guide for Pandemics
- Community Sheltering in Place
- Hot Weather Emergency Response Planning
- Maps of All-Hazards Planning, Road Names, and Fire Hydrant locations

3.2. 2024 Waltham Municipal Plan and Land Use Plan Goals

Transportation Goals (Public Safety & Infrastructure Resilience) (pp. 36)

Goal 1: Contribute to a region-wide safe, efficient transportation system.

- Objective A: Maintain or improve current level of service on all public roads.
- Objective B: Manage roads to meet community needs, keeping rural character.
- Objective C: Ensure clear & enforceable road/driveway standards.

Public Facilities Goals (Emergency & Safety Capacity) (pp. 41)

Goal 2: Ensure public facilities can accommodate needed services and future demand.

- Objective A: Support Selectboard's exploration of a Capital Plan (helps plan for emergency-related infrastructure).

Goal 3: Develop and enhance public lands

- Includes establishment of safe public access to Otter Creek (supports safe recreation access)

Flood Resiliency Goals (Direct Hazard Mitigation)(pp. 65)

Goal 1: Protect the health, safety, and welfare of all Waltham residents and visitors.

- Objective A: Ensure new development does not exacerbate flooding or erosion.
- Objective B: Prohibit development in the 100-year floodplain; floodproof existing structures.
- Objective C: Maintain & upgrade roads, bridges, culverts to flood-resilient standards.

Goal 2: Improve Waltham's flood resilience & achieve best ERAF funding rate.

- Objective A: Maintain a current LEMP annually.
- Objective B: Enroll in the National Flood Insurance Program and update flood regulations.
- Objective C: Use state funding to develop a Local Hazard Mitigation Plan (LHMP).

Goal 3: Protect and restore floodplains and stream buffers.

- Objective A: Support conservation easements in floodplain and river corridor areas.
- Objective B: Support re-naturalization and reforestation of stream and river corridors.

3.3. 2026 Addison County Regional Plan

Goals that support hazard mitigation:

- Work to restore and maintain stream equilibrium by developing and implementing river corridor plans.
- Reduce flooding and related damages through appropriate mitigation techniques.
- Encourage watershed-based cooperation and educate towns and the general public about water quality and stream dynamics
- Provide communities the support they need to be proactive in reducing flood and erosion hazards by adopting appropriate zoning regulations to limit development in hazardous areas.
- Encourage proper maintenance and sizing of bridges, culverts and other structures to accommodate flow from storm events and to mitigate flood hazards.
- Reduce the loss of life and injury resulting from all hazards.
- Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.
- Reduce the damage to public infrastructure resulting from all hazards.
- Recognize the connections between land use, storm-water, road design/ maintenance and the effects from disasters.
- Ensure that mitigation measures are sympathetic to the natural features of the region's rivers, streams and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.
- Encourage hazard mitigation planning as a part of the Municipal Planning Process.
- Encourage municipalities and landowners to consider VT Agency of Natural Resources riparian guidelines for habitat and flood protection.

3.4. 2023 Vermont Sate Hazard Mitigation Plan

Goals



Priority Plan Actions:

Utilizing existing FEMA mapping updates and the Functioning Floodplain Initiative, develop an inventory of critical headwater and floodplain storage areas that would result in a measurable abatement of flooding.
Develop a drought plan for Vermont to include analyzing water level/monitoring data to use as predictor of drought and rates of recovery.
Develop a wildfire mitigation plan, to include research on the long-term future risk of wildfire due to climate change, determine existing infrastructure for wildfire suppression, and develop wildfire mitigation options.
Support municipalities in developing a prioritized list of transportation infrastructure improvements that increase resilience using PROTECT and/or other funding sources.
Increase Public Service Department capacity to maximize utilization of available federal dollars (including IIJA, IRA, ARPA, and EDA) towards utility resilience implementation work.
Assess all state/federal funding/technical assistance programs, as well as State permitting programs, to determine areas for better alignment around state hazard mitigation priorities.
Identify sustainable, long-term funding to support hazard mitigation and local match, to include: purchase of hazard-prone properties and easements to conserve river corridors, floodplains, and wetlands identified as key flood attenuation areas.
Complete an assessment of heat risks in urban areas of Vermont and expected impacts on historically disadvantaged populations, identify strategies for mitigating impacts (e.g., urban forestry, green roofs, green infrastructure, and/or other vegetative strategies; increased use of highly reflective and/or high emittance materials for pavement, roofs, and building).
Develop a methodology and protocol for quantifying climate mitigation, resilience, and adaptation impacts (Climate Action Office measuring and assessing progress tool).
Develop an analysis of existing Resilience Hub locations, including identification of new locations, and identification of key components that should be co-located within a Resilience Hub.

4. Community Risk Assessment

Requirement 44 CFR § 201.6(c)(2)(i)
(Description of all natural hazards)

4.1. Risk Prioritization Process

The Town of Waltham's Hazard Mitigation Planning Committee reviewed the following hazards in its Hazard Inventory/Risk Assessment, examining each of the 2018 State Hazard Mitigation Plan assessed hazards:

- Inundation Flooding,
- Fluvial Erosion
- Severe Snow Storm
- Ice Storm
- Tornado or High Winds
- Severe Cold
- Invasive Species
- Landslides
- Wildfire
- Drought
- Hail
- Infectious Disease outbreak
- Severe Heat
- Earthquake
- Dam Failure

While completely human-caused hazards were removed in the most recent State of Vermont's 2023 hazard mitigation plan, the Waltham committee felt that additional hazards should be included in the assessment due to community concerns and potential impacts:

- Structure Fire
- Highway Accident

The Waltham's Hazard Mitigation Planning Committee then assessed the town's vulnerability to each hazard for each of the following factors:

- **Probability,** or likely frequency of occurrence from historical trends and future projections
- **Warning**, or the projected time available to give notice to the majority of the population
- **Geographic impacts**, or how much of the population is expected to be impacted
- **Potential impacts**, or the potential severity of damages and disruption to lives and property.

Overall Vulnerability was then calculated by taking the total score of Warning, Geographic Impact, and Property Damage and multiplied by Probability. This score was divided by 4 to increase the scoring legibility and rank hazards on a 12-point scale.

In an effort to validate the risk assessment completed by the Steering Committee, community input was solicited through both an online survey and interactive display at Town Meeting Day to solicit input. The priority scores indicated by community members were very similar to those determined by the steering committee and comments supported including the additional hazards (See **Appendix 1**).

4.1.1 Hazard Inventory/Risk Assessment Parameters

Probability: Frequency of Occurrence

1= Unlikely	<1% in a given year
2= Occasionally	1%-10% probability in a given year
3= Likely	>10% but <100% in any given year
4= Highly Likely	100% probability in a given year

Warning: Time available to give notice to the majority of the population

1= More than 12 hours
2= 6-12 Hours
3= 3-6 hours
4= <3 hours (minimal)

Geographic Impacts: How much of the population is expected to be impacted

1= Isolated Locations/neighborhood	<20% of population impacted
2= Moderate impact	>20% and <75% of population impacted
3= Community-wide	>75% of population impacted within community
4= Region-wide	Level 2 & 3 impacts in surrounding communities

Potential Impact: Severity of damages and disruption to lives and property

1= Negligible	Isolated property damage, minimal disruption to infrastructure
2= Minor	Isolated moderate to severe property damage, brief disruption to infrastructure
3= Moderate	Severe damages at neighborhood level, temporary closure of infrastructure
4= Major	Severe damages town-wide, temporary to long-term closure of infrastructure

Vulnerability: Total score of Warning, Geographic Impact, and Property Damage, multiplied by Probability (and divided by 4 to increase legibility of scale)

Community Priority:

Highest Priority	Vulnerability score > 6
High Priority	Vulnerability score > 4 and ≤ 6
Moderate Priority	Vulnerability score > 3 and < 4
Low Priority	Vulnerability score ≤ 3

4.1.2 Town of Waltham Risk Assessment Results 2026

Required Evaluation	Hazard	Hazard Impact	Potential Occurrence Location	Probability	Warning Time	Geographic Extent	Potential Impact	Total Vulnerability Score	Community Priority	Vulnerability Category
				1(Unl)-4(High)	1(Long)-4(Short)	1(Little)-4(Wide)	1(Neg)-4(Maj)	Prob. x Other Factors (/4)		
*	High Winds	Power outages, property damage and human injury	Town wide, powerlines and roads	4	3	2	3	4	9.60	Highest
*	Flash Flooding & Fluvial Erosion	Water and erosion damage to roads requiring road maintenance	Townwide roads and structures, basements, septic fields	4	3	2	3	4	9.60	Highest
*	Invasive Species	Ecological damage	Town wide natural and agricultural areas	4	1	4	2	3	8.00	High
*	Severe Ice Storm	Power outages or fires	Town wide, powerlines and roads	3	2	3	2	4	6.60	High
	Highway Accident	Human injury or hazardous material spill	State Routes 7 and 17, Maple & Green St.	4	4	1	1	2	6.40	High
*	Drought	Loss of drinking water/crops	Town wide wells and agriculture	3	1	3	2	4	6.00	High
*	Lightning Storm	Fire or Electronics damage	Town wide	3	4	1	2	2	5.40	Moderate
*	Severe Snow	Closed Roads	Town wide	3	1	4	1	1	4.20	Moderate
*	Extreme Heat	Health Risks	Town wide	3	1	3	1	2	4.20	Moderate
*	Extreme Cold	Health Risks	Town wide	3	1	3	1	2	4.20	Moderate
	Structure Fire	Property Damage, Human Injury	Structures town wide	2	4	1	2	2	3.60	Moderate
*	Infectious Disease	Health Risks	Town wide	2	1	4	1	3	3.60	Moderate
*	Tornado	Power Outage, Structural Damage	Town wide	2	3	1	3	1	3.20	Moderate
*	Wildfire	Structure Fire, Smoke inhalation	Agricultural fields and forests, town wide	2	3	1	1	3	3.20	Moderate
*	Severe Hail Storm	Crop or Property Damage	Town wide	2	4	1	1	1	2.80	Moderate
*	Insect-borne Illness	Health Risks to humans and animals	Town wide	2	1	3	1	2	2.80	Moderate
*	Inundation Flooding	Water Damage	Floodplain areas along Otter Creek	2	1	1	2	1	2.50	Moderate

Required Evaluation	Hazard	Hazard Impact	Potential Occurrence Location	Probability	Warning Time	Geographic Extent	Potential Impact	Total Vulnerability Score	Community Priority	Vulnerability Category
				1(Unl)-4(High)	1(Long)-4(Short)	1(Little)-4(Wide)	1(Neg)-4(Maj)	Prob. x Other Factors (/4)		
*	Earthquake	Property Damage	Town wide	1	4	4	2	1	2.20	Low
*	Landslide/ Rockslide	Property or Infrastructure	Town wide	1	4	1	1	1	1.40	Low
*	Dam Failure	Water or Erosion	Small dam on Route 66	1	2	1	1	1	1.00	Low
*	Ice Jam	Water Damage	Otter Creek	1	2	1	1	1	1.00	Low

4.2. Risk Prioritization Results

The committee calculated the following hazards as their **HIGHEST** vulnerabilities, based on probability, warning time, geographic impacts, property damage, and other concerns*:*

- **High Winds (9.60)**
- **Flash Flooding & Fluvial Erosion (9.60)**

The following hazards were identified as **HIGH** vulnerabilities:

- **Invasive Species (8.00)**
- **Severe Ice Storm (6.60)**
- **Highway Accidents (6.00)**
- **Drought (6.00)**

The following hazards were identified as **MODERATE** vulnerabilities:

- **Lightning Storm (5.40)**
- **Severe Snow Storm (4.20)**
- **Extreme Heat (4.20)**
- **Extreme Cold (4.20)**
- **Structure Fire (3.60)**
- **Infectious Disease (3.60)**
- **Tornado (3.20)**
- **Wildfire (3.20)**
- **Severe Hail Storm (2.80)**
- **Insect-borne Illness (2.80)**
- **Inundation Flooding (2.50)**

4.3 Hazards: Location, Extent, Previous Occurrences, Future Probability and Vulnerability

Addison County has experienced just over a dozen federally-declared disasters over the past decades (see Figure 1 and Table 1). Most of these have been due to severe storms and associated flooding.

The Town of Waltham has avoided most of the physical effects and financial damage of these disaster events. The costliest storm events were flooding in spring 2011 (months prior to Tropical Storm Irene), and a snowstorm in March 2001. The town received some public assistance following these events, but the individual assistance damage threshold was not met.

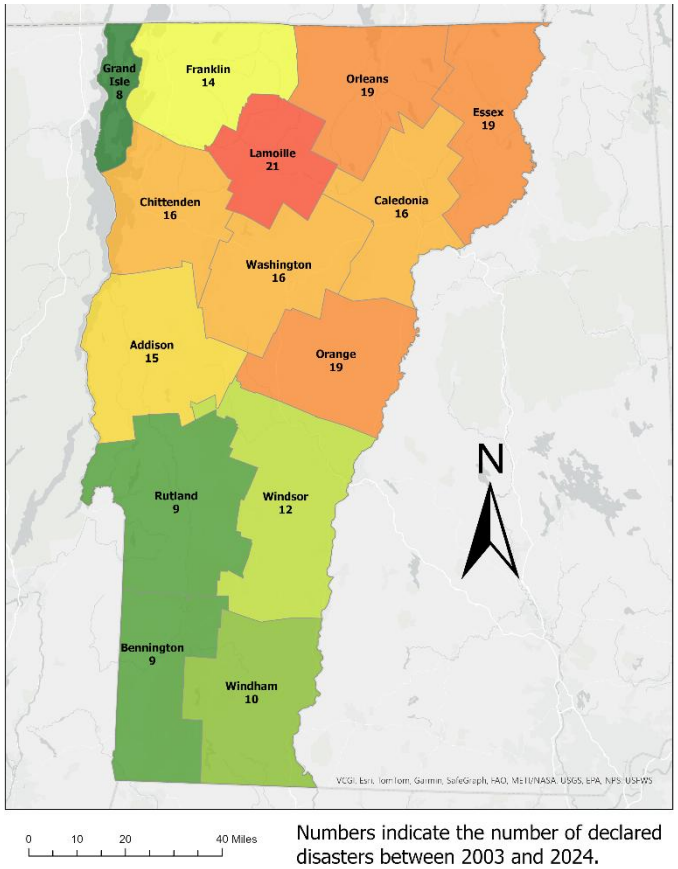


Figure 1. Federally Declared Disasters in Vermont by County, 2003-2024

Table 1. Federally declared disasters and costs affecting Addison County

Year	Incident Date	Description	Declaration #	County Cost
2024	July 29- 31, 2024	Severe Storms, Flooding, Landslides, and Mudslides	DR4826	Unavailable
2024	July 9 - 11, 2024	Severe Storm, Flooding, Landslides, and Mudslides	DR4810	Unavailable
2023	August 3 -5, 2023	Severe Storms and Flooding	DR4744	Unavailable
2023	Jul 7- 21, 2023	Severe Storms, Flooding, Landslides, and Mudslides	DR4720	Unavailable
2022	Dec 22- 24, 2022	Severe Storms and Flooding	DR4695	Unavailable
2021	July 29 - July 30, 2021	Severe Storms and Flooding	DR4621	Unavailable
2020	Jan 20, 2020 - May 11, 2023	Vermont COVID -19 Pandemic	DR4532	Unavailable
2019	April 15, 2019	Severe Storms and Flooding	DR4445	Unavailable
2019	October 31- November 1, 2019	Severe Storms and Flooding	DR4474	Unavailable
2017	Oct 29 - Oct 30, 2017	Severe Storms and Flooding	DR4356	Unavailable
2017	June 29 - Jul 1, 2017	Severe Storms and Flooding	DR4330	Unavailable
2015	June 9, 2015	Severe Storms and Flooding	DR4232	$893,310.63
2015	December 9 - 12, 2014	Severe Winter Storms	DR4207	$184,715.05
2012	May 29, 2012	Severe Storm, Tornado and Flooding	DR4066	$172,847.70
2011	August 26-September 2, 2011	Hurricane Irene	EM3338	Unavailable
2011	August 27-9/2/2011	Tropical Storm Irene	DR4022	$1,175,911.20
2011	April 23- May 9, 2011	Severe Storms and Flooding	DR1995	Unavailable
2008	June 14-17, 2008	Severe Storms and Flooding	DR1778	$1,114,515.70
2008	July 21-August 12, 2008	Severe Storms and Flooding	DR1790	$2,273,481.42
2004	August 12- September 12, 2004	Severe Storms and Flooding	DR1559	$430,551.00
2001	March 5-7, 2001	Snowstorm	EM3167	$138,333.08
2000	July 14-18, 2000	Severe Storms and Flooding	DR1336	$738,127.27
1998	January 6-16, 1998	Ice Storms	DR1201	$662,388
1998	July 17-August 17, 1998	Severe Storms and Flooding	DR1228	$2,146,484
1996	January 19- February 2, 1996	Storms, Flooding	DR1101	$130,529
1993	April 24- May 26, 1993	Flooding, Heavy Rain, Snowfall	DR990	$17,639
1989	August 4-5, 1989	Severe Storms, Flooding	DR840	$31,033
1977	September 6, 1977	Drought	EM3053	$ Unavailable
1976	August 5, 1976	Severe Storms, High Winds, Flooding	DR518	$ Unavailable
1973	July 6, 1973	Severe Storms, Flooding, Landslides	DR397	$ Unavailable

The following hazard types have been identified, evaluated and listed in order of priority as identified by the Waltham Hazard Mitigation Committee as shown in their risk assessment:
High Winds, Flash Flooding & Fluvial Erosion, Invasive Species, Severe Ice Storm, Highway Accidents, Drought, Lightning Storm, Severe Snow Storm, Extreme Heat, Extreme Cold, Structure Fire, Infectious Disease, Tornado, Wildfire, Severe Hail Storm, Insect-borne Illness, Inundation Flooding

Requirement 44 CFR § 201.6(c)(2)(i) (Hazard information- Location, Extent, Previous Occurrences)
Requirement 44 CFR § 201.6(c)(2)(ii) (Hazard Impacts, Vulnerability)
Requirement 44 CFR § 201.6(c)(d)(3) (Development in hazard-prone areas)

Other hazards identified in Vermont's state hazard mitigation plan did not rise to the same level of concern by the local planning committee based on minimal probability and lack of previous occurrence. Hazard types are listed in their order of priority with highest perceived vulnerability described first.

4.3.1 High Winds (Vulnerability Score 9.60)

High wind events can be the result of any of the following:

- **Wind Storm:** events without precipitation with gusts sustained at more than 31 mph for at least an hour or any gusts greater than 46 mph.
- **Hurricanes/Tropical Storms**: often result in high winds greater than 39 mph, along with inundation flooding, and fluvial erosion impacts.
- **Thunderstorm**: storms with precipitation, lightning, and/or hail, that can be compounded by downburst high winds potentially in excess of 80 mph.

(See Beaufort Wind and Saffir-Simpson wind scales in Appendix 4).

Location:

High winds can affect the entire planning area. In Vermont, high winds are most often seen accompanying severe thunderstorms. In Addison County, these storms usually originate from the west, southwest, or south. Because Waltham is distant from the base of the Green Mountains, it is less vulnerable to downslope windstorms and related hazards. Large-scale hurricanes affecting the entire region are infrequent because hurricanes typically lose wind speed as they move inland and downgraded to tropical storms by the time they reach inland Vermont. Route 66 through the center of Waltham is heavily wooded and could potential have fallen trees blocking the thoroughfare across the center of town and taking out electrical power.

Extent:

Wind-producing storms can range significantly in size and type. Wind storms and hurricanes can affect the entire state in a single event. Squall line thunderstorms move in a line or front that can exceed 100 miles in length, with the strongest rains and winds at the front of the storm. Thunderstorms can produce downburst winds that affect the land immediately beneath a storm. These downburst winds are called microbursts, which move outward from the base of a thunderstorm.

Previous Occurrences:

In Vermont, high winds most often seen accompany severe thunderstorms. In fact, straight-line winds are often responsible for most of the wind damage associated with a thunderstorm. These winds are frequently confused with tornadoes because they exhibit similar wind speeds and cause similar damage but the winds do not rotate as they do in a tornado.
While thunderstorms and associated hazards can occur anywhere and at any time of the year in Vermont; spring and summer are the most common times for severe thunderstorms. Tornadoes typically occur in Vermont between March and August.

Since 1970 NOAA has documented wind-damage from over 150 thunderstorms across Addison County, primarily during the spring and summer:

	Jan.	Feb.	Mar.	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Thunderstorm & Wind	0	1	2	0	21	32	72	35	9	3	3	1

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

Waltham has had 9 NOAA-documented thunderstorm-wind events causing a reported $55,000 of property damage

Large-scale windstorms have affected wide portions of the state three times in the last decade: October 30, 2017, November 1, 2019, December 23, 2022. In each of these storms, strong winds affected all of Vermont's 14 counties, resulting in downed tree limbs, power outages, and uprooted trees which affected transportation routes.

High winds damaged multiple trees and blocked roadways in the nearby towns of Shoreham and Orwell in July 2026.



Future Probability:

Wind events are considered **Highly Likely** in Vermont. The risk due to wind events is moderate for the built environment and minor for natural environment, people, and economy. Tornadoes are not common in Vermont. However, it is likely that as climate change accelerates, the area will see exacerbation of wind events such as hurricanes, tropical storms, and thunderstorms. Projected land use and population changes are not expected to significantly affect their impact on community assets or vulnerable populations, but may make such events more visible.



Vulnerability Summary:

People who live in rural, isolated communities like Waltham are particularly vulnerable to windstorms. High winds can take down trees and power lines, resulting in blocked transportation routes, cut off electricity and telecommunication networks, and property destruction. Lack of electricity is life-threatening for those relying on electric life supports systems and electrical heating and cooling systems. In addition, isolated populations may have limited access to information and communication resources that could prevent injury or death. Future assets are not expected to experience increases in vulnerability due to land use changes or change in population demographics. Due to the risk to life and property represented by this hazard the Town expends considerable resources attempting to make its roads as safe as possible within a restricted budget. Future assets are not expected to experience increases in vulnerability to wind storms due changes in population demographics but they may increase with land use changes or increased residential development.

High wind events are considered a **HIGHEST PRIORITY** for the Town of Waltham, with an overall vulnerability score of 6.75 determined.

4.3.2 Flash Flooding & Fluvial Erosion (Vulnerability Score 9.60)

Location:

Fluvial erosion is the wearing-away of streambed and streambank associated with physical adjustment of stream channel dimensions (both width and depth). It occurs naturally in stable, meandering rivers and small streams.

Fluvial erosion typically occurs as a result of one of the following:

- **Rainfall:** Significant precipitation from rainstorm or hurricane/tropical storm, causing flash flooding when a large amount of precipitation occurs over a short period of time.
- **Snowmelt:** Melted runoff due to rapidly warming temperatures, often exacerbated by heavy rainfall. The quantity of water in the snowpack is based on snow depth and density.
- **Ice Jams:** A riverine back-up when flow is blocked by ice accumulation, often due to warming temperatures and heavy rain which causes snow to melt rapidly.

Location:

The generally gentle topography of Waltham does not lend itself to widespread high velocity flood events common to fluvial erosion events. Previous plans have identified several vulnerable areas where roadways cross streams and the statewide Transportation Resilience Planning Tool (TRPT) identifies portions of Maple Street and Route 66 as highly vulnerable and critical.

Extent:

Summer downpours and remnants of tropical storms can have the effect of concentrating flood waters into rivers and small and narrow stream areas, particularly in steeper geographic regions. In Waltham there are approximately 1479 acres of state-identified river corridor areas along rivers and small streams, with 764 of those acres outside the 100-year floodplain. (See yellow corridor areas on 2.2.4. Flood Resiliency Map, page 20). River Corridors encompass the area of land surrounding a river that provides for the meandering, floodplain, and the riparian functions necessary to restore and maintain the naturally stable or least erosive form of a river thereby minimizing erosion hazards over time. Lands within and immediately abutting a river corridor are at higher risk to fluvial erosion. They are mapped by the Vermont Agency of Natural Resources using calculations that rely on in-field and map-based measurements. Recent erosion of these in Waltham is undocumented and thought to be minimal, but these areas are the most likely extent of flash flooding and fluvial erosion occurrence.

According to NCDC statistics, the Addison Region has experienced 31 flash flood events over the past 25 years. The highest record of damage in Addison County was $1,000,000 during a period in July of 1998. During the period an estimated $32,310,000 in property damages and $1,500,000 in crop damages were incurred. None of this damage was experienced in Waltham due to the limited infrastructure located in susceptible terrain. Waltham may also be affected indirectly by flash flooding in nearby areas, as the closing of nearby VT Route 7, Route 22A, or parts of Route 17 might result in an inordinate amount of traffic being directed onto Maple or Green Street and other parts of Waltham's road system.

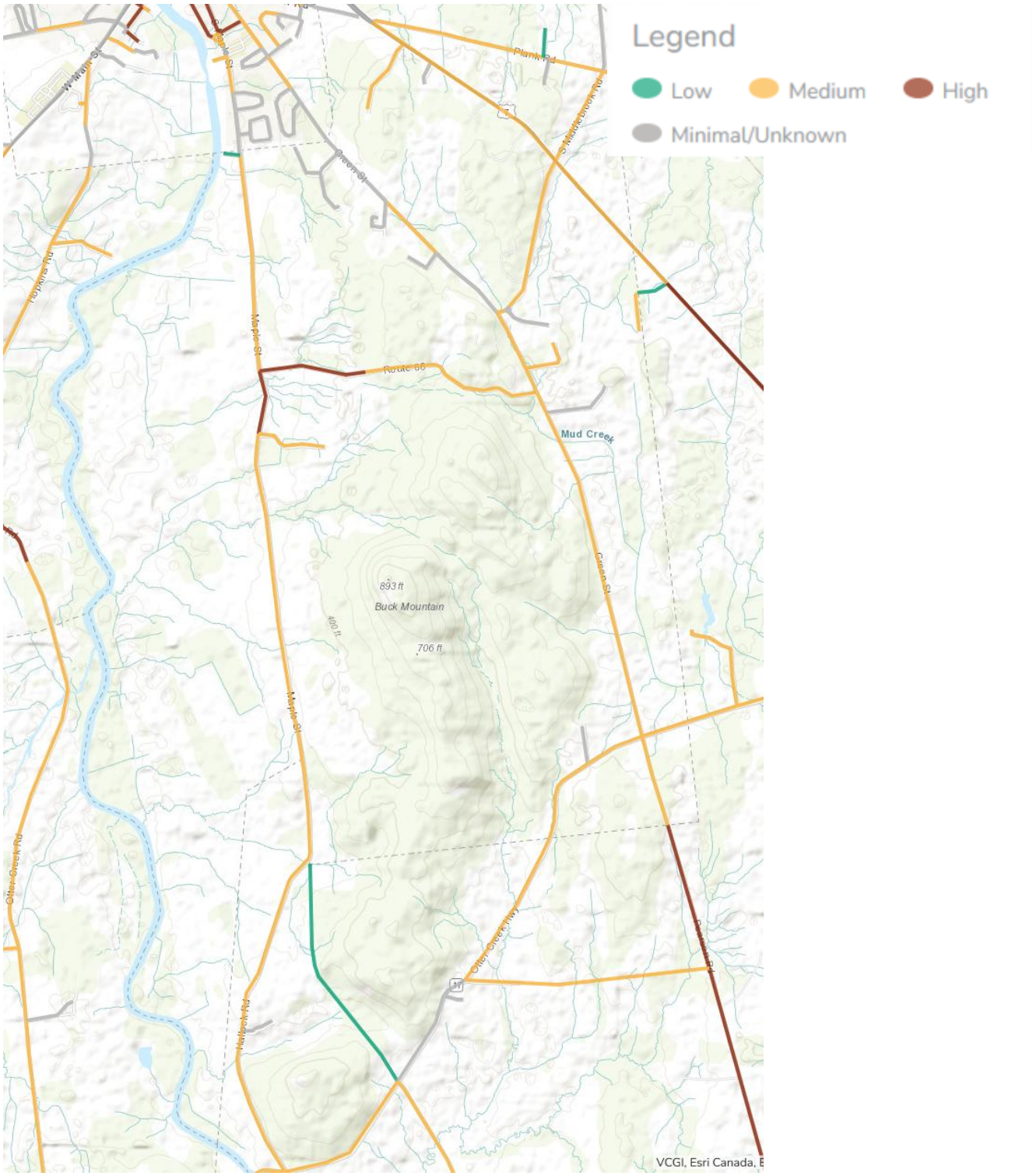


Figure. Waltham Road Infrastructure Asset Risk from the Vermont Transportation Resilience Planning Tool (TRPT) (https://roadfloodresilience.vermont.gov/#/map)

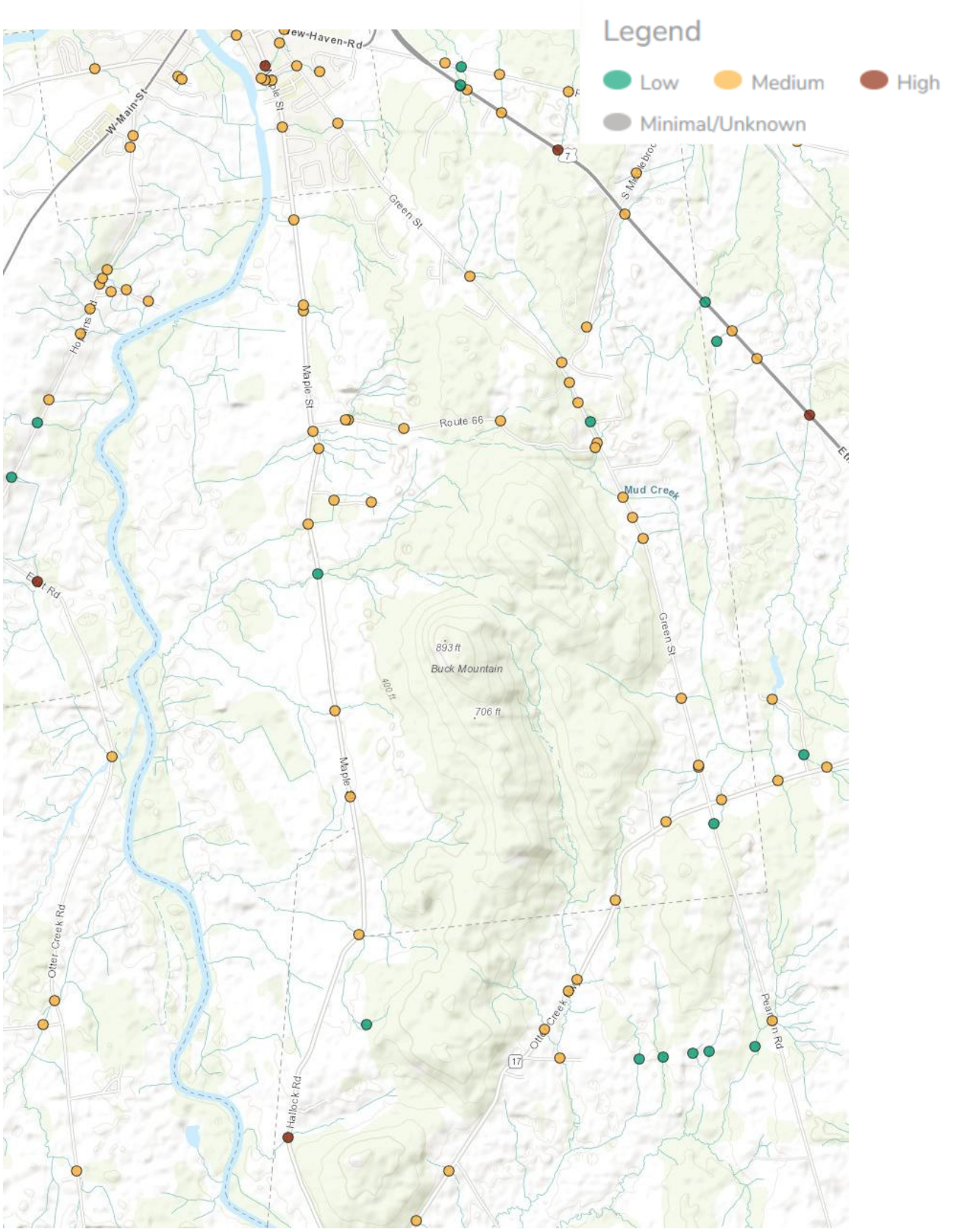


Figure. Waltham Culvert Infrastructure Asset Risk from the Vermont Transportation Resilience Planning Tool (TRPT) (https://roadfloodresilience.vermont.gov/#/map)

Previous Occurrences:

According to NOAA statistics, the Addison Region has experienced more than 45 flash flood events over the past 25 years. These generally occur in the summer months due to intense rainstorms, but they can occur in other seasons as well.

Table. NOAA recorded flash flood events by month of occurrence

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Flash Flood	**2**	**1**	**1**	**2**	**7**	**10**	**13**	**7**	**0**	**2**	**1**	**1**

The Halloween storm of October 31-November 1, 2019 brought more than 3 inches of rain and gusting southwest winds that caused flooding and power outages across the region. In Waltham, flooding damaged culverts and covered roadways.

Future Probability:

Changes in climate are expected to increase the probability of large rainfall events and rapid snow melt that may have increasing impacts on community assets. In Vermont, average annual precipitation has increased by almost 7 inches over the past 50 years. The northeastern United States is projected to experience above average precipitation in the winter and spring, with even wetter conditions expected under a high greenhouse gas emissions scenario, and is also projected to experience more frequent, heavier rainfall events. These anticipated increases in both frequency and magnitude of precipitation in Vermont are expected to lead to alterations of hydrology and increased flash flooding events and fluvial erosion. Additional development in Waltham could potentially affect the impact of flash flood events on vulnerable populations.

Vulnerability Summary:

Flash flooding is an increasing concern for residents of the Town of Waltham. Although few areas are susceptible to flooding, the expense of infrastructure repairs make the community relatively vulnerable to large scale damages caused by flash flooding. Residents, especially those that are older or have disabilities, may be most vulnerable to flash flooding and residential damage or potential entrapment due to washed out driveways or roads. Municipal public buildings are not currently at risk, but a number of town roads might experience high water levels and erosive force during storm events. Future assets are not expected to experience increases in vulnerability to flash flooding due to change in population demographics but may be increase with land use changes.

Flash Flooding & Fluvial Erosion events are considered the **HIGHEST PRIORITY** for the Town of Waltham, with an overall vulnerability score of 9.60 determined

4.3.3 Invasive Species (Vulnerability Score 8.00)

Invasive species are non-native introductions to an ecosystem whose presence causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can overwhelm native species and their habitats, forcing the native species out due to their ability to outcompete native species in their natural environments without the threat of a predator that can keep their populations in check. Invasive species are considered the second greatest threat to global biodiversity.

The State of Vermont has a long history of invasive species infestation in several categories, including:

Aquatic Species

- Zebra Mussel
- Eurasian and Variable-Leaf Watermilfoil
- Water Chestnut

Forest Pests

- Emerald Ash Borer
- Hemlock Woolly Adelgid*
- Asian Long-horned Beetle*

Arbovirus-Transmitting Arthropods

- Asian Tiger Mosquito (*Aedes albopictus*)*
- Asian Longhorned tick*

*Not yet present in Addison County

Disruptive Terrestrial Plants

- Japanese Knotweed
- Common Reed (Phragmites)
- Purple Loosestrife
- Garlic Mustard
- Buckthorn

Phototoxic Terrestrial Plants

- Giant Hogweed
- Wild Parsnip
- Wild Chervil

Tick Increasing Plants

- Japanese Honeysuckle
- Japanese Barberry

Aquatic Invasive Species pose a serious threat to lakes, ponds, and rivers by choking out swimming holes and crowding out beneficial native species, drastically impacting aquatic foodwebs and limiting fishing, or covering lake bottoms with a layer of sharp shells.

Forest Pests are insects that cause irreversible impacts on tree health and biodiversity.

Arbovirus-Transmitting Arthropods are a group of insects that transmit viral infections through their bites.

Disruptive Terrestrial Plants are invasive plants can change soil composition, change water tables, and disrupt insect cycles, negatively affecting native plant regeneration, agricultural crops, ecosystem function, recreation and wildlife habitat, and human health.

Phototoxic Terrestrial Plants are invasive plants whose sap can cause a chemical reaction that makes skin hypersensitive to ultraviolet sunlight if it makes direct contact with human skin and potentially cause serious skin burns.

Tick Increasing Plants are plants have proven to increase the incidence of Lyme disease by providing sheltered habitat that increases the abundance of small rodents, which act as hosts to the ticks that carry Lyme disease pathogens.



Invasive species are commonly introduced via travel routes, unintentionally brought into Vermont with the transportation of people and goods. As a result, many are found along roadsides and in waterways across the entire state. Aquatic Species have become established in Otter Creek (Water Chestnut). Waltham contains relatively little forest cover susceptible to Forest Pest insects, in comparison to neighboring municipalities. Waltham's largest forest block is located on Buck Mountain in the center of town.

Large trees adjacent to Route 66 and other trees along other roads and driveways in town could be impacted. Waltham is within the five mile "confirmed infested areas" of confirmed Emerald Ash Borer locations in Middlebury and Bristol.
Phototoxic Terrestrial Plants like Wild Parsnip are especially common in abandoned yards, farmland, and along roadsides and other disturbed environments. They spread by seed via waterways, wind, mowers, and wildlife.

Extent:
Invasive species have a variety of effects on humans and the environment so characterizing the extent of their spread is a challenge.
Forest Pest insects threaten more than 14 different species of trees in Vermont, including: maple, elm, horse chestnut, willow, ash, poplar, European mountain ash, hackberry, and hemlock.
Wild Parsnip secretes a toxic sap that contains furanocoumarins, chemicals that make the skin extremely sensitive to ultraviolet (UV) rays. The toxic sap, in combination with sun exposure, can cause a severe skin reaction called phytophotodermatitis, which usually starts within 24 to 48 hours of exposure. The reaction can turn into a severe rash or blistering burn and lead to discoloration of the skin or photosensitivity that can last for years.
Phragmites (*Phragmites australis*), or Common Reed, is a highly aggressive, non-native wetland grass found across Vermont that creates dense monocultures, choking out native plants and ruining wildlife habitat. These tall (up to 15-20 ft) plants spread via seeds and rhizomes, disrupting ecosystems and altering wetland hydrology. Control requires a multi-year effort combining cutting below the water line or using herbicide applications. The plant creates a thick accumulation of dead biomass that can produce high-intensity fires, threatening structures near

wetlands and roadsides, particularly in late winter and early spring, due to its dense, tall, and dry stands.

Previous Occurrences:

Because invasive species often spread over a long period of time and have dispersed effects, identification of hazard events concerning invasive species is difficult.

- The zebra mussel was discovered in Lake Champlain in the summer of 1993.
- The emerald ash borer was first discovered in Vermont in February 2018, and was detected in nearby Bristol (2019) and Middlebury (in 2021).
- Wild Parsnip was likely brought by early European settlers, but has escaped cultivation and populations have increased dramatically across the state in the last decade. In recent years it has been documented to cause 2nd degree burns to several individuals in parts of Vermont.

Future Probability:

Changes in climate are expected to increase the probability of invasive species introduction and spread, but projected land use and population changes are not expected to affect their impact on community assets or vulnerable populations. Existing and new invasive species are expected to continue moving into Waltham through human transport and by natural reproductive spread.

Phototoxic terrestrial plants like Wild Parsnip can form dense stands which outcompete native species and become self-sustaining populations that continue to expand if not eradicated.

Some mobile species like ticks and Woolly Adelgid are moving north from southern Vermont and are expected to continue moving as milder winter temperatures allow them to overwinter.
The *Aedes albopictus* (Asian tiger) mosquito, which can carry and transmit Zika, dengue, and other arboviruses including West Nile Virus, has an estimated geographic range that includes southern Vermont and is anticipated to move into Addison County.

In addition to concerns over Vermont's ash tree population, northern hardwood species like maple, yellow birch and American beech are predicted to largely vanish in the State, replaced by tree species such as oak and pine that thrive in warmer, drier conditions. The changing climate is expected to lead to less available water, resulting in additional stress to existing trees, which will increase their vulnerability to pest invasion and disease.

Vulnerability Summary:

Warming temperatures and milder winters makes Vermont more vulnerable to insect borne diseases and increases the chance these diseases can overwinter. While not strictly invasive, this shift in species distribution and range could threaten human health in the state. As the global climate continues to shift rapidly rate, species better adapted for warmer climates will continue to proliferate, causing changes in ecosystem composition that could destabilize basic ecosystem functions. Monetary and health costs associated with the disturbances invasives cause will

continue to increase. However, future assets are not expected to experience increases in vulnerability to invasive species due to land use changes or changes in population demographics.

Invasive Species are considered a HIGH PRIORITY for the Town of Waltham, with an overall vulnerability score of 8.00 determined.

4.3.4 Severe Ice Storm (Vulnerability Score 6.60)

Location:
Severe ice storms are common throughout Vermont and can occur geographically in any part of Waltham, and often across the entire town and region in a short period of time. Generally, ice storms strike within a particular elevation band depending on temperatures with higher elevations experiencing snow and lower elevations experiencing a mix of ice and rain. Located at a consistent elevation along Lake Champlain, Waltham can be at high risk for more widespread ice accumulation.

Extent:
Because winter storms are extremely temperature and elevation dependent, they are notoriously difficult to predict. When conditions conducive to ice build-up are predicted, the National Weather Service issues a Winter Storm Warning with emphasis on ice accumulation. The Winter Storm Severity Index (WSSI) (Appendix 5) is a categorization of overall severity based on six components:

- Snow Amount: to depict severity due to total amount of snow or rate of snowfall accumulation. (Adjustments are made based on climatology and urban areas)
- Snow Load: to depict severity due to total weight of snow on trees and power lines.
- Blowing Snow: to depict severity mainly to transportation due to blowing and drifting snow.
- Ice Accumulation: to depict severity of transportation and downed trees/powerlines due to the accumulated ice in combination with wind.
- Ground Blizzard: to depict severity to mainly transportation of ground blizzards that develop due to a pre-existing snowpack and strong winds.
- Flash Freeze: to depict severity primarily to transportation of situations where temperatures rapidly fall below freezing during precipitation.

Previous Occurrences:
The National Climatic Data Center reports that the Addison Region has experienced two major Ice Storm events over the past 25 years. During that period an estimated $850,000 in total property damages were recorded in the region. The highest recorded damages were incurred during the January 1998 Ice Storm which impacted most of the northeastern US and resulted in ice accumulations of up to ¾ inch, a loss of power for up to 2.5 weeks, and $750,000 in damages to Addison County. The Waltham hazard mitigation committee identified the 1998 ice storm as the worst that had occurred in the region. Fortunately, the residents of Waltham were largely spared the effects of this storm. On December 22-23, 2022, Addison County received high winds, downing power lines and closing roads, followed by cascading temperatures falling into the single digits, with wind chills of zero to the minus 0's, but again Waltham was largely spared the effects.

Previous Occurrences:
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Since 1970, NOAA has documented winter storms across Addison County in a number of events, spanning the period from November to April:

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Ice Storm	1	0	0	0	0	0	0	0	0	0	0	1
Winter Storm	28	38	42	10	0	0	0	0	0	1	14	42
Winter Weather	54	32	27	12	0	0	0	0	0	7	11	44

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

The impacts within the Town of Waltham are generally limited to residents impacted by loss of power and the occasional downed tree or branches in the road. Loss of power to the town hall and garage are of concern due to the frequency of losses at these locations. In March 2001 a string of storms hit Waltham and the rest of Vermont, beginning with 15-30" of snow on March 5-6, followed by 10-30" on March 22, and 10-20" on March 30.

Future Probability:

Warmer temperatures such as might be anticipated with climate change would result in less snow and a higher likelihood of ice in winter. Other predictions indicate that climate change will bring more atmospheric moisture and snowfall, or jet stream alternations producing "Bomb Cyclones" that might increase sudden deep freezes or ice storms in early spring and late fall. In all cases, winter storms are predicted to increase in severity. Changes in land use and development are not expected to increase the impacts of ice storms or power outages on community assets or the population.

Vulnerability Summary:

The Town of Waltham is a rural community with one major highway and dispersed population. Utility company priorities following storms are to repair the simplest fixes which impact the highest total populations as the highest priority. As a result, there is a high risk of extended power failures due to ice storm throughout the Town of Waltham.

Severe Ice Storms are considered a HIGH PRIORITY for the Town of Waltham, with an overall vulnerability score of 6.60 determined.

4.3.5 Highway Accidents (Vulnerability Score 6.40)

Location:

Since 2015, there have been 70 vehicle accidents documented by state police within the town of Waltham. The majority of crashes occurred on Vermont Route 17 (67%), with a few on VT Route 17 (9%) and the remaining 24% on town roads. The most dangerous intersection is VT Route 7 with South Middlebrook Road (26 crashes). The Plank Road-Route 7 intersection (5 crashes) and Crosby Heights (4 crashes) are also significant crash locations.

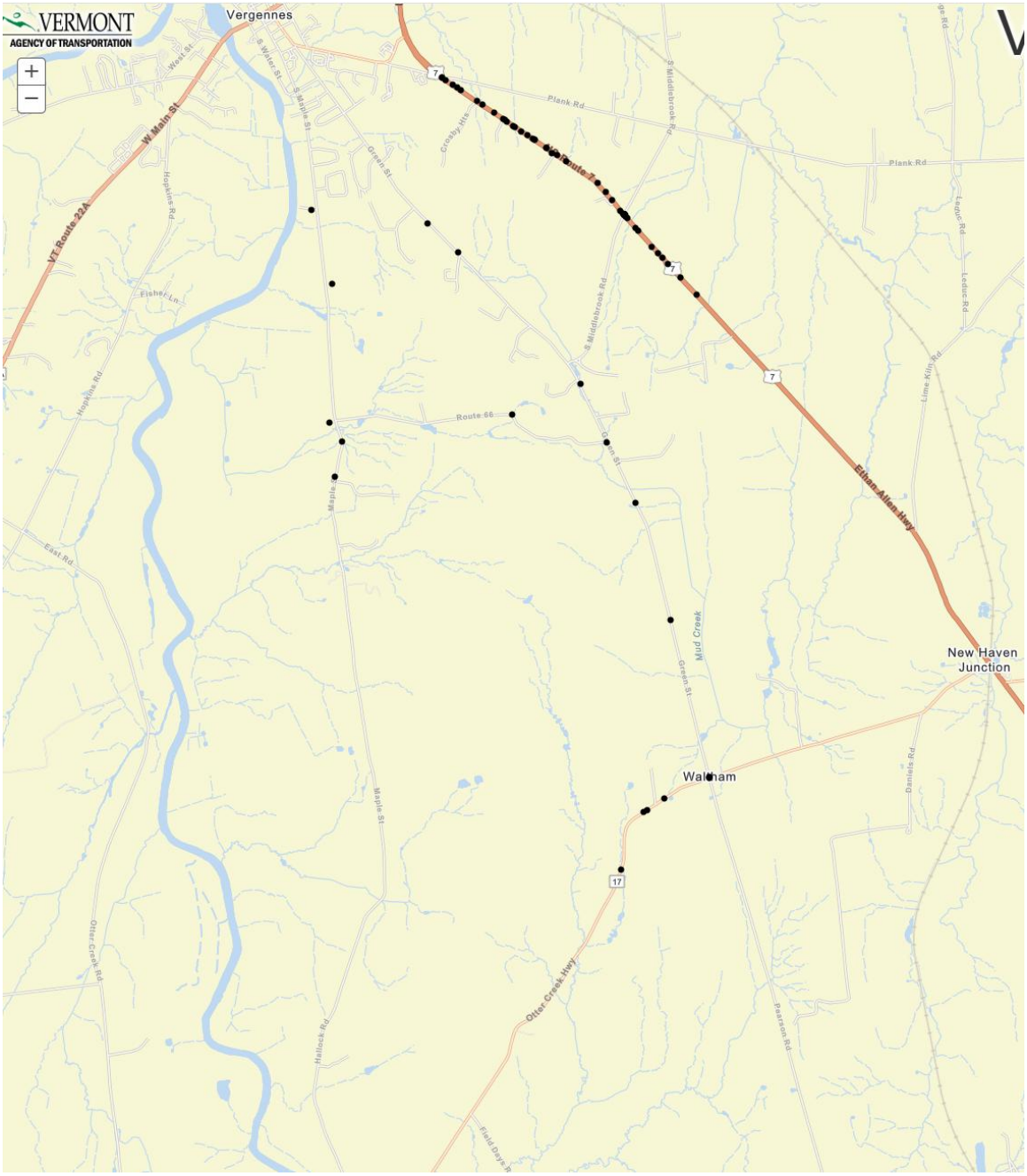


Figure. VTrans Recorded Waltham Accident locations, 2015-2026

Extent:
Most accidents occurred during daylight hours (67%) and in clear weather, though freezing precipitation was the weather condition in 12% of crashes. The majority of crashes were single vehicle accidents with most resulting only in property damage, with one fatalities, and more than 19 (34%) resulted in injuries. At least 5 (8.9%) involved Heavy Trucks.

Previous Occurrences:
Car accidents in Waltham have averaged less than 1 per month, with slightly higher rates in the winter months and mid-summer, but declining overall in recent years.

Figure. Car crashes by Year

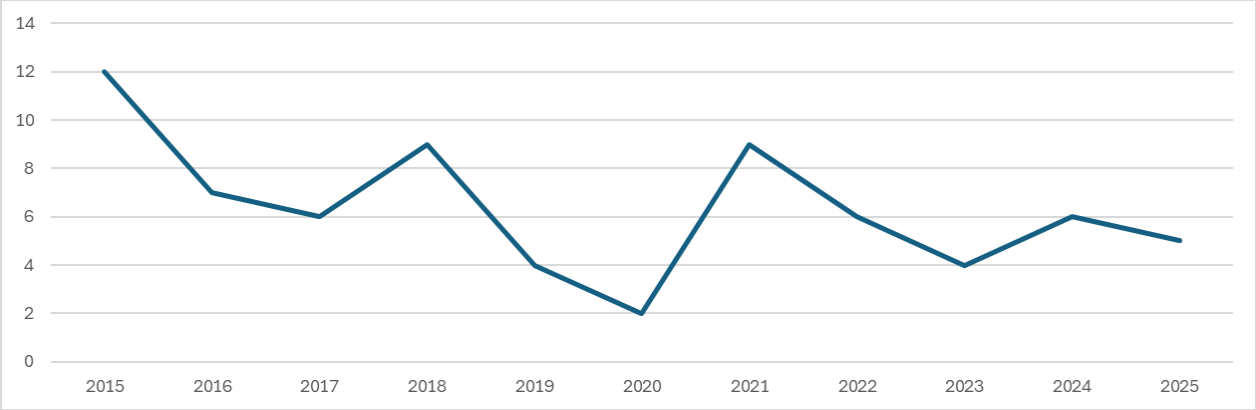
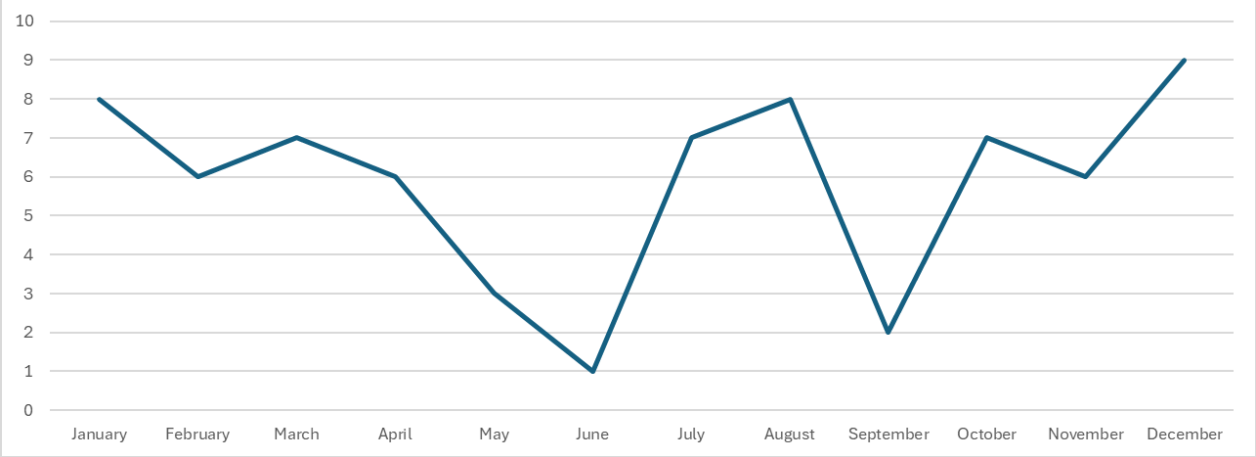


Figure. Car crashes by Month



Future Probability:
While documented car accidents over time have declined in recent years, through-traffic may have increased, potentially due to commuters and travelers. Traffic calming measures, such as road widening and other safety engineering, should help reduce speeding and accidents.

Vulnerability:

Changes in climate are not expected to increase the probability of Highway Accidents or affect their impact on community assets or the population.

Highway Accidents are considered a HIGH PRIORITY for the Town of Waltham, with an overall vulnerability score of 6.40 determined.

4.3.6 Drought (Vulnerability Score 6.00)



Shoreham Orchard irrigation pond, September 2025

Location:

Drought is an inherent, cyclical component of natural climatic variability and can occur at any place at any time. Drought events are often spread over a larger geographic area than other natural hazards, with gradation of impacts that are not as obvious as other hazards. Significant droughts would affect the entirety of the municipality of Waltham, as well as adjoining municipalities and likely extending to other counties and states during the same event.

Extent:

The severity of a drought depends on the duration, intensity, and geographic extent of the water shortage, as well as the demands on the area's water supply. Droughts are rated in classifications from D0–D4, depending on the severity of the drought, the amount of time it will take for vegetation to return to normal levels, and the possible effects of the drought on vegetation and water supply. High winds, low humidity, and extreme temperatures can all amplify the severity of drought.

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures Coming out of drought: some lingering water deficits pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely Water shortages common Water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses Widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies

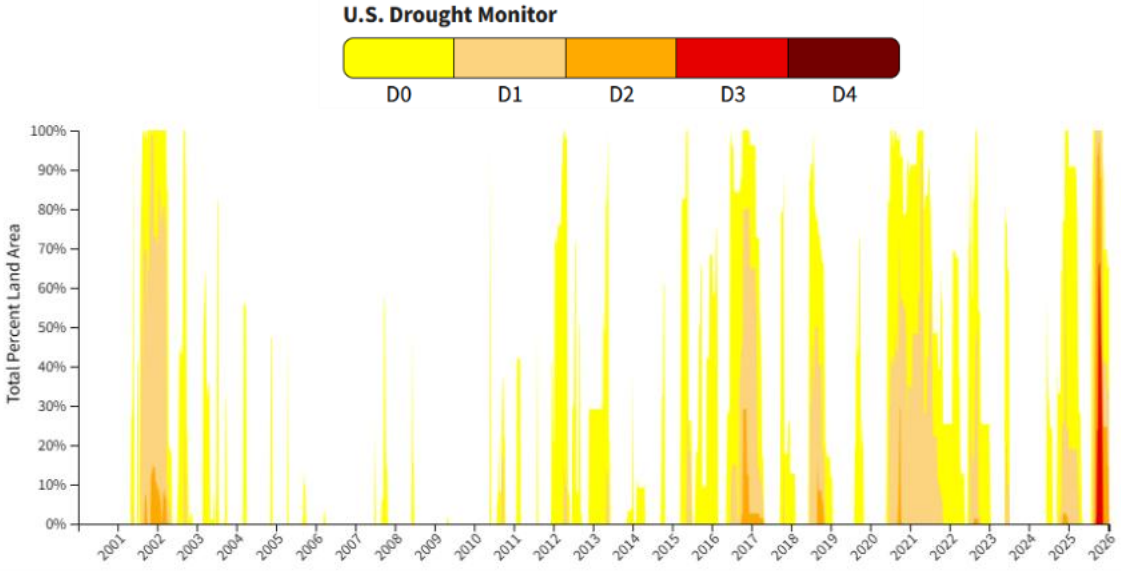
Source: http://droughtmonitor.unl.edu/AboutUSDM/DroughtClassification.aspx

The impacts of drought are typically felt by agricultural enterprises and rural residents in areas like Waltham first. Drought can cause extensive damage to gardens, agricultural crops and livestock. Drought can also lead to dry or low water levels in wells needed for drinking water. and can also concentrate water contamination levels and lead to resulting in potential health concerns.

Soil moisture, streams, and groundwater are all depleted due to drought. Drought depletes water availability for both cultivated and wild plants and animals. Lack of rain combined with high temperatures can lead to significant crop loss. As a result, the economic effects of a drought can be just as devastating as any other natural hazards.

Previous Occurrences:

Droughts, while low frequency hazards, are of serious concern to the population of Vermont. It is often difficult to recognize the onset of a drought during its preliminary stages.

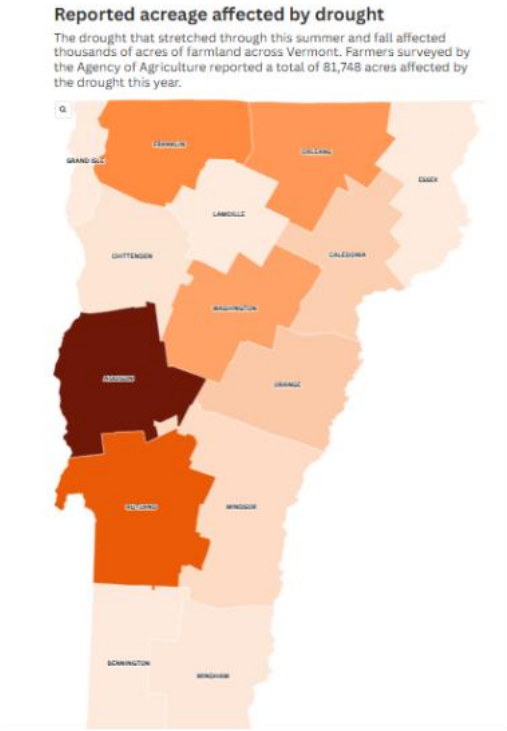


Source: https://www.drought.gov/states/vermont#historical-conditions

Since 2000, drought conditions measured by intensity indices have periodically surged in Vermont. Beginning in 2001, New England experienced historic drought conditions not seen since the 1960s. In 2001-2002, large parts of Vermont were affected by a Severe Drought (D2), but Waltham and the Champlain Valley were judged to have only reached Abnormally Dry (D0) conditions.

A series of drought conditions have affected portions of Vermont nearly annually over the past decade. Parts of central Vermont were in Severe Drought (D2) from October 2016 through April 2017, peaking in October and November 2016. At least 80% of the State was in at least Moderate

Drought (D1), including all of Waltham and Addison County reaching Severe Drought (D2) (Figure). Moderate Drought conditions returned in October of 2017 and again in June 2018.



Since 2018 there have been four Severe Droughts, more than the previous two decades combined. From September to November of 2018 the State experienced another Severe Drought. Then from June 2020 to October 2021 much of the State was under Moderate Drought to Abnormally Dry conditions. From September to October of 2020 29.4% of the State was under Severe Drought conditions. A severe drought occurred from June through September, 2025. According to a state survey, Addison County saw the most acres affected by far. Thirty farmers across the county reported a little more than $1.4 million in damages across about 25,000 acres.

Figure. Reported acreage affected by 2025 summer drought

(Source: VT Agency of Agriculture, Food and Markets 2025 Agricultural Drought Impact Survey)

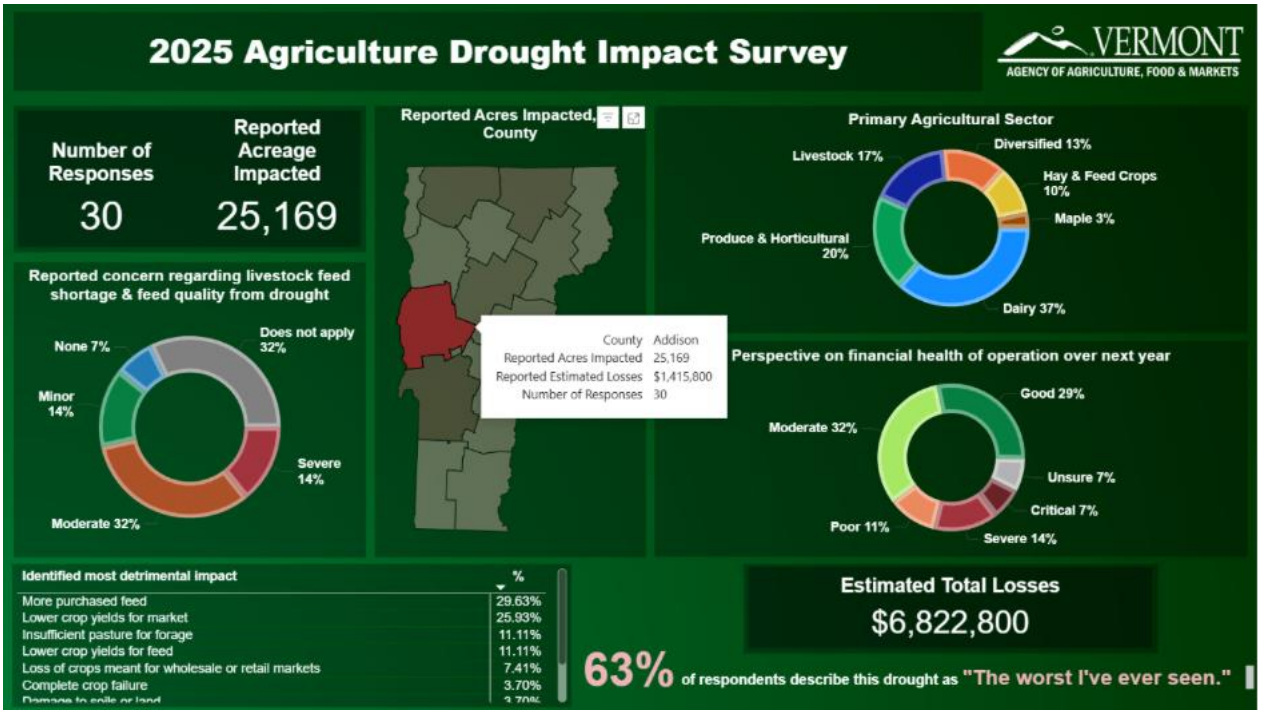


Figure. Addison County 2025 Agriculture Drought Impact Survey Results
(Source: VT Agency of Agriculture, Food and Markets 2025)

Future Probability:

Relative to other regions of the country, severe droughts are not frequent occurrences in Vermont. However, changes in climate are expected to significantly increase the probability Drought events. Both wet and dry extremes are expected to increase over time across the state: Vermont's precipitation trend is an on upward trajectory, having seen increases in average annual precipitation of 7.5 inches since 1900. At the same time Vermont is seeing an increase in average annual maximum and minimum temperature, which is contributing to an increased likelihood of drought. Higher temperatures lead to increased rates of evaporation, combined with dry periods between intense precipitation events will lead to increased dry conditions.

Land use changes are not expected to significantly affect the impact of droughts on community assets, but changing demographics, especially isolated or aging populations, may increase vulnerability. For instance, isolated residents may be unable to obtain drinking water.

Vulnerability Summary:

Changes in climate may increase the probability of droughts. Drought frequency and severity is unlikely to be affected by land use or demographic changes, or cause additional impact on community assets.

Droughts are considered a **HIGH PRIORITY** for the Town of Waltham, with an overall vulnerability score of 6.00 determined.

4.3.7 Lightning Storm (Vulnerability Score 5.40)

Location:

Severe storms which include lightning along with wind and rain events are a common occurrence in Waltham during summer months. While unpredictable, lightning tends to be drawn to exposed areas of higher elevation or where there are sudden increases in elevation. Areas where elevation has resulted in more frequent lightning strikes are located along higher ridges. Another common strike location is at power line transformers, threatening power supplies.

Lightning fatalities are most commonly associated with water-related activities such as fishing, boating, and swimming. Given Waltham's lack of open water, these are not a significant concern with the potential exception of Otter Creek recreation.

Extent:

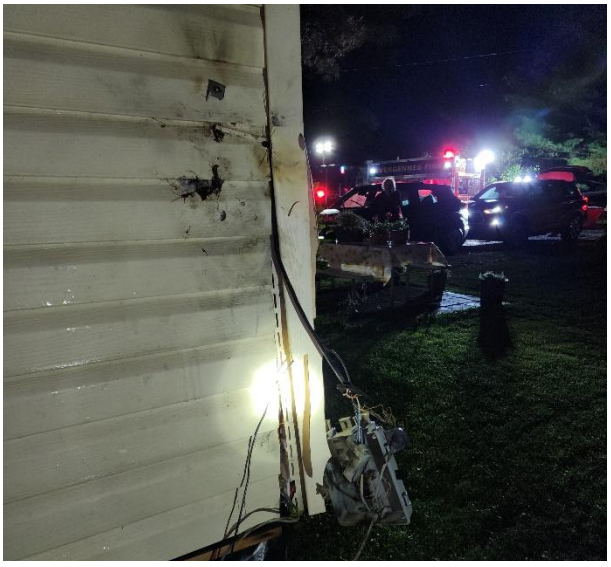
Based on data collected by NASA satellites between 1995 and 2002 there were between 4-6 strikes per square kilometer in western Addison County each year. These numbers would extrapolate into between 225 and 350 lightning strikes per year.

Lightning strikes routinely cause fires to trees along ridge tops in Vermont and less commonly start fires in structures. Fires associated with lightning strikes to inhabited buildings occur fewer than once every five years on average. More common is loss of power and damage to electronic equipment in homes where there has been a proximity strike. Anecdotally, there are multiple reports each year of electronic equipment unprotected by surge suppressors which are damaged by lightning strikes. Generally, these homeowners file insurance claims for damages and total annual damages in the entire community likely do not exceed $10,000.

Previous Occurrences:

The National Lightning Safety Institute has recorded only three known fatalities due to lightning in Vermont between 1990-2003.

Given the estimated numbers of lightning strikes in Waltham, unreported strikes on homes and other structure that resulted in fire are possible, but likely infrequent.



Energy meter that caught fire from Whispering Pines lightning strike in Panton, 2023

Future Probability:

Storm frequency and severity are predicted to increase, which would likely cause more lightning strikes. The effect of strikes may be mitigated by the use of fire-resistant materials in new construction. Changes in climate are expected to slightly increase the probability of lightning strikes, but projected land use and population changes are not expected to affect their impact on community assets or vulnerable populations.

Vulnerability Summary:

Waltham's susceptibility to lightning strikes seems to be relatively stable. The use of lightning rods has historically protected buildings from lightning-caused fires but these have fallen out of favor in recent years due to increased fire protection capability. The perceived risk of lightning strike in the community is relatively unchanged.

A lightning strike to the Town Office would be particularly significant to town operations. Changes in climate may increase the intensity and frequency of lightning storms. Lightning strikes are unlikely to be affected by land use or demographic changes, or cause additional impact on community assets.

Lightning Storms are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 5.40 determined.

4.3.8 Severe Snow (Vulnerability Score 4.20)

Location:
Severe winter snow storms are common throughout Vermont and can occur geographically in any part of Waltham. Generally, ice storms strike within a particular elevation band depending on temperatures with higher elevations experiencing snow and lower elevations experiencing rain. Located at a moderate elevation, Waltham is at moderate risk for more widespread snow accumulation, with additional risk of drifting due to relatively flat topography.

Extent:
Because winter storms are extremely temperature and elevation dependent, they are notoriously difficult to predict. When conditions conducive to ice build-up are predicted, the National Weather Service issues a Winter Storm Warning with emphasis on ice accumulation.

The Winter Storm Severity Index (WSSI) (Appendix 5) is a categorization of overall severity based on six components:

- **Snow Amount:** to depict severity due to total amount of snow or rate of snowfall accumulation. (Adjustments are made based on climatology and urban areas, e.g. 4" of snow in Atlanta is more severe than 4" in Minneapolis.)
- **Snow Load:** to depict severity due to total weight of snow on trees and power lines.
- **Blowing Snow:** to depict severity mainly to transportation due to blowing and drifting snow.
- **Ice Accumulation:** to depict severity of transportation and downed trees/powerlines due to the accumulated ice in combination with wind.
- **Ground Blizzard:** to depict severity to mainly transportation of ground blizzards that develop due to a pre-existing snowpack and strong winds.
- **Flash Freeze:** to depict severity primarily to transportation of situations where temperatures rapidly fall below freezing during precipitation.

Previous Occurrences:
Since 1970, NOAA has documented winter storms across Addison County in a number of events, spanning the period from late October to April:

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nove	Dec
Blizzard	0	0	1	0	0	0	0	0	0	0	0	0
Heavy Snow	0	7	1	0	0	0	0	0	0	0	0	1
Winter Storm	28	38	42	10	0	0	0	0	0	1	14	42
Winter Weather	54	32	27	12	0	0	0	0	0	7	11	44

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

The major impacts within the Town of Waltham are generally limited to residents impacted by loss of power and the occasional downed tree or branches in the road. Loss of power to the town hall and garage are of concern due to the frequency of losses at these locations. In March 2001 a string of storms hit Waltham and the rest of Vermont, beginning with 15-30" of snow on March 5-6, followed by 10-30" on March 22, and 10-20" on March 30.



Future Probability:
Warmer temperatures such as might be anticipated with climate change would result in less snow and a higher likelihood of ice in winter. Other predictions indicate that climate change will bring more atmospheric moisture and snowfall, or jet stream alternations producing "Bomb Cyclones" that might increase sudden deep freezes or ice storms in early spring and late fall. In all cases, winter storms are predicted to increase in severity. Changes in land use and development are not expected to increase the impacts of ice storms or power outages on community assets or the population.

Vulnerability Summary:
Severe snowstorms in rural Vermont pose significant threats to vulnerable populations and both current and future infrastructure. These storms can lead to power outages, road closures, and restricted access to essential services, disproportionately affecting older adults, individuals with health conditions, and those with limited mobility or financial resources. The accumulation of heavy snow can damage roads, bridges, and utility lines, while also impeding emergency response efforts. As climate change contributes to more frequent and intense winter storms, the strain on aging infrastructure and the challenges faced by vulnerable communities are expected to increase, underscoring the need for proactive adaptation and resilience planning.

The Town of Waltham is a rural community with one major highway and dispersed population. Utility company priorities following storms are to repair the simplest fixes which impact the highest total populations as the highest priority. As a result, there is a moderate risk of extended power failures due to snow storm throughout the Town of Waltham. Changes in land use and development are not expected to increase the impacts of snow storms or power outages on community assets or the population.

Severe Snow events are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 4.20 determined.

4.3.9 Extreme Heat (Vulnerability Score 4.20)

The frequency and intensity of hot weather is increasing in Vermont, resulting in greater numbers of heat-related emergency department visits and total deaths.

Location:

Heat waves occur across the entire state, but may be a slightly higher risk in areas like Waltham that aren't higher elevation mountain locations, but also aren't close to Lake Champlain with cooling on-shore and off-shore breezes.

Extent:

A number of metrics demonstrate the extent of recent increase across the state:

- Days with a maximum temperature above 95 degrees Fahrenheit have increased from less than 1 per year (1950-2009) to at least 2 per year (2010-2022)
- Days with a maximum temperature above 90 degrees Fahrenheit have increased from about 4 per year (1950-2009) to more than 9 per year (2010-2022)
- Days with a minimum temperature above 70 degrees Fahrenheit have increased from about 2 per year (1950-2009) to more than 7 per year (2010-2022)

Previous Occurrences:

Since 1970 across western Addison County, NOAA has seven documented heat events, primarily during July and August and all since the year 2006:

	January	February	March	April	May	June	July	August	September	October	November	December
Heat Event	0	0	1	0	0	1	3	2	0	0	0	0

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

The March 2012 event saw record heat across all of Vermont with maximum temperatures 30° to 40° above normal. Some daily records that stood for more than 100 years were broken and several daily records were broken by 10° or more. The Winter of 2011-12 was atypical with temperatures that averaged 4°-5° above normal and snowfall that was 40-60 percent lower than normal. This combination caused snowpacks across the region to be well below normal or even non-existent by mid-March. The ski industry suffered significant revenue loss due to lack of snow, including early spring closures and the Vermont maple sugaring industry lost approximately $10M statewide.

From June 18-23, 2020 the second longest heatwave in modern history (1900-onward) occurred across portions of New York and Vermont. Temperatures exceeded 90° F for up to six consecutive days in portions of the Champlain Valley.

Future Probability:

Average temperatures in Vermont are projected to increase by an additional 3° to 12° F by 2100, suggesting that Waltham can expect more frequent and harmful hot weather in the future. A number of NOAA projections demonstrate the probability of future temperature increases in the Champlain Valley:

- Days with a maximum temperature **above 95 degrees** Fahrenheit will increase from 2 per year (2010-2022) to **between 3 and 6 per year** (2035-2064)
- Days with a maximum temperature **above 90 degrees** Fahrenheit will increase from 9 per year (2010-2022) to **between 13 and 19 per year** (2035-2064)

Vulnerability Summary:

Changes in climate are expected to increase the probability of Severe Heat incidents and changes in land use and population may increase their impact on community assets or the population.

Despite Vermont's northern location, data indicates that Vermont residents experience heat-related illnesses at lower temperatures than residents of other regions. This is likely related to the infrequency of hot weather in Vermont, which has several impacts:

- Vermonters do not experience enough hot weather for their bodies to adapt to hotter conditions;
- Many Vermont homes are not adequately weatherized and do not have air conditioning;
- The State and local communities have not developed plans and policies needed to be prepared for hot weather;
- Adapting behaviors to stay safe during hot weather can be challenging for individuals;
- Vermont has a large population of older adults, who are at higher risk for heat-related illnesses.

The Vermont Department of Health has identified Waltham as having a higher population vulnerability than the state average, due primarily to the percentage of "Adults 65 and Older Living Alone" in Waltham. Other populations disproportionately impacted by heat can include outdoor workers and hobbyists with more exposure to hot conditions, populations that are particularly sensitive to heat exposure (older adults, young children, pregnant women, people that are overweight or have chronic medical conditions, people using drugs, alcohol, or some prescription medicines), and people with limited adaptation resources (living alone, unable to access community cooling sites, or unable to keep their home cool).

Between 2009 and 2019, there were an average of 104 heat-related emergency department visits per year and 12 heat-related deaths across the state. The primary shelter for Waltham, the town office, currently has no way to provide cooling.

Extreme Heat events are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 4.20 determined.

4.3.10 Extreme Cold (Vulnerability Score 4.20)

Location:
Severe cold events occur across the entire state, and are generally more severe at higher elevations. Temperatures in the lower, populated areas of Waltham are somewhat moderated, but can still experience significant low temperatures.

Extent:
Vermont often experiences cold conditions during winters, however very cold temperatures remain a threat despite their regularity. The NOAA Wind Chill Chart identifies those temperatures and associated wind speeds that may cause frostbite if skin is exposed to the air over a certain period of time. In anticipation of extreme cold temperatures, the National Weather Service may issue the following watches, warnings or advisories, which are aimed at informing the general public as well as the agricultural industry:

- **Wind Chill Warning:** Dangerously cold wind chill values are expected or occurring
- **Wind Chill Watch:** Dangerously cold wind chill values are possible
- **Wind Chill Advisory:** Seasonably cold wind chill values but not extremely cold values are expected or occurring
- **Hard Freeze Warning:** Temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants
- **Freeze Warning:** Temperatures are forecasted to go below 32°F for a long period of time, killing some types of commercial crops and residential plants
- **Freeze Watch:** Potential for significant, widespread freezing temperatures within the next 24-36 hours
- **Frost Advisory:** Areas of frost are expected or occurring, posing a threat to sensitive vegetation

Previous Occurrences:
Since 1970, NOAA has documented severe cold and wind chill events across Addison County in a number of events, exclusively in the period from December to February:

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nove	Dec
Cold/ Wind Chill	19	6	0	0	0	0	0	0	0	0	0	3

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

In January and March of 2007, several arctic cold fronts moved across Vermont on the 24th and delivered very cold temperatures as low as 15 degrees below zero along with blustery winds.

On January 14, 2009 an arctic cold front moved across Vermont during the early morning hours which delivered some of the coldest temperatures across the region in several years. As the arctic

front passed across northern Vermont, temperatures dropped over 20 degrees within several hours. Temperatures averaged 20 to 25 degrees below normal values, which were already at climatological winter minimums. In parts of Addison County, minimum temperatures reached 20 degrees below zero. These extremely cold temperatures led to numerous cold weather-related problems including numerous dead vehicle batteries and broken home/business water pipes.

On January 7, 2015, early evening temperatures were zero to 10 above zero with winds of 15 to 30 mph that created wind chills colder than 20 to 30 below zero through the overnight into the morning hours of January 8th. Actual morning low temperatures on January 8th were 10 below to 20 below zero in Addison County, with temperatures dipping to 12 below zero in some locations.

On December 22-23, 2022, Addison County received high winds, downing power lines and closing roads, followed by cascading temperatures falling into the single digits, with wind chills of zero to the minus 0's. The greatest effect to Waltham was the extended power outage.

Future Probability:

Warmer temperatures associated with climate change may result in milder winters but the possibility of jet stream alterations producing "bomb cyclones" that might increase sudden deep freezes or ice storms in early spring and late fall. As a result, some winter storms and severe cold events are predicted to increase in severity. Changes in land use and population are not expected to increase the impact of severe cold events on community assets or the population.

Vulnerability Summary:

Severe cold can drain vehicle batteries and freeze water pipes, leading to transportation challenges that prevent people from reaching work, school, childcare, grocery stores, and hospitals. Frozen or burst pipes can cut off water supply and cause extensive damage, leaving homeowners and business owners with costly repairs, cleanup, and potential loss of income or operations—compounding the hardship caused by the cold.

Future assets are not expected to experience increases in vulnerability to severe cold events due to land use changes or change in population demographics.

Extreme Cold events are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 4.20 determined.

4.3.11 Structure Fire (Vulnerability Score 3.60)

Location:
Nationwide, civilian fatalities are correlated with populations living in rural areas and in older homes. As with much of Vermont, Waltham's housing stock is dominated by older, owner-occupied residential homes, which account for most structure fires. While multi-building fires are unlikely, given the dispersed geography of the town's structures, response time is extended. Access issues on narrow driveways could also cause challenges, especially with multiple departments and the need to coordinate a continuous stream of water tankers to deliver the needed volume for fire suppression in areas without a municipal water system.
Waltham relies on the volunteer fire department of the neighboring Vergennes for fire-response coverage, as well as motor vehicle accidents and a number of other types of emergency calls.

Extent:
The primary causes of structure fires are cooking fires and heating appliances, especially wood stoves and uncleaned creosote from solid-fueled heating equipment chimneys. Aging houses and cold Vermont winters put added stress on heating systems. Furthermore, the high cost of heating fuel can force people to use alternative heating sources that may not be safe. An improperly installed and maintained heating appliance can result in added fire risk and carbon monoxide poisoning. While fatalities from fires are rare, older adults have a greater risk of fire death than the overall population.

Previous Occurrences:
In the last decade, only a small number of emergency calls in Waltham were for structure fires. However, structure fires do occur every year or two.

Future Probability:
The risk of individual structure fire events is likely to continue. Education about safe practices and maintenance activities will prevent some incidents, but accidents and unforeseen occurrences will occur. Changes in climate, land use, and population are not expected to increase the probability of Structure Fires or affect their impact on community assets or the population.

Vulnerability Summary:
Older adults have a greater risk of fire death than the overall population. In the past decade, more than a third of Vermont's fire deaths have been seniors over the age of 65. About 21% of Waltham's population is older than 65, about the same as the rest of Addison County and Vermont. Future assets are not expected to experience increases in vulnerability to structure fires due to land use changes or change in population demographics.

Structure Fires are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 3.60 determined.

4.3.12 Infectious Disease (Vulnerability Score 3.60)

An infectious disease is caused by micro-organisms, such as bacteria, viruses or parasites. A vector-borne disease is an infectious disease that is transmitted to humans by blood-feeding arthropods, including ticks, mosquitoes, and fleas, or in some cases by mammals (e.g. rabies). This section covers Zoonotic Diseases, spread by animals (including Rabies, Avian Influenza or Bird Flu, Hantavirus, Tularemia) and respiratory viruses (including Coronavirus 19 (COVID-19), influenza, Respiratory syncytial virus (RSV), etc.).

For the purposes of this plan, Waltham has separated tick and insect-borne diseases, primarily through mosquitoes, into a separately evaluated hazard (Section 4.3.16).

An epidemic emerges when an infectious disease occurs suddenly in numbers above normal expectancy. Infectious disease outbreaks put a strain on the healthcare system, can cause continuity of operations challenges for local businesses, impact the economy, and interrupt daily life for everyone within a community. These outbreak incidents are a danger to emergency responders, healthcare providers, schools, and the public.

Extent:

Infectious diseases come in a wide variety of types and have a broad range of effects. In most cases, only a few individuals are affected. However, more virulent infectious disease outbreaks have the potential to affect the entire community over a long period of time.

Municipal staff, volunteers, and road crews in Vermont face heightened vulnerability to **respiratory illnesses** like COVID-19 and RSV, especially during peak seasons. Respiratory illnesses like COVID, flu, and RSV spread mainly through infectious droplets and aerosols released when an infected person breathes, talks, coughs, or sneezes, and by touching contaminated surfaces and then the face. As essential workers who often operate in close-knit teams and prioritize public-facing duties these personnel are likely to see increased sick leave, reduced staffing capacity, and potential disruptions to municipal services during intense respiratory illness waves.

Several infectious zoonotic diseases that may be present in the state or may spread to Vermont in the future may not be directly influenced by climate change, but will continue to be a serious concern. **Rabies** poses risks of fatal viral transmission to humans and unvaccinated animals via bites. **Hantavirus**, though relatively rare with only two confirmed Vermont cases since 1993, causes severe respiratory illness after exposure to virus-laden rodent droppings — notably those of deer and white-footed mice. **Leptospirosis**, spread through contaminated water and soil via mammalian urine (e.g., rodents, raccoons, livestock), can lead to serious kidney and liver issues and is emerging as a threat to both humans and pets in Vermont. **Plague** remains predominantly a western U.S. disease, but travel or wildlife movement could introduce it; typically bubonic and contracted from rural rodent reservoirs, it averages around seven U.S. cases annually. **Valley Fever**, caused by the soil-based Coccidioides fungus, isn't endemic to Vermont but climate shifts raise concerns for possible eastward spread of spores and risk of respiratory infection. **Anthrax** persists in soil and livestock, particularly cattle, sheep, and goats; humans may contract it through contact with infected animals or products, with spores capable of persisting in the environment for decades. **Q Fever**, transmitted via inhalation of contaminated materials from sheep, goats, or

cattle, can cause flu-like illness and chronic conditions like endocarditis, notably impacting agricultural workers.

Waterborne Illnesses

When large runoff delivers excess nutrients like phosphorus and nitrogen into lakes, the warmer, calmer waters become prime habitat for blooms, which can release harmful toxins that cause skin rashes, throat irritation, gastrointestinal distress, and serious illness in humans and pets. Flooding events elevate the risk of waterborne parasites such as **Cryptosporidium**: heavy rains wash animal feces into surface waters, and the parasite's hardy oocysts can survive traditional chlorination, leading to outbreaks of diarrhea and dehydration—especially affecting children, the elderly, and immunocompromised individuals.

Location:

Infectious disease cases have been dispersed throughout Vermont and likely in Waltham. Low population density in town may reduce the spread of respiratory disease within town, but the small number of business and town offices may congregate residents and increase local exposure. Workers travelling to more distant locations like Burlington, Middlebury and Rutland may also increase the chances of exposure to and spread of respiratory illnesses.

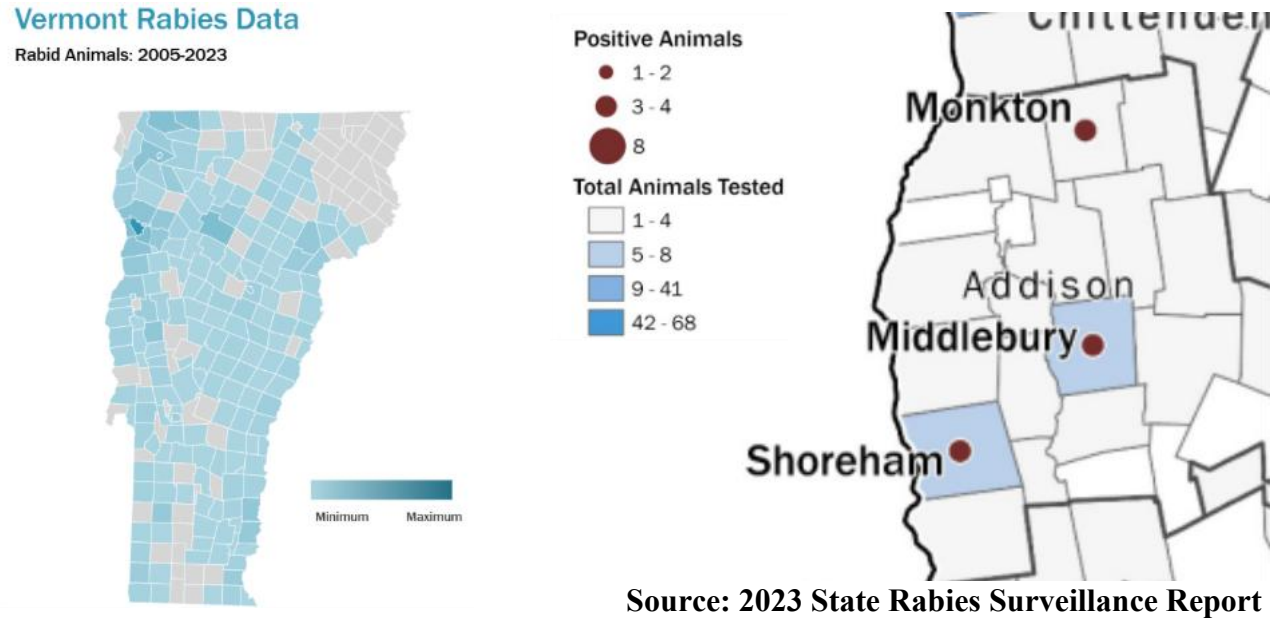
Proximity to livestock from farms and wild animals in rural areas throughout the rural areas of town increases potential exposure to zoonotic disease. Waterborne illness are most likely along the edge of Lake Champlain where residents recreate and may be exposed to algal blooms or waterborne parasites from runoff events.

Previous Occurrences:

Respiratory diseases have had the greatest impact and most widespread previous occurrences. Pandemic influenza, considered to be a global outbreak, spread quickly around the world and was observed in 1918, 1957, 1968 and in 2009 with the novel H1N1 strain. The great influenza epidemic of 1918 killed millions worldwide and would likely cause hundreds to thousands of deaths in Vermont should a similar outbreak occur today. The 2009 H1N1 outbreak, though not considered a serious threat to the state, still affected some Vermonters.

The COVID-19 pandemic led to a complete disruption of daily life in Vermont. A state of emergency was issued by Governor Phil Scott on March 13, 2020 to help ensure Vermont had the resources necessary to respond to the COVID-19 public health emergency. In the following weeks, a series of executive orders were issued restricting activities likely to result in transmission or use up valuable medical resources. Some of these included restricting visitor access to long term care facilities, suspending in person PreK-12 education, closing bars and restaurants, suspension of elective and non-essential medical surgeries, interstate travel restrictions, and limits on non-essential gatherings. COVID-19 restrictions stayed in effect until June 14, 2021 when 80% of Vermont's eligible population (those 12 and older) had received at least one dose of COVID-19 vaccine, in accordance with the State's Vermont Forward Plan. To date, Vermont has documented more than 150,000 cases and 900 deaths due to COVID-19. A more serious strain of the flu is anticipated in the future and vaccines might not be available in time to combat rapid spread.

Vector-borne diseases, even beyond Mosquito and Tick-borne illnesses, continue to pose a significant and growing threat. Rabies remains a serious concern in Vermont, with 66 rabid animals identified in 2024 — primarily raccoons, skunks, foxes, bats, and woodchucks. Rabies cases have been noted recently in and near Addison. Between 2005 and 2025 Addison has had five rabies cases identified, primarily in raccoons (3), as well as a skunk and a cow. In Vermont, rabies is most commonly found in wild animals such as raccoons, skunks, bats, foxes and woodchucks. Cats, dogs and livestock can also get rabies if they have not been vaccinated.



Source: 2023 State Rabies Surveillance Report

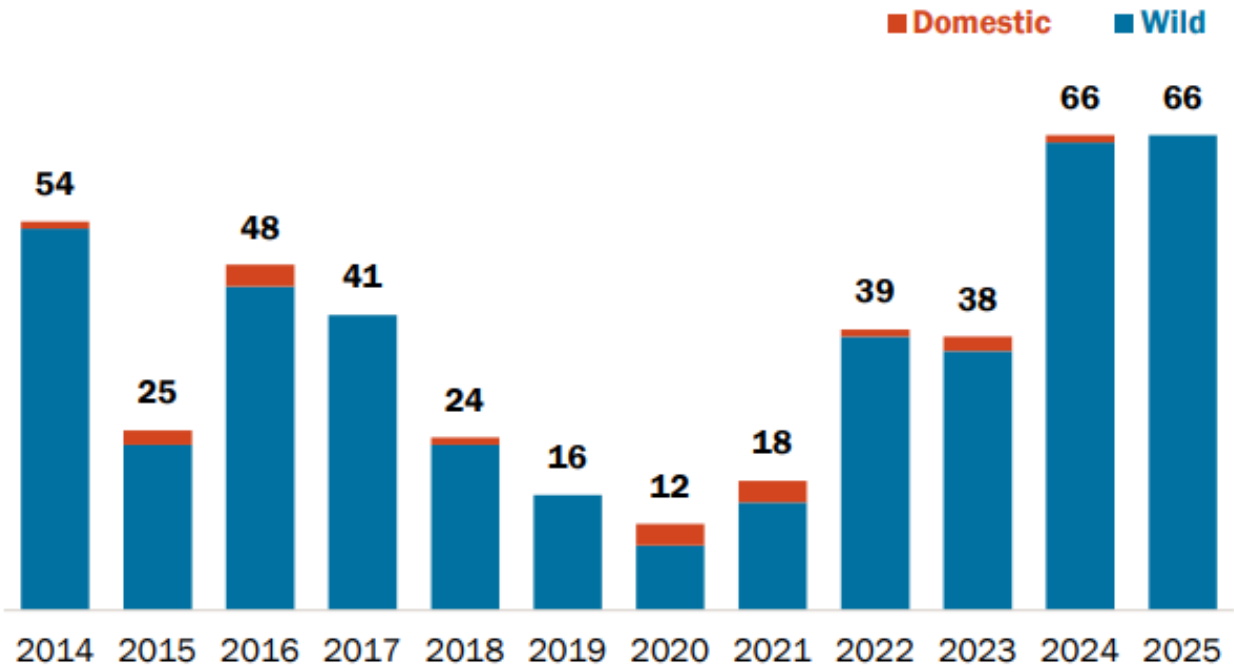


Figure. Annual reported cases of rabies (VT 2025 Rabies Surveillance Report)

The presence of highly pathogenic avian influenza (HPAI), also known as H5N1 bird flu, has been circulating in Vermont since 2022. A bobcat and two red-tailed hawks found dead in Cornwall tested positive for HPAI in early 2024. HPAI is uncommon in mammals, and the bobcat that tested positive was the first detection of HPAI virus in a mammal in all of Vermont HPAI was also confirmed in a backyard chicken flock in Franklin County in December 2024. This was the fourth instance of HPAI in a domestic flock in Vermont since spring of 2022 and emphasizes the ongoing need for vigilance as the disease continues to be an ongoing risk to domestic birds.

Future Probability:

Changes in climate are expected to increase the probability of Infectious Disease introduction and spread. According to the Centers for Disease Control (CDC), the number of reported cases of vector-borne infectious disease more than tripled between 2004 and 2016 and can be expected to continue rising. Warmer temperatures allow more diseases and their vectors to expand and establish populations farther north, where harsh winters temperatures previously inhibited expansion. Projected land use changes are not expected to affect the impact of infectious disease on community assets, but changing demographics may result in faster spread and impacts on vulnerable populations. With increasing trends for global travel and short-term visitors, diseases not previously observed in Vermont may be introduced by infected travelers and spread to the local population.

Vulnerability Summary:

People who are immunocompromised, elderly and young, and healthcare workers are most vulnerable to infectious disease. These populations are at heightened risk of infection and death due to weakened immune systems or compounding factors of other illnesses or stressors. Future assets are not expected to experience increases in vulnerability to infectious diseases due to land use changes but may increase with changes in population demographics.

Infectious Diseases are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 3.60 determined.

4.3.13 Tornado (Vulnerability Score 3.20)



Tornadoes are violently rotating columns of air extending from a thunderstorm with wind speeds capable of reaching in excess of 250 mph.

Location:

High winds can affect the entire planning area. In Vermont, high winds are most often seen accompanying severe thunderstorms. In Addison County, these storms usually originate from the west, southwest, or south.

Extent:

Tornado damage paths can be more than mile wide and 50 miles long. Straight-line winds from thunderstorms are more common, but usually more limited in scale. (See Beaufort Wind and Saffir-Simpson wind scales in Appendix 4).

Previous Occurrences:

Since 1970 across Addison County, NOAA has documented damage from only 3 tornadoes, primarily during the spring and summer:

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Tornado	0	0	1	0	0	0	2	0	0	0	0	0

*NOAA Storm event database (https://www.ncdc.noaa.gov/stormevents/)

Tornadoes can occur in Addison County, but are rare. In July 2022 a storm system produced two tornado touchdowns: one in Addison (EF1) and one in Waltham (EF0). (See Enhanced Fujita Scale in Appendix 4). The tornadoes caused property damage, and uprooted and snapped several trees. The path length of the Addison tornado was 1 mile long and as much as 50 yards wide, while the second tornado path was 0.7 miles long and 25 yards wide. On the afternoon of 18 June 2026, a EF-1 tornado occurred in mountainous Lincoln, Vermont, during as part of a broader severe-weather episode across the northeastern United States.

Future Probability:

Tornadoes are not common in Vermont. However, it is likely that as climate change accelerates, the area will see exacerbation of wind events which could include tornadoes. Projected land use and population changes are not expected to significantly affect their impact on community assets or vulnerable populations, but may make such events more visible.

Vulnerability Summary:

People who live in rural, isolated communities like Waltham are particularly vulnerable to windstorms. High winds can take down trees and power lines, resulting in blocked transportation routes, cut off electricity and telecommunication networks, and property destruction. Lack of electricity is life-threatening for those relying on electric life supports systems and electrical heating and cooling systems. In addition, isolated populations may have limited access to information and communication resources that could prevent injury or death. Future assets are not expected to experience increases in vulnerability to tornadoes due to land use changes or change in population demographics.

Tornadoes are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 3.20 determined.

4.3.14 Wildfire (Vulnerability Score 3.20)

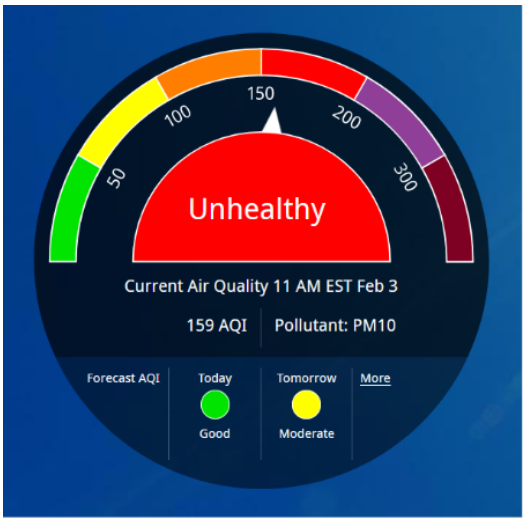
Location:
Severe wildfires are uncommon throughout Vermont, but minor fires are regular occurrences and could conceivably occur in any part of Waltham. Un-mowed field edges and grass or shrub vegetation are the most likely locations for fires to start. In Waltham, Buck Mountain's steep topography and heavily forested features would speed the spread of wildfires and make them very challenging to contain.

Extent:
Wildfire conditions in the Champlain Valley are typically at their worst either in spring when dead grass and fallen leaves from the previous year are dry and new leaves and grass have not come out yet. The majority of fires in Vermont are caused by burning debris, though they can be a result of naturally occurring influences such as lightning, and exacerbated by drought and extreme heat. Open burning of natural and untreated wood, brush, weeds, or grass requires a 'Permit to Kindle Fire' from the Town Forest Fire Warden. When there is significant fire danger, open burns are banned entirely.



Wildfire risk may be increased by the presence of invasive *Phragmites* (*Phragmites australis*), or Common Reed, a highly aggressive, non-native wetland grass. The plant creates a thick accumulation of dead biomass that can produce high-intensity fires, threatening structures near wetlands and roadsides, particularly in late winter and early spring, due to its dense, tall, and dry stands.

The Air Quality Index (AQI) is EPA's index for reporting air quality, ranging from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. AQI categories are:



- **Less than 50: Good**
- **51 to 100: Moderate-** Concerning for some people who may be unusually sensitive to air pollution
- **101 to 150: Unhealthy for some groups**- Concerning for some groups- concerning for people highly affected by air pollution: People with heart or lung disease, Older adults, Children
- **151 to 200: Unhealthy**- concerning for Everyone
- **201 to 300: Very unhealthy**- concerning for Everyone
- **301 to 500: Hazardous**- concerning for Everyone

There is an AQI for major pollutants such as ozone, particle pollution (PM2.5 and PM10), and gaseous particles. Air from pollution such as wildfire smoke – a mixture of particle and gas pollutants from burning trees, buildings and other materials – is unhealthy to breathe in, especially for people who are highly affected by air pollution.

Previous Occurrences:

There has not been a major wildfire in Waltham or any of Vermont in the last 50 years, but small fires do occur relatively frequently. In the last decade, the average size of wildfires has been 1.72 acres and there were only 11 brush fires in all of Addison County in 2024. In July 2025 a wildfire in the town of Fair Haven, in neighboring Rutland County burned approximately 11 acres over 6 days before being contained by state and local firefighters. The cause of that fire remains unknown, but it occurred during a period of hot, dry, and windy conditions. A March 2026 fire in Ferrisburgh burned about 120 acres of field, woods and swamp, as well as an outbuilding, and required assistance from 10 fire department crews to contain. On April 28-29, 2026, a 54-acre wildfire burned in the Green Mountain National Forest of Middlebury-Ripton, requiring multiple municipal, state, and federal agencies to control.

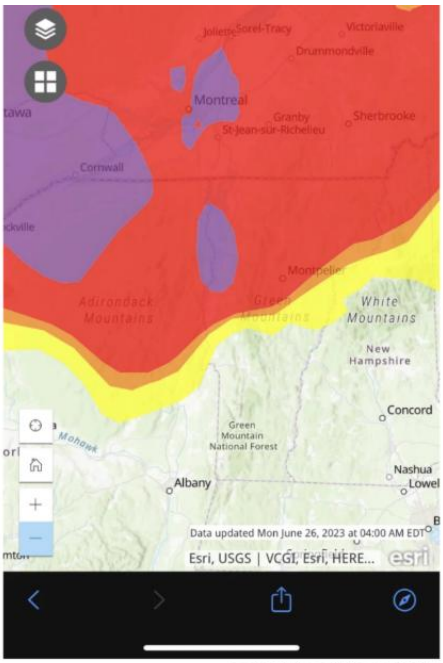
Most wildland fires occurring in vegetation or natural fuels in the area are caused by debris burning or campfires and are quickly reported and contained. A campfire that got out of control in Starksboro damaged just over 4 acres in an inaccessible area off Big Hollow, and a small campfire in Bristol burned about 2 acres. The Town Forest Fire Warden issues permits and local fire departments respond for wildland fire control with mutual aid assistance from other towns and the State, when necessary.



March 2026 Wildfire in Ferrisburgh, VT

The greatest impacts to communities from wildfires are smoke from wildfires in Canada and the western United States. In 2023, Waltham and much of Vermont experienced substantial impacts from Canadian wildfire smoke from June 5 to 8, and again in August 2025. The entire state experienced poor air quality, with records for highest ever 24-hour average concentration of fine particulate matter (PM2.5, µg/m3), broken several times over multiple days and far exceeding the previous records. Air quality was worst in the south and west of Vermont, with the Air

Quality Index exceeding 400 in some locations, considered "hazardous" for all populations, resulting in cancellations of outdoor activities and widespread distribution on N95 masks to the public.



April McCullum / Vermont Public

A map of air quality, provided by the Environmental Protection Agency, shows parts of Vermont and Montreal with "very unhealthy" air quality early in the morning of June 26, 2023.

Future Probability:

Although wildfires are currently uncommon in Vermont, the hazard committee acknowledged that extended periods of warming due to climate change have the potential to increase the occurrence of wildfire events. Unhealthy wildfire smoke from out-of-state wildfires is also expected to affect Vermont more frequently and severely in the future, as climate change is already increasing wildfire risks in the western United States and Canada. Changes in climate are expected to significantly increase the probability of wildfire events, if not in Waltham, then in distant forested areas that still affect local atmospheric conditions.

Local land use changes are not expected to significantly affect their impact on community assets, but changing population demographics, especially aging populations, may create more vulnerability and compounding factors. For instance, older residents may have more breathing issues, or experience more social isolation. Limited numbers of volunteer fire fighters are available, especially for daytime and early evening hours when wildfires are most likely to be initiated, make response efforts challenging and reliant on mutual aid from neighboring communities.

Vulnerability Summary:

Populations that are more vulnerable to wildfire include firefighters, isolated residents, and immune-compromised individuals. Future assets are not expected to experience increases in vulnerability to wildfires due to land use changes or change in population demographics.

Wildfires are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 3.20 determined.

4.3.15 Hail Storm (Vulnerability Score 2.80)

Location:
Hail can occur anywhere in Vermont, but storms tend to be highly localized and limited to a relatively small area.

Extent:

Hail is considered a relatively infrequent occurrence in Vermont. Storms can be significant to local farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage, including both structures and vehicles. Hailstone size can range from the size of a pea to the size of a melon.

Previous Occurrences:

There have been several significant hailstorms documented in Waltham since 1970. There have been documented occurrences in neighboring Bridport (7) and Orwell (2), all between 2008 and 2014 and all with magnitudes of quarter and half-dollar equivalent in hail size. No property or crop damage was recorded as a result. Hailstorms usually occur in Vermont during the summer months and generally accompany passing thunderstorms.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Waltham	0	0	0	0	3	0	1	0	0	0	0	0
Neighboring Towns	0	0	0	0	2	3	6	1	0	0	0	0

Source: https://www.ncdc.noaa.gov/stormevents/

Future Probability:

Significant hailstorms are likely to occur relatively infrequently, and have not shown significant change in frequency over time. According to the 2018 National Climate Assessment, changes in the frequency or severity of hail events are still uncertain. Changes in climate may slightly increase the probability of Hail Storms, but projected land use and population changes are not expected to affect their impact on community assets or vulnerable populations.

Vulnerability Summary:

The impact from hail is considered to be negligible to infrastructure, life, the economy and the environment. However, hail can damage property, young and tender plants, and cause bodily harm to those individuals unfortunate enough to be caught outside. As a result, farmers and outdoor recreationists are more vulnerable to hailstorms than other groups of people.

Hail Storms are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 3.20 determined.

4.3.16 Insect-borne Illness (Vulnerability Score 2.80)

An infectious disease is caused by micro-organisms, such as bacteria, viruses or parasites. A vector-borne disease is an infectious disease that is transmitted to humans by blood-feeding arthropods, including ticks, mosquitoes, and fleas, or in some cases by mammals (e.g. rabies). For the purposes of this plan, Waltham has separated tick-borne and insect-borne diseases, transmitted primarily through mosquitoes, into this separately evaluated hazard.

Waltham is not a member of Insect Control District (ICD). There are only two insect control districts in the state of Vermont (the Lemon Fair ICD in Cornwall-Bridport-Weybridge, and the other is located in the towns on the east side of Otter Creek). The LFICD has identified about 800-900 treatable acres along the Lemon Fair River, and up to 400 acres in the Cornwall Swamp.

The Vermont Department of Health has separated vector-borne and other infectious diseases into five threat categories. Diseases spread by ticks and mosquitoes include:

Threat Classification	Disease	Vector
Diseases already present in Vermont that may be exacerbated by climate change	West Nile Virus	Mosquitoes
	Eastern Equine Encephalitis	Mosquitoes
	Lyme Disease	Ticks
	Anaplasmosis	Ticks
	Babesiosis	Ticks
	Hard Tick Relapsing Fever	Ticks
	Jamestown Canyon Virus	Mosquitoes
	Tularemia	Ticks, Flies
	Powassan Virus	Ticks
Diseases that may spread to Vermont even without contribution of climate change, whose spread to and transmission of Vermont could be exacerbated by climate change	St. Louis Encephalitis	Mosquitoes
	Western Equine Encephalitis	Mosquitoes
	La Crosse Encephalitis*	Mosquitoes
	Ehrlichiosis	Ticks
	Alpha-gal Syndrome	Ticks
	Rocky Mountain Spotted Fever	Ticks
Diseases with vectors that may spread to Vermont by the end of the century under a higher emission scenario	Dengue	Mosquitoes
	Zika Virus	Mosquitoes
	Chikungunya Virus	Mosquitoes
Diseases that have or may in the future have competent vectors in Vermont, but are unlikely to become established in Vermont despite a vector presence	Yellow Fever	Mosquitoes
	Malaria	Mosquitoes
	Chagas Disease (insects)	Insects
	Rift Valley Fever	Mosquitoes
Diseases that may be present in Vermont or may spread to Vermont in the future but whose link with climate changes expected in Vermont is tenuous.	Bartonellosis (fleas/lice)	Fleas/Lice
	Plague	Fleas (rodents and cats)

(from 2016 Vermont Climate Health Report see full chart in infectious disease section).

Location:

In Waltham, mosquito-borne illness poses a seasonal health threat, particularly during the warmer months when mosquito populations flourish. The Lemon Fair River, with its slow-moving waters and adjacent floodplains, creates ideal breeding grounds for mosquitoes, is the primary habitat for a floodplain mosquito known as *Aedes vexans* (a nuisance mosquito).

The wetlands around Dead Creek provides a large, undisturbed wetland habitat where *Culiseta melanura* black mosquito larvae thrive, and are known to carry Eastern Equine Encephalitis (EEE). Additionally, numerous wet areas on private properties—such as poorly drained lawns, clogged gutters, and standing water in containers—serve as smaller, but widespread breeding sites that help sustain local populations of Common or Northern House Mosquitoes (*Culex pipiens)* known to carry diseases such as West Nile virus.

The risk to surrounding populations varies based on proximity to these breeding areas and individual property conditions. Residents living near wetlands may face elevated exposure, particularly if preventative measures are not taken to control standing water or limit outdoor activity during peak mosquito hours. However, even those farther from large wetlands may be affected due to mosquitoes traveling short distances and breeding in overlooked backyard environments. Public health agencies urge continued surveillance and mosquito control efforts, along with public education campaigns, to reduce the risk of transmission and protect community health throughout the region.

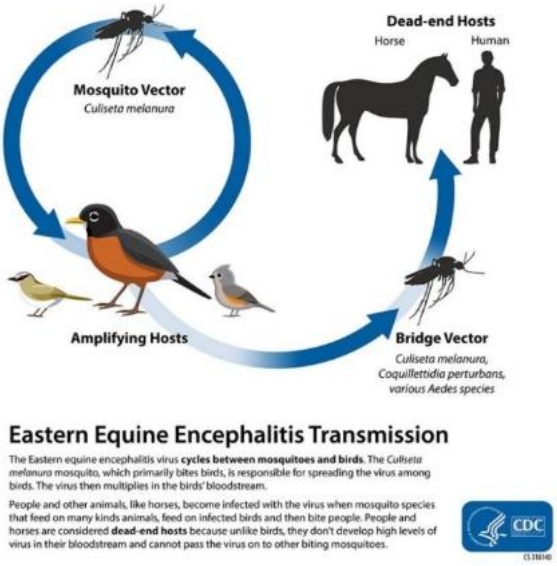
Extent:

West Nile virus (WNV) is a Flavivirus from the family Flaviviridae that can infect a wide range of vertebrates. Birds are the natural reservoir for WNV. WNV is maintained in nature in a mosquito–bird transmission cycle primarily involving Culex mosquitoes. Many species of birds survive their infections and develop permanent immunity; the virus can even become amplified in some bird species, contributing to the transmission cycle between birds and mosquitos. However, several species become ill and die, particularly corvids such as crows, blue jays, and ravens.

Approximately 80% of humans infected with WNV do not develop symptoms, and 20% experience a febrile illness. Less than 1% develop severe neurologic illness, such as encephalitis or meningitis, which can be fatal in a small percentage of cases. People over 50 years of age and individuals with weakened immune systems are at greatest risk for severe illness.

The virus was first detected in Vermont in 2000 and has spread to all 14 counties. WNV is considered enzootic and widespread in Vermont, and the risk is considered uniform throughout the state. Active mosquito-based WNV surveillance is conducted June through October every year throughout Vermont, and passive veterinary and human surveillance is conducted year-round.

Eastern Equine Encephalitis virus (EEV) is maintained in nature through avian hosts and *Culiseta melanura* mosquitoes located primarily in freshwater, hardwood swamps. Mosquito species from the genera *Aedes, Ochlerotatus, Coquillettidia*, and *Culex* that bite both birds and mammals are considered "bridge" vectors and allow transmission of EEEV to mammals



The virus is well established in North America, but human cases are relatively uncommon, with an annual average of 11 cases reported nationally during 2010–2019. Most EEEV activity has occurred in the Atlantic, Gulf Coast, and Great Lakes states. The first evidence of EEEV in Vermont was identified through a 2010 deer and moose serosurvey.

In humans, an infection with EEEV can vary from asymptomatic to severe illness. People who become ill with an EEEV infection either have systemic or encephalitic disease. Symptoms of a systemic illness include the abrupt onset of fever, chills, fatigue, arthralgia, and myalgia, which lasts 1–2 weeks. Those with encephalitic disease may have fever, headache, irritability, vomiting, diarrhea, convulsions, and other symptoms; approximately one third of people with encephalitis from EEEV infection die and about half of those who survive have some degree of permanent neurologic damage.

Jamestown Canyon Virus (JCV) is a bunyavirus belonging to the California serogroup and circulates in nature in a cycle including deer and various mosquito vectors. The transmission cycle of JCV is still not fully understood, but it is thought that early season mosquitoes, such as Ochlerotatus species, play a significant role in the early amplification of the virus within deer populations. These species overwinter as eggs and may be infected when they are laid in the fall by an infected female mosquito. When the eggs hatch after the snow melts in the spring, they are able to transmit the virus when they take their first bloodmeal. Late season amplification as well as transmission to humans is also thought to be connected to certain Anopheles mosquitoes, which readily bite mammals, including humans.

Many people infected with JCV do not develop any illness, but the proportion of asymptomatic infections among all infections is unknown. In people who develop illness, JCV will cause a mild, febrile illness. Some patients also report respiratory symptoms, such as cough, rhinitis, or pharyngitis. The incubation period for JCV disease is unknown. Neuroinvasive disease (meningitis or encephalitis) has been reported. No human infections with JCV have been reported in Vermont to date. In recent years the number of annual JCV cases reported to the CDC by other states has been increasing, although this is thought to be due to increased awareness and testing efforts.

Lyme Disease
In 2019, Vermont ranked highest in the United States for Lyme disease incidence, and is often at or near the top of incident rankings. The Vermont Department of Health has tracked Lyme disease cases in the state since for several decades, though not at the town-level. Shifting habitats and climate changes continue to create favorable conditions for pathogen-carrying ticks to proliferate.

<u>Previous Occurrences</u>:
The state has an Arbovirus Surveillance and Response Plan[1], updated in 2024, that it implements with sampling and testing. Several insect-borne diseases are frequently present in and around Waltham; West Nile Virus was confirmed in mosquito populations in Vergennes and New Haven in August and September of 2023, and in Vergennes in July 2026. There had not been any cases of Jamestown Canyon Virus in Vermont until the first human case of the virus was confirmed in Windsor County in 2025.

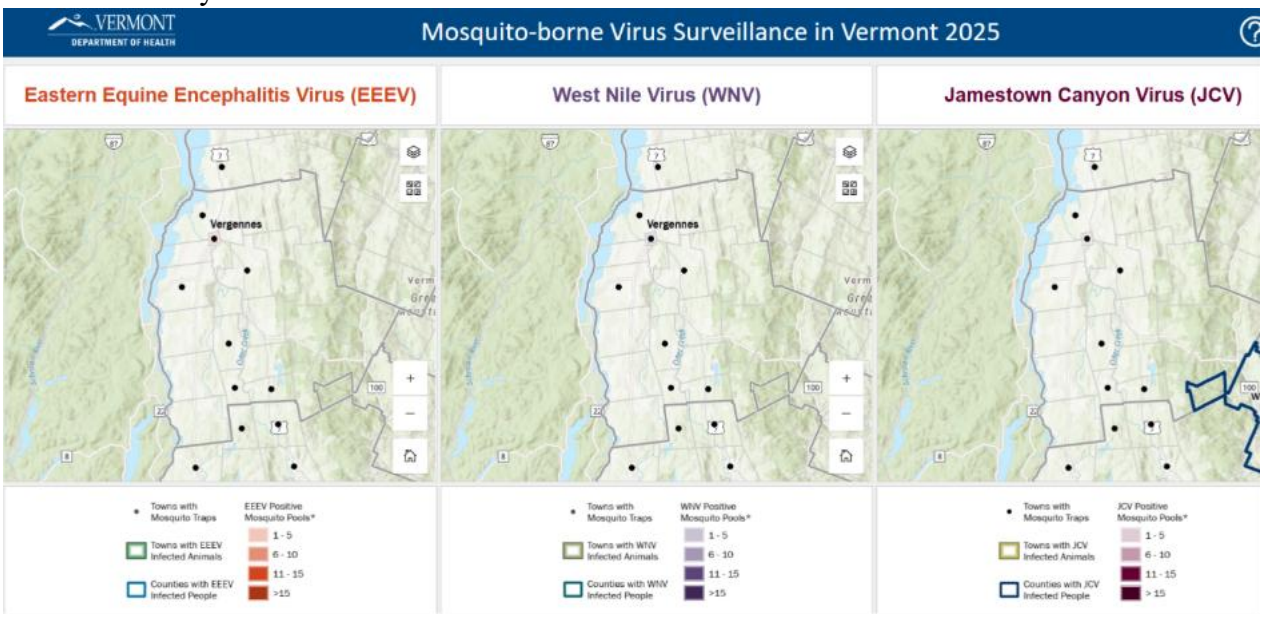


Figure. 2025 Surveillance Map [2]

<u>Future Probability</u>:
Climate change is intensifying the risk of mosquito-borne illnesses in Waltham, Vermont, as warmer temperatures and increased precipitation create more favorable conditions for mosquito proliferation. The expansion of mosquito habitats, coupled with longer breeding seasons, heightens the potential for diseases such as Eastern Equine Encephalitis (EEE) and West Nile virus to affect the region. This trend is evident in the broader Northeast, where EEE cases have emerged in states including Vermont, New Hampshire, and Massachusetts, prompting public health advisories and preventive measures. In Vermont, the combination of milder winters and wetter summers has been linked to a surge in mosquito populations, thereby increasing the likelihood of disease transmission.

The increase in Lyme disease is the most significant trend in infectious disease cases from ticks in Vermont. The Vermont Department of Health reports a dramatic increase in reported cases of

Lyme disease around the state and milder, shorter winters increase the potential for infection through tick bites. Additionally, early successional habitat on road edges and retired farmland could provide a more suitable habitat for ticks and their hosts, which may lead to further spread of Lyme disease.

Vulnerability Summary:

People who are most vulnerable to insect-borne diseases include immunocompromised individuals, elderly and young populations, and those frequently outdoors. Due to weakened immune systems or compounding factors of other illnesses or stressors these populations are at heightened risk of infection and death. Outdoor laborers and recreationalists are especially vulnerable to mosquito-vector transmission and tick bites that may cause Lyme disease. Future assets are not expected to experience increases in vulnerability due to land use changes or changes in population demographics.

Insect-borne Illnesses are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 2.80 determined.

4.3.17 Inundation Flooding (Vulnerability Score 2.50)

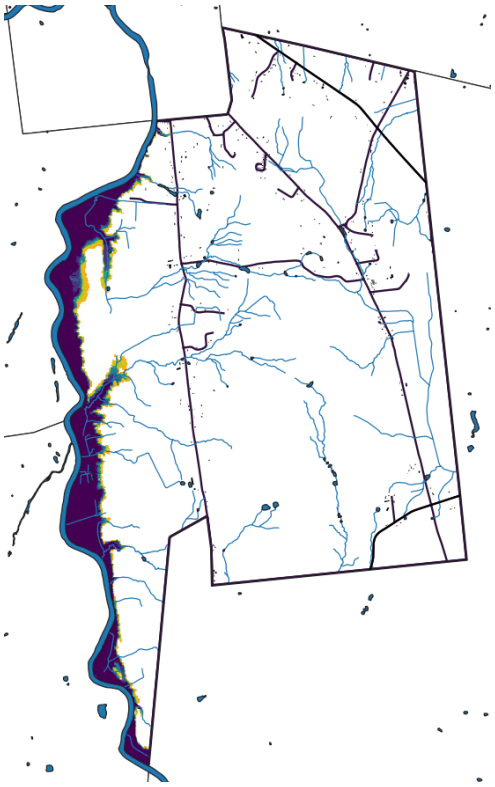


Figure. Lake Champlain Basin Lidar-Informed Flood Inundation recurrence intervals

Location:

Minor inundation flooding is a regular occurrence in Waltham. The 1% annual chance of flooding Special Flood Hazard Area (aka 100-year floodplain) identified by FEMA is primarily around the Otter Creek along the western side of town (see **2.2.5. Flood Resiliency Map, page 20 and Appendix**). There is regular flooding in the low-lying areas that are entirely farmland.

A FEMA Flood Insurance Study (FIS) performed in August 5, 1986 identified low lying areas of Waltham that were subject to periodic flooding in the floodplains of Otter Creek but no damage to structures had occurred.

Extent:

All structures and residences in Waltham are located well above known floodplains. Most FEMA-identified special floodplain hazard area in the municipality is farmland along Otter Creek.



The Town of Waltham has been a participating member of the National Flood Insurance Program since 1986 and as such, has adopted zoning by-laws designating Flood Hazard Areas including associated regulations for administering those areas. The most current floodplain maps were adopted August 5, 1986 and are available on paper copy and unofficial digitized versions. The availability of alternate sites and the adoption of flood hazard regulations have thus far discouraged development along these low-lying areas due to difficulties in disposing of septage and the costs of complying with floodplain regulations. There are no "repetitive loss" or "severe repetitive loss" properties in Waltham.

Areas along the wetlands near Green Street may also be at some flooding risk and are identified within the FEMA-identified special floodplain hazard area.



Green Street and adjoining wetlands in Special Flood Hazard Area

Previous Occurrences:

The 1986 FEMA Flood Insurance Study (FIS) did not identify any flood events that caused damage to structures in the floodplains of Otter Creek. Much of Waltham is relatively flat and its main waterways rise every spring through agricultural fields, so there has been no development in those areas. As a result, inundation flooding has not historically affected Waltham and there have been no recent incidents.

Future Probability:

Flood hazard areas for Waltham and all of Addison County are currently being updated by USGS for FEMA and are expected to be finalized by 2028. The Zoning Administrator implements the substantial improvement/substantial damage provisions of the town's floodplain management regulations by prohibiting substantial improvement and post-event repairs that will result in any increase in flood levels. All new construction and substantial improvements require the granting of a conditional use permit. Changes in climate and high rainfall events may increase the probability of inundation flooding events, but land use and development changes are not expected to affect their impact on community assets or vulnerable populations.

Vulnerability:

The Town of Waltham, with its historic development patterns and large wetland areas, is relatively inundation flood-safe. Future assets are not expected to experience increases in vulnerability due to land use changes or change in population demographics.

Inundation Flooding events are considered a **MODERATE PRIORITY** for the Town of Waltham, with an overall vulnerability score of 2.50 determined.

5. Community Mitigation Strategies

Requirement 44 CFR § 201.6(c)(3)(i)
(Goals to reduce vulnerability to Hazards)

5.1 Hazard Mitigation Goals by Hazard Type

The Town of Waltham has identified that its goals for hazard mitigation are to reduce vulnerabilities to the hazards identified in section 4.3 and mitigate their potential harmful effects. In doing so, it also recognizes that political will and lack of funding stand in the way of many mitigation projects. The town particularly supports local residents' efforts to mitigate their personal risks. The Town also supports projects that lead to a positive benefit vs. cost evaluation and which the voters can afford.

Goal 1: Increase Community Awareness of Waltham's Vulnerability to Natural Hazards and Work towards developing a Community Social Resilience Ethic

Objective: Inform and educate the community about the types of hazards the Town is exposed to, where they occur, how to prepare, and recommended responses

Goal 2: Reduce Vulnerability of People, Property, and the Environment to Natural and Human-influenced Hazards

Objective: Provide mechanisms to enhance life safety
Objective: Reduce impacts to critical facilities and services
Objective: Reduce impacts to existing buildings and infrastructure to the extent possible.
Objective: Reduce impacts to future development and infrastructure to the extent possible
Objective: Reduce impacts to the town's natural and historic resources
Objective: Reduce impacts to public health

Goal 3: Increase Interagency Capabilities and Coordination to Reduce the Impacts of Natural and Human-influenced Hazards

Objective: Continue to collaborate and coordinate with other agencies on planning, projects, hazard response, and funding opportunities

Requirement 44 CFR § 201.6(c)(3)
(Existing capabilities and ability to expand)

5.2 Authorities, Policies, Programs, Resources

5.2.1. Authorities of Town Officials:

Selectboard: The Selectboard is responsible for the basic administration of the town. They take care of roads, make appointments to other boards and commissions, and authorize expenditures of voted budgets. The selectboard may enact ordinances and rules in many areas including traffic regulation, regulating nuisances, managing solid waste, dogs and recreation.

Planning Commission: The Planning Commission is responsible for long-range planning in a town particularly as it relates to future land uses and resilience. They prepare a municipal plan and zoning bylaws which are adopted by the Selectboard. Planning Commission members are appointed by the Selectboard.

Zoning Administrator: The Zoning Administrator (ZA) is appointed by the town's Selectboard with consideration given to the recommendation of the planning commission. Their responsibilities include administration and enforcement of a town's zoning bylaws, The ZA and usually also serve as the administrator of town floodplain regulations.

Tree Warden: The Town Tree Warden is responsible for the shade and ornamental trees within the town rights-of-way. They oversee tree health and removal when necessary. The tree warden is appointed by the Selectboard.

Fire Warden: The Town Forest Fire Warden has the responsibility for suppression of wildland fires, regulating open burning in the town by issuing burn permits, and wildfire education/prevention. The Town Fire Warden is appointed by the state Commissioner of Forests, Parks and Recreation with approval by the town's Selectboard.

Health Officer: The Town Health Officer is the executive officer of the local Board of Health.

A local board of health may make and enforce rules and regulations…relating to the prevention, removal, or destruction of public health hazards and the mitigation of public health risks. The Town Health Officer is appointed by the Commissioner of Health with approval by the local Selectboard. They take direction from the state Department of Health in investigation and enforcement of public health issues.

Town Service Officer: The Town Service Officer's responsibilities are to coordinate aid for residents needing assistance during hours when State offices are closed. Many towns rely on State agencies for 24/7 emergency assistance programs.

Emergency Management Director: Waltham has appointed a town resident as emergency Management Director. The EMD is responsible for the organization, administration and operation of the local emergency management organization. Emergency managers prepare annual local emergency management plans, coordinate a local emergency management group and perform emergency management functions at the local level.

Town Road Contractor: Vermont town road crews maintain municipal highways, grading dirt roads, clearing culverts, and plowing snow. Municipal road departments are managed by a road foreman who reports to the selectboard. The Town of Waltham contracts with a private individual for road maintenance.

5.2.2. Current policies, programs, resources

These may be expanded on for the following identified hazards:

Inundation flooding and flash flooding

Waltham addresses inundation flooding through its longstanding Flood Hazard Area regulations i**n its** Zoning, Subdivision, and Floodplain Regulations (updated in 2019), which regulates development within flood-prone areas to safeguard structures and minimize erosion risks. This area is defined by the Special Flood Hazard Areas defined by the FEMA Flood Insurance Rate Maps effective August 5, 1986 . Updated flood maps are in process from FEMA and USGS and are expected to become official in winter 2027. The map Special Flood Hazard Area will not vary considerably from the current (1986) maps.

However, there are several pieces of NFIP-required text that do not appear in the town zoning, including:

- demonstration that cumulative effects of any development encroachments will not raise the base flood elevation by more than 1 foot,
- recreational vehicle standards,
- definition of lowest floor and use in elevation standards, and
- definition of "Substantial damage" and explicit SI/SD determination procedures

As a result, the town has never been enrolled in the National Flood Insurance Program. The town planning commission is currently considering whether to add these language additions or implement a wholesale adoption of the Vermont Model Flood Bylaw in order to best meet the NFIP requirements.

Structure Fires and Wildfires

Waltham does not provide fire or rescue services. Fire and rescue services are provided by the City of Vergennes Volunteer Fire Department by annual contract.

5.2.3. Current resources

The Town of Waltham's annual budget is slightly more than $1 million annually. Receipts are primarily from property taxes, with less than 1% from grant incomes, fines fees and licenses, zoning permits, and other sources of income. Approximately $860,000 is paid to the school district and the balance, $360,000 goes to the General Town Budget, including administration, highway department and capital expenses. The town's budget is structured to address various operational and community needs. Key allocations include:

- General Fund: Covers administrative expenses, including salaries for town officials, office supplies, and other operational costs.
- Public Safety: Funds allocated for fire protection services, emergency medical services and law enforcement (Addison County Sheriff) support.
- Public Works: Includes road maintenance, snow removal, and infrastructure repairs.
- Health and Welfare: Supports health officers, animal control, and contributions to health-related organizations.
- Recreation and Culture: Funds for community events, library services, and historical preservation.
- Debt Service: Payments on any outstanding municipal debts.

The budget also outlines anticipated revenues from property taxes, state aid, and other local sources to balance expenditures.

Current Grants and Funding Sources

Waltham actively seeks external funding to supplement its budget. Notable grants and funding sources include:

- State and Federal Grants: Applications submitted for infrastructure improvements and community development projects.
- Donations and Contributions: Received from local organizations and residents to support specific initiatives.
- Intergovernmental Transfers: Funds from county or state agencies for designated programs.

These funding sources are detailed in the "Grant Activity" section of the town report, highlighting the town's efforts to secure additional resources.

Potential Grants for Future Hazard Mitigation

To enhance Waltham 's resilience against natural hazards, the town may consider applying for the following grants:

- Hazard Mitigation Grant Program (HMGP): Provides funding for projects that reduce disaster risk, such as infrastructure upgrades and property buyouts.
- Building Resilient Infrastructure and Communities (BRIC): Supports proactive mitigation projects, including planning and code enforcement activities.
- Flood Mitigation Assistance (FMA): Offers grants for flood risk reduction projects, particularly for properties insured under the National Flood Insurance Program.
- Community Development Block Grant - Disaster Recovery (CDBG-DR): Funds long-term recovery efforts in areas affected by significant disasters, focusing on infrastructure and housing restoration.

To be eligible for these grants, Waltham must maintain an updated Local Hazard Mitigation Plan, be in good standing with the National Flood Insurance Program, and have an adopted Local Emergency Management Plan.

By leveraging these funding opportunities, Waltham can proactively address potential hazards and enhance the community's safety and resilience.

5.2.4. Authority and Capabilities to Expand Funding

As a small town governed by a Selectboard and annual Town Meeting, the Town of Waltham has limited authority and capacity to expand its funding capabilities independently. However, it does have some tools and options within its municipal authority:

- **Property Tax Adjustments**: The town can propose and approve increases to property tax rates through the Town Meeting process, allowing for additional revenue—though this depends on voter support and is often constrained by affordability concerns in a small population.
- **Grant Applications**: Waltham has the authority to pursue state and federal grants, and its annual report indicates it does so. Successful grant-seeking depends on administrative capacity, competitive proposals, and alignment with state and federal priorities.
- **Special Assessments and Fees**: The town can levy fees or create special assessment districts for specific projects (e.g., road improvements), though this is rare in small rural towns.
- **Intergovernmental Partnerships**: Waltham can collaborate with neighboring towns or regional planning commissions (e.g., Addison County Regional Planning Commission) to access shared services, technical assistance, and larger funding pools.

Limitations:

- **Administrative Capacity**: Small towns like Waltham often lack full-time staff, grant writers, or dedicated financial planners, limiting their ability to aggressively pursue or manage complex funding streams.
- **Revenue Base**: With a small population and limited commercial activity, Waltham's tax base is modest, restricting local revenue potential.
- **Regulatory Constraints**: State laws cap certain forms of taxation or borrowing, and voter approval is typically required for new spending or debt.

In summary, Waltham has some municipal authority to improve its funding—especially through voter-approved measures and grants—but its small size and limited resources pose real constraints on expanding its financial capabilities. Collaborating regionally and leveraging state/federal programs are its most viable paths to increased funding.

5.3 Project Prioritization Process

Requirement 44 CFR § 201.6(c)(3)(ii)
(Prioritization, Implementation, Administration)

Projects and actions included in Section 5.2 are conducted by the Town of Waltham, GMP or regional and State agencies where noted. The Town encourages its residents to adopt mitigation actions which could protect their personal property by making educational materials available to residents. Mitigation actions identified in Section 5.4, are considered the jurisdiction's priority mitigation actions.

The Town has established the following priorities for choosing mitigation projects: Life safety and the safety of its residents, keeping local roads and bridges open to ensure access for emergency vehicles, and protecting critical infrastructure facilities in the town. These actions/projects are constantly evaluated for benefit to the community, estimated project cost and political will to implement and will be implemented as those factors indicate. Several mitigation projects have been completed in the past five years, and additional work is underway. The Town has established that costs considered are primarily financial, however there are political and social costs considered depending on the action.

The actions identified in Section 5.4 under each hazard have passed a preliminary evaluation utilizing those general concepts by the hazard mitigation committee, and are listed in their order of priority. Before undertaking these projects, they will additionally be prioritized based on their feasibility and a benefit vs. cost review. A minimum C/B result of 1.0 will be required prior to any request for federal mitigation funds. All projects in section 5.4 will be reviewed for progress following any local disaster declaration and will be considered annually as part of overall town budgeting.

5.4 Hazard Mitigation Goals by Hazard Type

Requirement 44 CFR § 201.6(c)(d)(3)
(Revisions due to priorities changes)
Requirement 44 CFR § 201.6(c)(3)(ii)
(Range of actions and projects considered

The following list of proposed mitigation actions and projects was revised from the previous plan due to changes in community priorities. The Hazards Committee identified a comprehensive range of specific mitigation actions from the previous Hazard Mitigation Plan, the State Hazard Mitigation Plan, and the goals and actions of neighboring municipalities, and analyzed each. Projects were considered to reduce the effects of each priority hazard, with emphasis on human life and safety as well as consideration of the new and existing buildings and infrastructure.

The final list includes only those projects which could be considered reasonable and feasible based on cost and political willingness. The town will maximize 406 mitigation opportunities whenever possible when making repairs to Public Assistance eligible damages during a declared disaster.

Each project in this action plan includes an estimated cost, possible funding sources, potential benefits, the lead person or agency responsible for completion of the project and an estimated start and end timeframe for project completion. Timeframes are an estimate only and are dependent upon funding and the political will to complete.

Requirement 44 CFR § 201.6(c)(3)(ii)
(Actions for each identified hazard)
Requirement 44 CFR § 201.6(c)(3)(iii)
(Responsible position, potential funding, expected time frame)

5.4.1 Mitigation Actions by Hazard Type Table

Hazard	Suggested mitigation action(s) for this hazard?	Estimated Cost	Source of Funds	Responsibility	Time-frame	Priority
All-Hazards	Provide community information on Preparation Kits and Go-Bags	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2031	**High**
	Encourage residents to sign up for VT-Alert and Care Registry	None to Town	Volunteer Time	**Em. Management Director**	2026-2031	
	Obtain a back-up generator or solar panels + storage battery for the Town Hall and Office to provide shelter and Emergency Ops. Center	$15,000-$55,000	Grant funding	**EMD,** Select Board	2026-2031, Ongoing	**High**
	Provide education about preparation and safety for power outages	None to Town	N/A	**EMD**	2026-2031, Ongoing	**Medium**
High Winds	Remove dead and dying trees from town rights of way as part of normal maintenance- especially central portion of Route 66	$8,000-10,000/yr	Town highway budget	**Town road contractor**	2026-2031, Ongoing	**High**
	Support GMP efforts to maintain rights-of-way and bury power lines	None	N/A	**Green Mountain Power Corp.**	2026-2031, Ongoing	**Medium**
Flash Flooding & Fluvial Erosion	Pursue specific road projects identified in the town road network system, to be implemented as funding allows:					
	Evaluate and repair damaged and under-sized culverts in town rights-of-way	Varies by project	Town Budget	**Town road contractor**	2026-2031, Ongoing	**High**
	Evaluate, and repair/replace if necessary, high-flood-risk culverts on Route 66 and Maple Street	Varies by project	Town Budget	**Town road contractor**	by 2030	**High**
	Adopt updated flood hazard area language to complete NFIP enrollment and consider adoption of river corridor regulations	None to Town	Volunteer Time	**Planning Commission**	by 2028	**High**
	Implement Road Erosion Inventory and Municipal Road Grant Program, Stone Line ditches when road work is being completed	Varies by project	Town highway budget.	**Town Road Contractor**	2026-2031, Ongoing	**High**
	Provide landowner education for maintaining driveway culverts	None to Town	Volunteer Time	**PC/DRB & EMD**	2026-2031, Ongoing	**High**
	Fund attendance by the Zoning Administrator at NFIP trainings when offered locally	$500	Town operating Budget	**Zoning Admin.,** DRB, or EMD	2026-2031	**Medium**
	Enforce curbcut policy and driveway design standards in current zoning	None to Town	Volunteer Time	**Planning Commission/DRB**	2026-2031, Ongoing	**Medium**
	Update and enforce driveway drainage design standards in zoning	None to Town	Volunteer Time	**Planning Commission/DRB**	by 2028	**Medium**

Hazard	Suggested mitigation action(s) for this hazard?	Estimated Cost	Source of Funds	Responsibility	Time-frame	Priority
Invasive Species	Follow state recommendations for roadside mowing to prevent seed production of Poison Parsnip	None	N/A	**Town Road contractor**	2026-2031, annually	**Medium**
	Provide education and monitoring of Ash Trees and Emerald Ash Borer damage.	None	Volunteer Time	**EMD,** Town Clerk	2030	**Medium**
Severe Ice storm	Support GMP efforts to maintain rights of way and bury power lines	None	N/A	**Green Mountain Power Corp.**	2026-2031, Ongoing	**Medium**
	Manage vegetation in town ROW's to minimize/allow space for powerlines	$5000/yr	Town highway budget	**Town Road Contractor**	2026-2031, annually	**High**
Highway Accident	Maintain contract with Addison County Sheriff for limiting speeding and parking enforcement on Route 66		Town Budget	**Select Board**	2026-2031, annually	**Medium**
	Support lower speed limit on portions of Route 17	Unknown	VTrans	**VTrans**	by 2031	**Low**
Drought	Encourage reporting by residents with dry wells	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2031, Ongoing	**High**
	Provide education to residents about water conservation measures	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2031, Ongoing	**High**
Lightning Storm	Provide lightning-mitigation education materials on the Town website	None to Town	Town Staff Time	**EMD,** Town Clerk	2026-2031, Ongoing	**Low**
Severe Snow Storm	Identify appropriate shelters for people who may need to evacuate due to loss of electricity, isolation, cold temperatures	None to Town	N/A	**Emergency Mngmt Director**	2026-2031	**Medium**
	Maintain snow removal equipment and retain qualified personnel for removal.	$75,000	Town highway budget	**Town road contractor**	2026-2031, Ongoing	**High**

Hazard	Suggested mitigation action(s) for this hazard?	Estimated Cost	Source of Funds	Responsibility	Time-frame	Priority
Severe Heat	Work towards Town Hall capacity as emergency cooling shelter with back-up power	$15,000-$55,000	State grants	**Select Board**	2026-2031	**Medium**
	Encourage residents to sign up for the CARE registry and set up a process to check on vulnerable populations during severe heat events.	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2028	**Medium**
	Develop and implement a Hot Weather-Cooling Shelter plan	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2028	**Medium**
	Identify a regional shelter and develop MOU for opening procedures	None to Town	Volunteer Time	**Emergency Mngmt Director**	by 2030	**Medium**
Severe Cold	Work towards Town Hall capacity as emergency heating shelter with back-up power	$15,000-$55,000	State grants	**Select Board**	2026-2031	**High**
	Encourage residents to sign up for the CARE registry and set up a process to check on vulnerable populations during severe cold events.	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2028	**Medium**
	Develop and implement a Warming Shelter plan	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2028	**Medium**
	Identify a regional shelter and develop MOU for shelter opening procedure	None to Town	Volunteer Time	**Emergency Mngmt Director**	by 2030	**Medium**
Structure Fire	Maintain driveway standards in zoning bylaws to support basic accessibility for emergency vehicles to all structures in town.	None to town	Zoning Administrator time	**Planning commission**, Zoning Administrator	2028	**Medium**
	Continue financial and personnel support of Vergennes Fire Dept	$36,000/yr	Town operating Budget	**Select Board**	2026-2031, Ongoing	**High**
	Support cross-department training between Vergennes-New Haven-Bridport, & ensure Mutual Aid agreements are in place	None to Town	Volunteer Time	**Vergennes FD** Town EMD,	2026-2031, Ongoing	**Medium**
	Support efforts by the Vergennes fire department to install and maintain dry hydrants in town	None to town	Volunteer time	**Vergennes FD** Town EMD	2026-2031, Ongoing	**Medium**

Hazard	Suggested mitigation action(s) for this hazard?	Estimated Cost	Source of Funds	Responsibility	Time-frame	Priority
Infectious Disease Outbreak/ Pandemic	Support training of the Town Health Officer to help mitigate the effects of a pandemic	$500	Town operating Budget	**Town Health Officer**	2026-2031	**Medium**
	Develop and maintain continuity planning and agreements for potential town staff shortages.	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2031	**High**
Tornado	Remove dead and dying trees from town rights of way as part of normal maintenance	$8,000-10,000/yr	Town highway budget	**Town road contractor**	2026-2031, Ongoing	**Medium**
	Encourage residents to sign up for VT-Alert to receive early weather warnings	None to Town	Volunteer Time	**Emergency Mngmt Director**	2026-2031	**High**
	Provide tornado-safety education materials on the Town website	None to Town	Town Staff Time	**Town Contractor**	2026-2031, Ongoing	**Low**
Wildfire	Require outdoor burn permits prior to any outdoor burning.	Annual stipend	Town operating Budget	**Town Fire Warden**	2026-2031, Ongoing	**High**
	Maintain dry hydrants throughout town.	$1000-$5000	Rural Fire Protection Grants	**Vergennes FD**	2026-2031, Ongoing	**Medium**
	Maintain supply of N95 masks and offer to residents	None to Town	State funding	**Emergency Mngmt Director**	by 2027	**Medium**
	Obtain Air Filtration equipment for Town Hall	$5,000	Grant funding	**Emergency Mngmt Director**	by 2028	**Medium**
	Provide educational materials on "firewise" practices on the Town website	None to Town	Town Staff Time	**Town Clerk**	2026-2031, Ongoing	**Medium**
Hail Storm	Provide hail-safety education materials on the Town website	None to Town	Town Staff Time	**Town Clerk**	2026-2031, Ongoing	**Low**
Insect-borne Illness	Provide mosquito-safety educational materials on the use of appropriate repellants and behavior patterns to reduce the mosquito bites	None to Town	Town Staff Time	**Emergency Mngmt Director,** Town Clerk	2026-2031, Ongoing	**High**
Inundation Flooding	Update Town Zoning to meet National Flood Insurance Program (NFIP) standards and adopt new FEMA Flood Insurance Rate Maps	None to Town	Volunteer Time	**Planning Commission/DRB**	By 2027	**High**

6. Plan Maintenance Procedures

Any Hazard Mitigation Plan is dynamic and should not be fixed. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan will be integrated into other plans and updated at a minimum every five years.

6.1 Hazard Mitigation Plan Integration

Requirement 44 CFR § 201.6(d)(3) (Process of mitigation plan integration) Requirement 44 CFR § 201.6(c)(4)(ii)) (Integration process and planning mechanisms)

The municipality will integrate the goals and actions of this hazard mitigation plan into all other municipal planning mechanisms, including the annual Local Emergency Management Plan, annual municipal budget, and 2024 Waltham Municipal Plan (re-adoption due in 2032). The Emergency Management Director and Emergency Management Coordinator will be responsible for integrating the goals, information and strategy of the mitigation plan into other planning mechanisms

6.2 Hazard Mitigation Plan Review/Update Process

1. The Waltham Selectboard assembles a Review/Update Committee to include government officials and interested public.
2. The Committee will discuss the process to determine if any modifications or additions are needed due to changing conditions since the last update occurred. Data needs will be reviewed, data sources identified and responsibility for collecting/updating information will be assigned to members.
3. Other Town plans (Emergency Management Plan, Town Plan, Road Plan, etc.) will be reviewed to ensure a common mitigation thread still exists throughout.
4. A draft update will be prepared based on these evaluation criteria:
    - Changes in community and government processes, which are hazard-related and have occurred since the last review.
    - Progress in implementation of plan initiatives and projects.
    - Effectiveness of previously implemented initiatives and projects.
    - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report.
    - Evaluation of hazard-related public policies, initiatives and projects.
    - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
5. The public will be invited to review and give input on drafts as they are produced.
6. Selectboard members will have an opportunity to review the draft update. Consensus will be reached on any changes to the draft.
7. The Selectboard will notify and schedule a public meeting to ensure adequate public input.
8. The Selectboard will recommend incorporation of community comments into the draft update.

Requirement 44 CFR § 201.6(c)(4)(i)
(Monitoring, Evaluating, and Updating)

6.3 Mitigation Project Status Monitoring and Evaluation

The town of Waltham has outlined a process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy. The plan will be reviewed and updated in its entirety at least every five years as described in Section 6.2 above, the Town will monitor and evaluate its hazard mitigation goals, strategies and actions/projects annually as the town budget is created. A town budget is created by the Selectboard of a town in publicly noticed meetings utilizing budget requests from town committees and the citizenry. This will ensure that progress will be reviewed and actions/projects either added or removed from the towns work plan based on changing local needs and priorities. In creation of the municipal plan by the planning commission, concepts, goals and strategies from this plan will be used to inform the development of that plan and will be incorporated into that plan when appropriate. The progress/status of the mitigation actions identified within the mitigation strategy will be tracked by the Selectboard and Emergency Management Coordinator, who will be responsible for this process and bring mitigation actions to other planning processes. The plan will be evaluated for effectiveness annually and post-disasters (see section 6.5).

Requirement 44 CFR § 201.6(c)(4)(iii)
(Future public participation)

6.4 Public Participation

This Hazard Mitigation Plan solicited and received public input, especially in developing the hazard risk and vulnerability assessment. The municipality will continue to encourage future public participation in mitigation actions after the plan has been approved. Notice of the plan will be made and a copy of the plan along with contact information will be made available on the town website and at the Town Office. While the public are encouraged to read and comment on the plan, the committee understands that the length of the plan following all FEMA requirements is unwieldy and time-consuming for review, and has therefore provided a concise executive summary to provide the main Vulnerabilities, Goals and Mitigation actions The Emergency Management Director and Emergency Management Coordinator will provide a status report on mitigation action progress at the annual Town Meeting and provide information on potential weather-hazards via local networks including Front Porch Forum. Public comments and suggestions will be recorded and incorporated into the upcoming hazard mitigation plan.

6.5 Post-Disaster Review Procedures

Should a declared disaster occur, a special evaluation process will occur in accordance with the following procedures:

1. Within six (6) months of a declared emergency event, the Town will initiate a post disaster review and assessment of actions.
2. This post disaster review and assessment will document the facts of the event and assess whether the existing Hazard Mitigation Plan effectively addressed the hazard.
3. A report of the review and assessment will be created by a Review/Update Committee.
4. The committee will make a determination whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed.
5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on its recommendations and forwards to the Selectboard for their input.
6. Following completion of a public input process, further amendments may be made and a final plan delivered to the Selectboard for adoption.
7. The Selectboard adopts the amended plan.

7. Plan Adoption Resolution

Requirement 44 CFR § 201.6(c)(5)
(Documentation of adoption)

TOWN OF WALTHAM, VERMONT SELECTBOARD ADOPTION RESOLUTION

WHEREAS, the Town of Waltham has occasionally experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Town of Waltham, Vermont Single Jurisdiction All-Hazards Mitigation Plan (Plan)**, which can result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Waltham has developed the **Plan** and received conditional approval from the Federal Emergency Management Agency (FEMA); and

WHEREAS, the **Plan** identifies specific hazard mitigation strategies, and plan maintenance procedures applicable to the Town of Waltham; and

WHEREAS, the **Plan** identifies actions and/or projects intended to provide mitigation for specific natural hazards that impact the Town of Waltham; and

WHEREAS, adoption of this **Plan** will make the Town of Waltham eligible for additional funding to help alleviate the impacts of future hazards;

Now, therefore, be it RESOLVED by Town of Waltham Selectboard:

1. The **Town of Waltham**, **Vermont Single Jurisdiction All-Hazards Mitigation Plan** is hereby adopted as an official plan of the Town of Waltham, Vermont. While content related to Waltham may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Waltham to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions;

2. The respective Town officers identified in the action plan are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Support agencies within the Town of Waltham are also requested to implement actions assigned to them within this plan;

4. Plan maintenance procedures described in Section 6 of this plan are also adopted as part of this resolution.

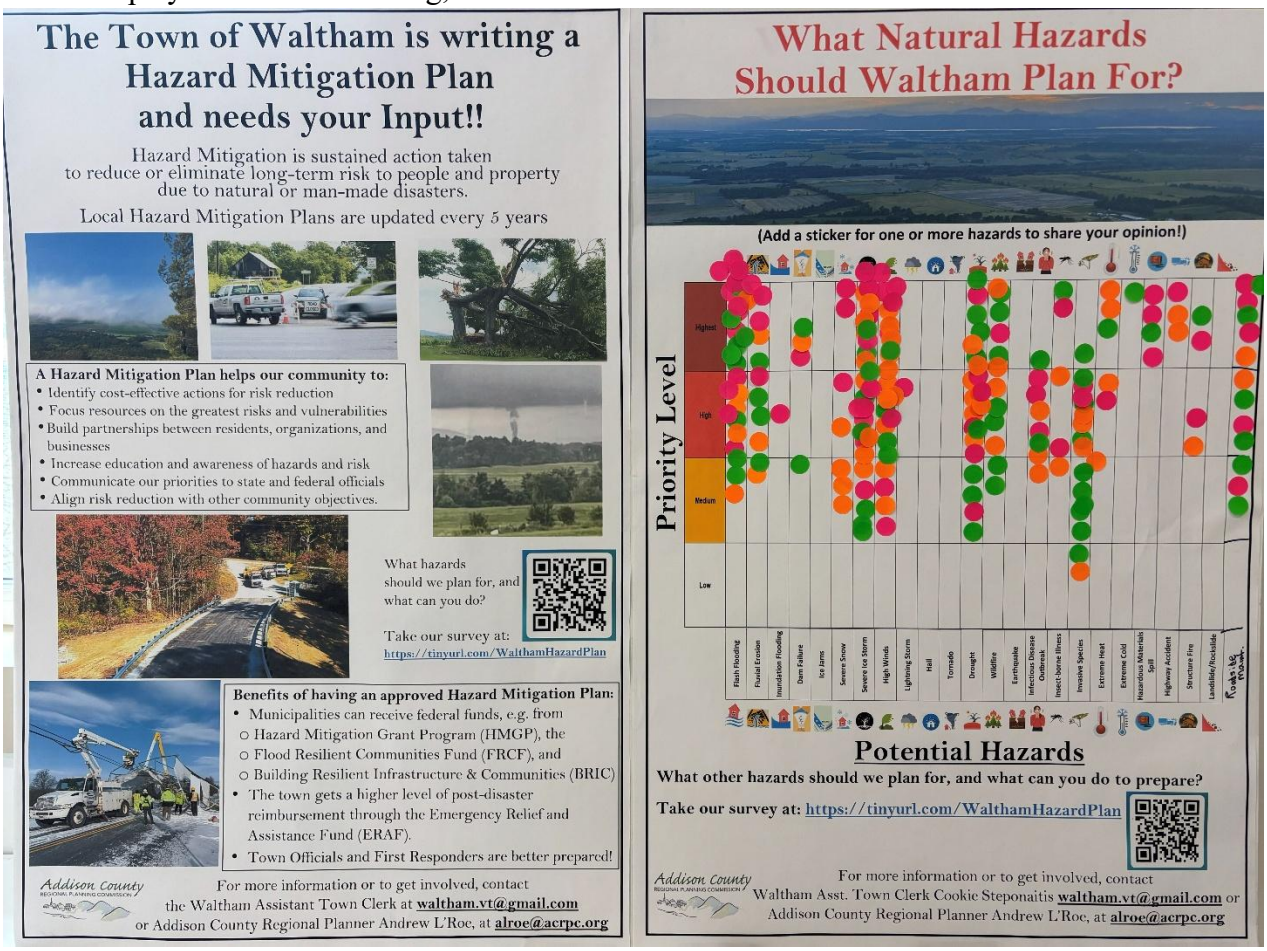
IN WITNESS WHEREOF, the undersigned have affixed their signatures for the Town of Waltham, this ____ day of _____ 202__.

_____	_____	_____
Selectboard Chair	Selectboard Member	Selectboard Member

ATTEST:_____

Appendix 1. Public Outreach

Poster displayed at Town Meeting, March 2026



Online Survey Responses

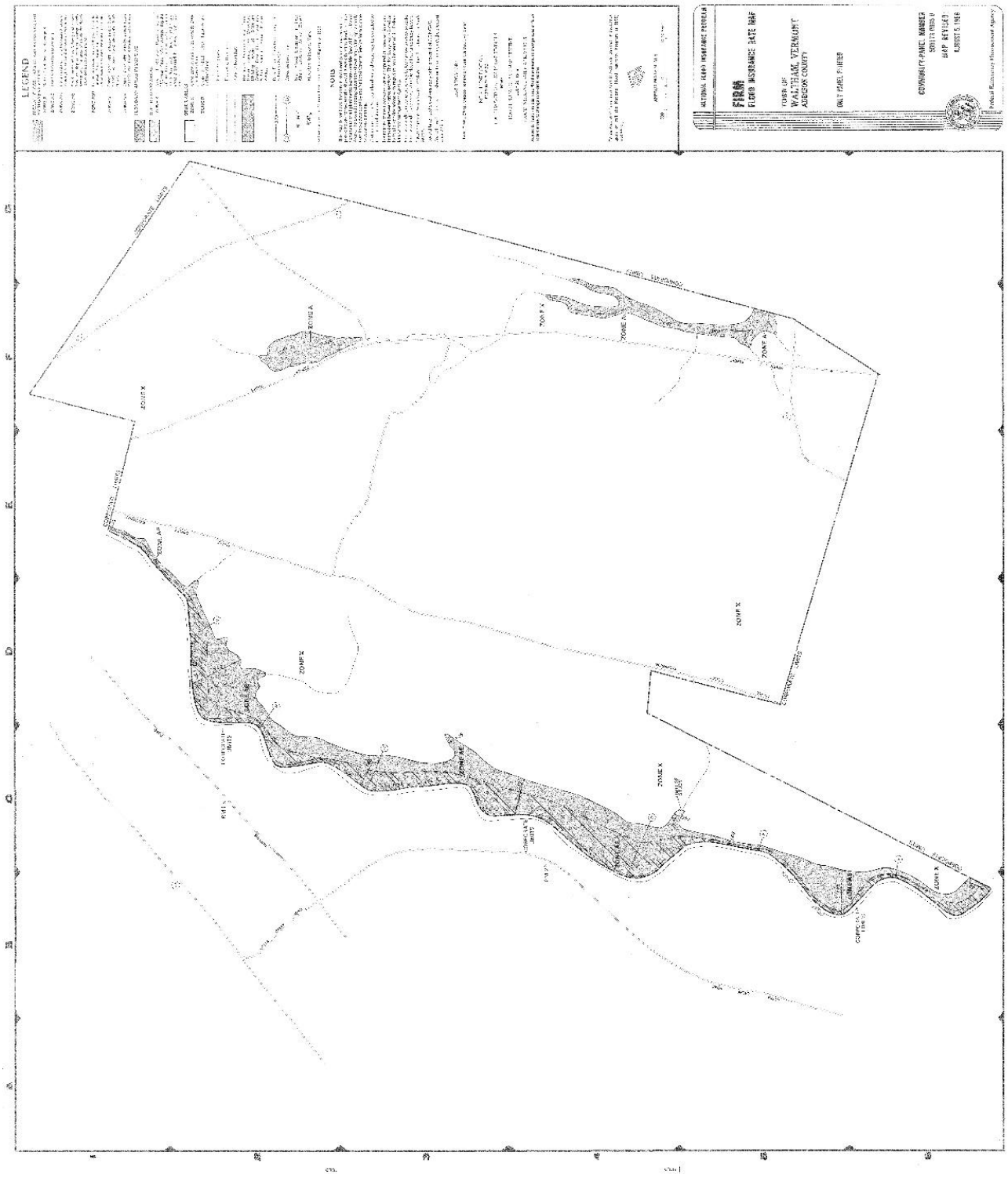
The online survey received 9 responses from Waltham residents, providing the following hazard priority rankings (on 1-5 scale, where 1 = Most Concerned, 5= Least Concerned).

Hazard	Mean Priority (5= Most, 1 = Least)	# of Times Ranked as Most Concern
Severe Ice Storm	3.85	19
Extreme Heat	3.71	4
Flash Fooding and Erosion	3.63	11
Drought	3.60	10
Insect-borne Disease	3.57	4
Infectious Disease	3.53	3
Wildfire	3.30	7
High Winds	3.28	15
Hazardous Materials Spill/Release	3.27	6
Severe Snowstorm	3.27	4
Dam Failure	3.09	3
Extreme Cold	3.01	2
Invasive Species	2.91	2
Inundation Flooding	2.78	0
Lightning Storm	1.13	0
Hailstorm	1.09	0
Landslide	0.81	0
Earthquake	0.72	0
Ice Jam	0.69	0

Appendix 2. FEMA Flood Insurance Rate Map

(Available at https://msc.fema.gov/portal/search?AddressQuery=waltham%20VT)

Number 5001730005B, effective August 5, 1986



Appendix 3. Flood Hazard language in Waltham Zoning, Subdivision, And Floodplain Regulations (2019)

ARTICLE IX: FLOOD HAZARD AREA REGULATIONS

Section 901: STATUTORY AUTHORIZATION

To affect the purposes of 10 V.S.A. Chapter 32, and in accord with the Vermont Planning and Development Act, 24 V.S.A., Chapter 117, Section 4410, 4411, and 4424, there are hereby established zoning regulations for areas of special flood hazard in the Town of Waltham.

Section 902: STATEMENT OF PURPOSE

It is the purpose of these regulations to promote the public health, safety, and general welfare, to prevent increases in flooding caused by the uncontrolled development of lands in areas of special flood hazard, and to minimize losses due to floods by:

1. Restricting or prohibiting use that are dangerous to health, safety, or property in times of flood or cause excessive increase in flood heights or velocities;
2. Requiring that uses vulnerable to floods, including public facilities that serve such uses, shall be protected against flood damage at the time initial construction;
3. Protecting individuals from buying lands that are not suited for their intended purposes because of flood hazard.

Section 903: LANDS TO WHICH THESE REGULATIONS APPLY

These regulations shall apply to all lands in the Town of Waltham, VT identified as areas of special flood hazard on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), dated August 5, 1986, and any revisions thereto.

Section 904: OFFICIAL FLOOD HAZARD AREA MAP

The Official Flood Hazard Area Map shall consist of the Flood Insurance Rate Maps (FIRM). The entire FIRM Map is hereby adopted by reference as part of these regulations. Table V below outlines the specific activity allowances for Flood Hazard Areas and Floodways. The table categorizes activities as permitted (P), conditional (C), prohibited (X), and/or acceptable/exempt of review (A).
V. Summary Table: Development Review in Hazard Areas

#	Activity	Hazard Zone	
	P Permitted **C** Conditional Use Review **X** Prohibited **A** Exempted	**Special Flood Hazard Area**	**Floodway**
1	New Structures	X	X
2	Storage	X	X
3	Improvements to Existing Structures	P, C	C
4	Small Accessory Structures	P	X
5	At Grade Parking	P	C
6	Replacement water supply or septic systems	C	C
8	Fill as needed to elevate existing structures	C	C
9	Fill	X	X
12	Grading	C	C
13	Road maintenance	A	A
14	Road improvements	C	C
15	Bridges and culverts	C	C
16	Channel management	C	C
17	Recreational vehicles	P	P
18	Open space, recreation	A	A
19	Forestry	A	A
20	Agriculture	A	A

New structures are prohibited in the flood hazard areas. New development should not increase the base flood elevation.

Section 905: INTERPRETATION OF DISTRICT BOUNDARIES

The Zoning Administrator shall determine the boundaries of any designated area of special flood hazard by utilizing the base flood elevation data contained in the Flood Insurance Study or, in the absence of such data, by obtaining, reviewing, and reasonably utilizing the official Flood Hazard Area Map and by obtaining, reviewing and reasonably utilizing any base flood elevation data available from a federal or state agency. Interested Persons may appeal the decision of the Zoning Administrator by filing an appeal with the Development Review Board pursuant to the provisions of Sections 370 – 375 of these regulations.

Section 906: PERMIT REQUIRED; PERMITTED USES

A permit from the Zoning Administrator or the Development Review Board is required for all development in areas of special flood hazard. Upon issuance of a permit by the Zoning Administrator, the following open space uses shall be permitted within the area of special flood hazard to the extent that they are not prohibited by any other ordinance and provided that they do not require the erection of structures or storage of materials and equipment, the borrowing of fill from outside the flood hazard area, or channel modification or relocation, and do not obstruct flood flows, affect the water-carrying capacity of the regulatory floodway or channel, or increase offsite flood damage potential.

1. Agricultural uses, such as general farming, pasture, orchard, grazing, outdoor plant nurseries, truck farming, and forestry.
2. Recreation uses, such as parks, camps, picnic grounds, tennis courts, golf courses, golf driving ranges, archery ranges, hiking and riding trails, hunting and fishing areas, game farms, fish hatcheries, wildlife sanctuaries, nature preserves, swimming areas, and boat launching sites.
3. Accessory residential uses, such as lawns, gardens, parking areas, and play areas.

Section 907: CONDITIONAL USES

All new construction, substantial improvement, and development uses prescribed by the Town of Waltham zoning ordinance that do not meet the requirements of Section 906 and fall within the designated area of special flood hazard are permitted only upon the granting of a conditional use permit by the Development Review Board in accordance with the procedures and requirements of Sections 910, 911, and 912 of these regulations.

Section 908: PERMIT REQUIREMENTS AND APPLICATIONS

A zoning permit is required for all proposed new construction, substantial improvements, and other developments, including the placement of manufactured homes, within all lands to which these regulations apply.

All zoning permit applications shall be submitted to the Zoning Administrator, on forms furnished by him or her, who shall determine, on application, whether or not the proposed development is located within the area of special flood hazard by the procedures established in Section 905 of these regulations.

If the proposed use will be located in the areas of special flood hazard and meets all the requirements of Section 906 of these regulations, the Zoning Administrator shall issue a zoning permit. If the proposed use does not meet the requirements of Section 906, the Zoning Administrator shall refer the applicant to the Secretary of the Development Review Board.

Section 909: RECORDS

The Zoning Administrator shall maintain a record of:

1. The elevation, in relation to mean sea level, of the lowest habitable floor, including basement, of all new residential construction or substantial improvement of structures and whether or not such structures contain a basement; and
2. The elevation, in relation to mean sea level, to which such non-residential structures have been flood proofed.

Section 910: CONDITIONAL USE REVIEW PROCEDURES

Upon receiving an application for a conditional use permit under these regulations, the Development Review Board shall, prior to holding a hearing and rendering a decision thereon, obtain from the applicant:

1. Base flood elevation data for all subdivisions and other proposed new developments greater than 5 lots or 5 acres, whichever is the smaller;
2. The elevation, in relation to mean sea level, of the lowest habitable floor, including basement, of all new construction or substantial improvement of structures;
3. Where flood proofing is proposed in lieu of elevation, the elevation, in relation to mean sea level, to which any structure or substantial improvement will be flood proofed;
4. Certification from a registered professional engineer or architect that the designed and proposed method of construction of buildings to be flood proofed are in accordance with accepted standards of practice for meeting the flood proofing criteria of Section 912(1)(b) of these regulations;
5. A description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.

In addition, the Development Review Board shall require such of the following information as it deems necessary for determining the suitability of the particular site for the proposed use:

1. Plans in triplicate, drawn to scale, showing the location, dimensions, contours (2' in the area proposed for development, 10' elsewhere), and elevation of the lot; the size and location on the site of existing or proposed structures, fill or storage of materials; the location and elevations of streets, water supply, and sanitary facilities; and the relation of the above to the location of the channel, floodway, and base flood elevation.
2. A typical valley cross-section showing the channel of the stream, elevation of land areas adjoining each side of the channel, and cross-sectional areas to be occupied by the proposed development.
3. A profile showing the slope of the bottom of the channel or flow line of the stream.
4. Specifications for building construction and materials, flood proofing, mining, dredging, filling, grading, paving, excavation, or drilling, channel improvement, storage of materials, water supply, and sanitary facilities sufficient to allow the Board of Adjustment to determine that all new construction and substantial improvements shall (i) be designed (or modified) and adequately anchored to prevent floatation, collapse, or lateral movement of the structure resulting from hydrodynamic or hydrostatic loads, including the effect of buoyancy, (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
5. That all other permits have been received from those governmental agencies for which approval is required.
6. In unnumbered A zones, the Development Review Board shall obtain, review, and reasonably utilize any base flood elevation data available from a federal, state or other source, as criteria for approval of all new construction and substantial improvements under Section 912(1), (2) and (3) below.
7. The Development Review Board shall notify adjacent communities and the Vermont Agency of Natural Resources, Department of Environmental Conservation, River Management Division prior to approval of an alteration or relocation of a watercourse and shall submit copies of such notifications to the FEMA Administrator.
8. The Secretary of the Board of Adjustment shall transmit one copy of the information required by subsections 910(1) and (2) to the Vermont Agency of Natural Resources, Department of Environmental Conservation, River Management Division in accordance with 24 V.S.A. Section 4424(D)(1).
9. In reviewing each application, the Board of Adjustment shall consider the evaluation of the Vermont Agency of Natural Resources, Department of Environmental Conservation, River Management Division and shall determine that the proposed use will conform to the development standards of Section 7.12 of these regulations.
10. In accordance with 24 V.S.A. Section 4424(D)(2), no permit may be granted for new construction or the development of land in any area designated as a flood plain prior to the expiration of a period of 30 days following the submission of a report to the Vermont Agency of Natural Resources, Department of Environmental Conservation, River Management Division under Section 910(5) above.

Section 911: CONSIDERATIONS BY THE DRB

In reviewing each application, the Development Review Board shall consider:

1. The danger to life and property due to increased flood heights or velocities caused by encroachment;
2. The danger that materials may be swept onto other lands or downstream to the injury of others;
3. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions under conditions of flooding;
4. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners;
5. The importance of the services provided by the proposed facility to the community;
6. The necessity to the facility of a waterfront location;
7. The availability of alternative locations not subject to flooding for the proposed use;
8. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future;
9. The relationship of the proposed use to the proposed comprehensive plan, insofar as it has been developed;
10. The safety of access to the property in times of flood of ordinary and emergency vehicles;
11. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site;
12. The costs of providing governmental and public facilities and services during and after flooding;
13. Such other factors as are relevant to the purposes of this ordinance.

Section 912: CONDITIONS FOR CONDITIONAL USE APPROVAL

As a condition of approval, the Development Review Board may specifically attach conditions as are necessary to meet the purposes and flood hazard area management requirements of these zoning regulations including:

1. All new construction or substantial improvement of any residential structure shall have the first floor and basement floor elevated to or above the base flood elevation;
2. All new construction or substantial improvement of nonresidential structures shall have the lowest floor, including basement, elevated to or above the base flood elevation, or be flood proofed below the base flood level so that the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy;
3. All new construction and substantial improvements with fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided; the bottom of all openings shall be no higher than one foot above grade; openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters;
4. Structures shall be designed (or modified and adequately anchored) to prevent flotation, collapse, or lateral movement of the structure during the occurrence of the base flood, be constructed with materials resistant to flood damage, be constructed by methods and practices that minimize flood damage, and be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;
5. Development within the floodway is prohibited unless a registered professional engineer certifies that the proposed development will not result in any increase in flood levels during the occurrence of the base flood;
6. All new and replacement water supply systems shall be designed so as to minimize or prevent the infiltration of flood waters into the system;
7. All new and replacement sanitary sewage systems shall be designed and located so as to minimize or prevent the infiltration of floodwaters into the systems and discharges from the system into floodwaters;
8. All on-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding;

9. New and replacement manufactured homes shall be elevated on properly compacted fill such that the top of the fill (the pad) under the entire manufactured home is above the base flood elevation;
10. All necessary permits shall be obtained from those governmental agencies from which approval is required by federal or state law;
11. The flood carrying capacity within any altered or relocated portion of a watercourse shall be maintained;
12. All land development shall be reasonably safe from flooding;
13. All public utilities and facilities serving subdivisions, such as sewer, gas, electrical, and water systems, be located and constructed to minimize or eliminate flood damage, and
14. Adequate drainage is provided within subdivisions to reduce exposure to flood hazards.

Section 913: TIME FOR ACTING ON APPLICATION

The Development Review Board shall act on an application pursuant to the provisions governing Conditional Use Review as set forth in Sections 350-356 of these regulations and conduct its review of criteria described in Sections 911 and 912, subject to the limitations of Section 910(6) and 910(7) of these regulations.

Section 914: ISSUANCE AND TRANSMISSION OF PERMITS

Upon approval or disapproval of a conditional use or a reversal of a decision by the Zoning Administrator, the Development Review Board shall send to the applicant, by certified mail, a copy of the decision. Copies of the decision shall also be mailed to every person appearing and having been heard at the hearing, to the Zoning Administrator, who shall forthwith issue a permit, and to the Town Clerk as a part of the public record. (See Section 341C of these regulations.)

Section 915: EFFECTIVE DATE

A permitted use permit shall take effect 15 days from the date of issuance after the expiration of the appeal period. Conditional use permits shall take effect upon the expiration of the appeal period to the Environmental Court. (See Section 324, 341D and 399 respectively.)

Section 916: APPEALS

An interested person, as defined in 24 V.S.A., Section 4465(b), may appeal a decision of the Development Review Board to the Environmental Court in accordance with the provisions of Section 399 of these regulations and 24 V.S.A. Section 4471.

Section 917: VARIANCES

Variances to the flood hazard development criteria shall be granted by the Development Review Board only:

1. In accordance with the provisions of 24 V.S.A., Section 4469 and C.F.R. §60.6;
2. Upon a determination that during the base flood discharge the variance will not result in increased flood levels in the designated regulatory floodway, threats to public safety, extraordinary public expense, or create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

The Secretary of the Development Review Board shall notify the applicant that the issuance of a variance to construct a structure below the base flood level:

1. Will result in increased premium rates for flood insurance commensurate with the resulting increase in risk;
2. Increase risks to life and property.

The Secretary of the Development Review Board shall:

1. Maintain a record of all variance actions, including justification for their issuance, and
2. Report such variances issued to the Administrator upon request.

Section 918: FEES

The Board of Selectmen shall establish such fees as may be necessary for filing of notices and the processing of hearings and action thereon. All such fees shall be paid to the Treasure of the Town of Waltham upon application for a conditional use permit or variance under these regulations.

Section 919: WARNING OF DISCLAIMER OF LIABILITY

These regulations do not imply that land outside the areas of special flood hazard or land uses permitted within such districts will be free from flooding or flood damages. These regulations shall not create liability on the part of the Town of Waltham or any town official or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

Section 920: PRECEDENCE OF REGULATIONS

The provisions of these regulations shall take precedence over any conflicting and less restrictive local laws.

Section 921: ANNUAL REPORT TO FEMA

The Zoning Administrator shall, to the extent possible, submit to the Administrator the information required by the FEMA annual report form with respect to the administration and enforcement of these flood hazard area bylaws.

A copy of the annual report shall be submitted to the state-coordinating agency.

Appendix 4. Wind Scales

Saffir-Simpson Hurricane Wind Scale				
Tropical Depression		≤38 mph, ≤33 knots, ≤62 km/h	**Tropical Storm**	39–73 mph, 34–63 knots, 63–118 km/h
Category	**Wind Speed**	**Types of Damages Due to Hurricane Winds**		
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap, and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.		
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.		
3 (Major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built frame homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.		
4 (Major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.		
5 (Major)	≥ 157 mph ≥ 137 kt ≥ 252 km/h	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.		

Source: https://www.nhc.noaa.gov/aboutsshws.php

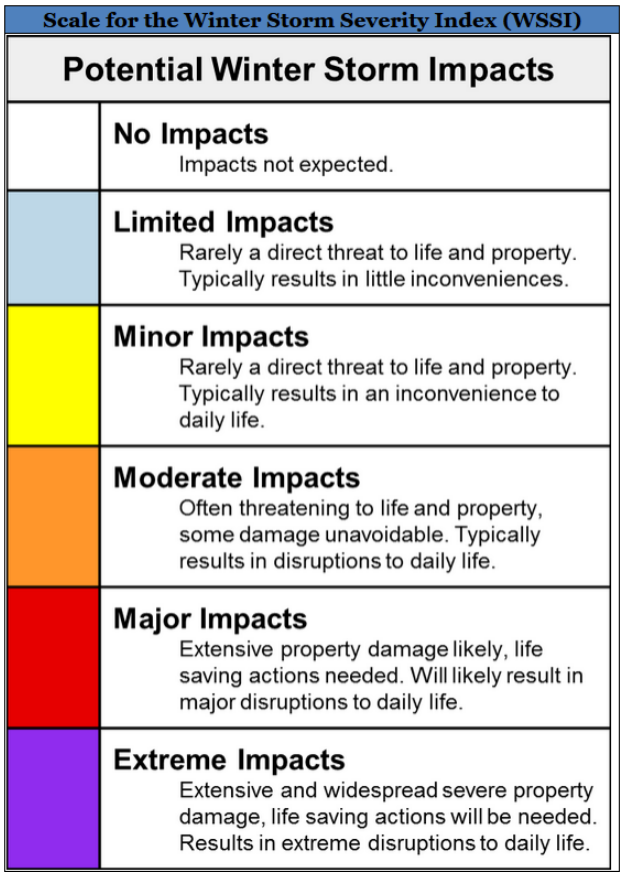
Enhanced Fujita Scale			
Scale	**Wind Speed**		**Types of Damages Due to Hurricane Winds**
	mph	km/h	
EF0	65-85	105-137	*Minor or no damage.* Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86-110	138-177	*Moderate damage.* Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	178-217	*Considerable damage.* Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	218-266	*Severe damage.* Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166-200	267-322	*Devastating damage.* Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	>322	*Extreme damage.* Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately 1 mile (1.6 km).

Source: http://www.spc.noaa.gov/efscale/ef-scale.html

Appendix 5. Winter Storm Severity Index

The WSSI is broken down into six components that are individually weighted based on the WSSI categories and then summarized into overall severity:

- **Snow Amount:** to depict severity due to total amount of snow or rate of snowfall accumulation. (Adjustments are made based on climatology and urban areas, e.g. 4" of snow in Atlanta is more severe than 4" in Minneapolis.)
- **Snow Load:** to depict severity due to total weight of snow on trees and power lines.
- **Blowing Snow:** to depict severity mainly to transportation due to blowing and drifting snow.
- **Ice Accumulation:** to depict severity of transportation and downed trees/powerlines due to the accumulated ice in combination with wind.
- **Ground Blizzard:** to depict severity to mainly transportation of ground blizzards that develop due to a pre-existing snowpack and strong winds.
- **Flash Freeze:** to depict severity primarily to transportation of situations where temperatures rapidly fall below freezing during precipitation.



Source: https://www.weather.gov/ict/WSSI_Overview