BERKSHIRE, VERMONT-LOCAL HAZARD MITIGATION PLAN 2026

RESOLUTION

A RESOLUTION OF THE TOWN OF BERKSHIRE SELECTBOARD ADOPTING THE 2026 TOWN OF BERKSHIRE HAZARD MITIGATION PLAN.

WHEREAS the Town of Berkshire Selectboard recognizes the threat that natural hazards pose to people and property within the Village of Enosburg Falls; and

WHEREAS the Town of Berkshire has prepared a multi-hazard plan, hereby known as the 2026 Town of Berkshire Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2026 Town of Berkshire Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Town of Berkshire from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Berkshire Selectboard demonstrates its commitment to hazard mitigation and achieving the goals outlined in the 2026 Town of Berkshire Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF BERKSHIRE SELECTBOARD, IN THE STATE OF VERMONT, THAT:

Section 1. In accordance with 24 VSA §872, the Town of Berkshire Selectboard adopts the 2026 Town of Berkshire Hazard Mitigation Plan. While content related to the Berkshire may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Berkshire Selectboard to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of ____ in favor and ____ against, and ____ abstaining, this _____ day of _____, 2026.

By: _____ (Signature)

_____ (print name)

ATTEST: By: _____ (Signature)

_____ (print name)

APPROVED AS TO FORM: By: _____ (Signature)

_____ (print name)

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1. INTRODUCTION

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

Hazard mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects. Based on the results of previous efforts, FEMA and state agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck. This plan recognizes that communities have opportunities to identify mitigation strategies. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

Hazard Mitigations strategies and measures **alter** the hazard by eliminating or reducing the frequency of occurrence, **avert** the hazard by redirecting the impact by means of a structure or land treatment, **adapt** to the hazard by modifying structures or standards or **avoid** the hazard by stopping or limiting development and could include (but not limited to) projects such as:

- Flood-proofing structures
- Tying down propane/fuel tanks in flood-prone areas
- Elevating furnaces and water heaters
- Elevating structures or utilities above flood levels
- Identifying & upgrading undersized culverts
- Proactive land use planning for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Buyout & relocation of structures in harm's way
- Establish & enforce appropriate building codes
- Public information

2. PURPOSE

The purpose of this Local Hazard Mitigation Plan is to assist the Town of Berkshire in recognizing hazards facing the community, ranking them according to local vulnerabilities, and developing strategies to reduce risk from those hazards. Once adopted, the local mitigation plan is not legally binding; instead, it outlines goal and actions to prevent future loss of life and property.

The Town of Berkshire strives to be in accordance with the strategies, goals and objectives of the State of Vermont's Hazard Mitigation Plan.

3. PLANNING PROCESS

This is an update to the 2017 Town of Berkshire Vermont Hazard Mitigation Plan which received FEMA approval on February 14, 2017. The Northwest Regional Planning Commission was hired to assist with the update following a competitive bid process.

Incorporation of Existing Plans, Studies, Reports and Technical Information

The 2026 Town of Berkshire Hazard Mitigation Plan development utilized plans, policies, studies, historical records, data and technical information as a foundation. Such information provided a comprehensive understanding of existing hazards, vulnerabilities and community needs. The information ensured that the plan is effective and tailored to the specific context of the community. A complete list may be found in Table 1

Table 1: Reference Materials

Information Source	Review and Incorporation
Berkshire Electric Outage Reports	Reference during Risk Assessment section of plan.
Town of Berkshire Town Plan - 2020	Existing land use, population, transportation and future land use, public facilities, public services, flood resilience. The plan was referenced throughout the process
Town of Berkshire Local Emergency Management Plan – 2024	The plan was reviewed and referenced throughout the planning process.
Town of Berkshire Land Use and Development Regulations – 2024	The sections reviewed include flood hazard areas, wetland regulations, road erosion, and regulations for areas of special flood hazard.
Town of Berkshire Local Emergency Management Plan 2025	The plan was reviewed and referenced throughout the planning process.
Northwest Regional Planning Commission Regional Plan 2018 (amended 2026)	The physical region section was referenced during the risk assessment as well as various data references on population and transportation.
Northwest Regional Planning Local Liaison Reports of Storm Damage	Referenced to develop the risk assessment section.
American Community Survey Five Year Estimate 2022	Used to develop community profile section.
FEMA Disaster Declaration Website	Data from the site was used during the hazard profile and risk assessment sections.
FEMA Hazard Mitigation Assistance Program Policy Guide 2024	Used to ensure plan meets the Federal mitigation planning requirements including those address climate change.
FEMA Local Mitigation Planning Handbook 2023	The handbook was used to ensure plan meets the Federal mitigation planning requirements including those for addressing climate change. Referenced throughout the planning process.
FEMA NFIP Insurance Reports 2021	Used to determine how many structures are insured, number of repetitive loss properties and describe NFIP compliance.
FEMA Risk Mapping, Assessment and Planning (Risk Map) Products	The data was referenced during the hazard profile and capabilities section of this plan.
Municipal Climate Change Vulnerability Indicators Tool	Data was used throughout the plan. The Municipal Vulnerability Indicators Tool (MVI) is a mapping tool to help municipalities understand their vulnerabilities to climate change across several social, economic, and environmental factors. T

National Oceanic and Atmospheric (NOAA) Climatic Data Center's Storm Events Database	Data was referenced and incorporated in the hazard identification and risk assessment section of this plan.
National Oceanic and Atmospheric (NOAA) Climatic Data Center's Storm Events Database	Data was referenced and incorporated in the hazard identification and risk assessment section of this plan.
State of Vermont Climate Assessment	Referenced in development of risk assessment.
State of Vermont Hazard Mitigation Plan 2023	The entire plan was reviewed and referenced during the development of this plan.
Town of Berkshire Flood Insurance Rate Maps 1983	The date was referenced for risk assessment section and used in capabilities section.
Town of Berkshire Flood Insurance Study 1980	The date was referenced for risk assessment section and used in capabilities section.
Town of Berkshire Road Erosion Inventory	Referenced to develop the risk assessment section and mitigation actions section.
VT DEC's Statewide Integrated Watershed Assessment (SIWA)	Referenced to develop the risk assessment section and mitigation actions section.
VT DEC's Missisquoi Bay Watershed, Basin 6 Tactical Basin Plan 2021	The data was referenced during the risk assessment and mitigation actions review.
Vermont Agency of Transportation Bridges and Culverts On-Line Database	The data was referenced during the risk assessment and mitigation actions review.
Vermont Agency of Transportation Resilience Planning Tool	Referenced to develop the risk profile and mitigation actions.
Vermont Dam Inventory	The tool was referenced during the risk assessment section and mitigation actions to address floods.
Vermont Department of Health website	Refenced during research of hazard identification and risk assessment.
Vermont Department of Health website	Referenced during research of hazard identification and risk assessment section of plan/
Vermont Flood Ready Website	Data from the website was referenced throughout the planning process and used in various sections of the plan.
Vermont Natural Resource Atlas	Tool was referenced throughout the process.
Vermont Transportation Resilience Planning Tool (TRPT)	Data was used throughout the plan. Web-based application identifies bridges, culverts, and road embankments that are vulnerable to damage from floods, estimates risk based on the vulnerability, and criticality of roadway segments, and identifies potential mitigation measures based on the factors driving the vulnerability.

Documentation of the Planning Process, Public Involvement and Input from Neighboring Communities

The Town Clerk assembled a Hazard Mitigation Planning Team to participate in updating the Hazard Mitigation Plan. The town actively invited various stakeholders in the planning process including residents, local businesses, local neighboring government agencies, regional emergency management committee, schools, and non-profits that work directly with or provide support to people with disabilities and functional access needs.

Planning Team Member: A planning team member is a designated individual who actively participates in the planning process. They may be responsible for specific tasks such as data analysis, strategy development, and drafting the plan. Planning team members are usually part of the formal planning structure and may have specific roles based on their expertise or position within an organization.

Stakeholder: While stakeholders are also involved in the process, they may not have a formal role or responsibility within the planning team. Their participation is often more about providing input, feedback, and support rather than executing the planning tasks. Stakeholders can influence the planning process through their contributions but are not necessarily tasked with specific planning duties.

The following Table 2 depicts the planning team:

Table 2: Planning Team

Name	Organization	Role
Emily Fecteau	Town Clerk	Planning Team Lead (Community Lead POC)
Jason Kittell	Selectboard Chair	Planning Team Member (Locally elected official)
Mark Larivee	Selectboard EMD	Planning Team Member (Locally elected official)
Shaun Coleman	Northwest Regional Planning Commission	Planning Team Member (Project Leader)
Danny Kennison	Highway Department	Planning Team Member (Highway Dept lead)
Tony Archambault	Selectboard Fire Chief	Planning Team Member (Locally elected official)
Ann Lavery	Zoning Administrator	Planning Team Member (Local official)
Pierre Letourneau	Enosburgh Selectboard Chair / EMD	Stakeholder (neighboring community)
Lisa Larivee	Franklin Town Clerk	Stakeholder (neighboring community)
Andy Pond	Richford Selectboard Chair / EMD	Stakeholder (neighboring community)
Jacqueline Kelley	EP, Vermont Department of Health, St. Albans District	Stakeholder (Public Health)
Reginald Beliveau, Jr.	Franklin County Regional Emergency Management Committee	Stakeholder (First Response/Mutual Aid)
Jess Graff	Director, Champlain Valley Office of Economic Opportunity (CVOEO)	Stakeholder (People with Disabilities and Functional Access Needs)
Lindsey Wight	Missisquoi River Basin Association	Stakeholder (Natural Resources)

Lauren Weston	Franklin County Natural Resources Conservation District	Stakeholder (Natural Resources)
Cathy Sandvil	Enosburg Food Shelf	Stakeholder (Food, Water, Shelter)
Ashley Bartley	Visiting Nurses Association	Stakeholder (Senior Healthcare, Hospice and Community Support Services)
Keith Ellery	Northwest Medical Center	Stakeholder (Hospital)
Miranda Henry	Northern Tier Center for Health	Stakeholder (non-profit healthcare center)
Gavin Roddy, Principal	Berkshire Elementary School	Stakeholder (Education)
John Weld, President	Historical Society	Stakeholder (Historical)
Tim Smith, Director	Franklin County Industrial Development	Stakeholder (Business)
Carl Watkins, Manager	Franklin County Regional Chamber of Commerce	Stakeholder (Business)

Stakeholder Engagement and Public Outreach

The Town of Berkshire and NRPC developed a stakeholder and public outreach plan to ensure the whole community were given opportunities to be involved in the plan's development process. Engagement and outreach are crucial for hazard mitigation planning for several reasons including fostering inclusive decision making, strengthening community resilience through active participation, raising risk awareness and preparedness through education, transparency, and promoting consensus building. The plan may be found in Appendix H.

Plan Development Process

The Town of Berkshire held several planning meetings to discuss the development of a Hazard Mitigation Plan. All meetings were open to the public and held at regularly scheduled Selectboard meetings. Public in attendance at the meetings were encouraged to participate. All meeting agendas were posted at 3 locations in the municipality in compliance with the requirements of Vermont Open Meeting Law.

April 16, 2026 - Initial meeting with Town Clerk and NRPC to discuss the mitigation planning process, assembly of planning team, stakeholder engagement and public outreach plan. This included a review of the Town's new Communication Plan & Policy.

April 17, 2026 - Survey and flyer was agreed to by the committee and finalized and released to the public. This was to solicit input from the whole community. The Town provided notice of the survey by posting at several locations throughout the community including the library, Town Office, school and library. The flyer with QR code was also posted on Town Office web page, and NRPC's Town of Berkshire Mitigation Plan project web page.

May 18, 2026 – Initial meeting with team with a virtual option to participate. The public meeting was warned following Vermont's Open Meeting Law requirements. Communications methods followed the stakeholder and public outreach

plan to ensure the whole community had an opportunity to participate. NRPC staff facilitated the hybrid meeting that focused on past efforts, the FEMA mitigation planning process, plan update considerations, FEMA guidance, State Hazard Mitigation Plan review, roles and timeline. The group also agreed to utilize NRPC's website as the host site for the project website due to ease of administration.

May 20, 2026 – Hazard Risk Assessment Meeting at the Town Office with virtual option to participate. The public meeting was warned following Vermont's Open Meeting Law requirements. Communications methods followed the stakeholder and public outreach plan to ensure the whole community had an opportunity to participate. NRPC staff reviewed mitigation planning process, community outreach efforts, timeline, review of local hazards, state-wide hazards as identified in the mitigation plan, review of hazard data, update the risk assessment section based on participant feedback. A survey was discussed to solicit input from the whole community.

June 15, 2026 - Policies, Plans and Capabilities Meeting at the Town Office with virtual option to participate. The public meeting was warned following Vermont's Open Meeting Law requirements. Communications methods followed the stakeholder and public outreach plan to ensure the whole community had an opportunity to participate. The participants reviewed existing village resource capacity and capabilities, flood plain and river corridor bylaw regulations, ordinances, stormwater infrastructure and inventories, school safety plans, and survey.

July 27, 2026 - Mitigation Projects Meeting at the Town Office with virtual option to participate. The public meeting was warned following Vermont's Open Meeting Law requirements. Communications methods followed the stakeholder and public outreach plan to ensure the whole community had an opportunity to participate. The meeting centered on hazard mitigation strategies and confirmed goals and discussed past and future mitigation projects for the Town. There was a review of the survey results to date and a discussion on the survey.

August 25, 2026 – Public comment period opens. Plan made available on Town website and NRPC website Hardcopies of the plan made available at town office and library. Postings included instructions to email comments to Shaun Coleman, Senior Planner at Northwest Regional Planning Commission. NRPC Senior Planner also directly emailed final draft plan to neighboring towns and stakeholders to seek input.

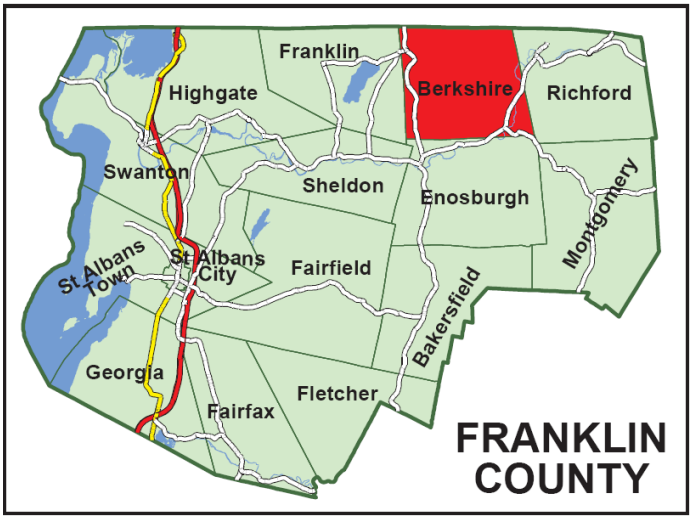
September 25, 2026 – The public comment period will be closed. Final survey results and additional stakeholder input were incorporated into the final draft. The selectboard Chair requested the draft plan and toolkit be submitted to VEM and FEMA for review and approval pending adoption.).

Fall 2026 – The final draft LHMP and FEMA plan Review Toolkit will be submitted to VEM and FEMA for approval pending adoption.)

4. COMMUNITY PROFILE

Berkshire Geography and Profile

The Town of Berkshire is located in the northeast corner of Franklin County (72°46'W, 44°58'N). Berkshire is bounded by the Province of Quebec to the north, the Town of Franklin to the west, the Town of Richford to the east and the Town of Enosburgh and the incorporated Village of Enosburg Falls to the southwest. The total area of the town is approximately 27,008 acres or 42.2 square miles.



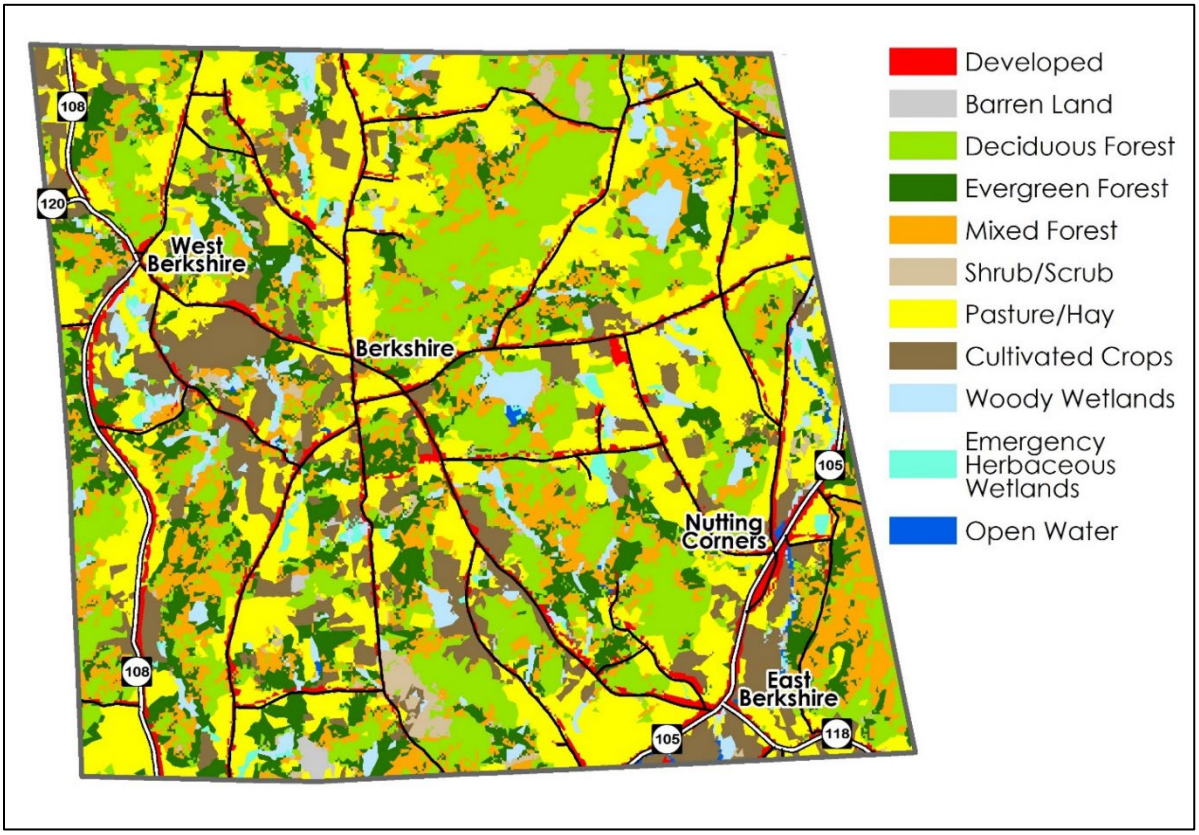
Berkshire consists of rolling topography. Elevations range from approximately 1,320 feet at its highest point at Ayers Hill to approximately 400 feet at its lowest points on the Pike River in northwest Berkshire and on the Missisquoi River in southeast Berkshire.

Berkshire is but one town in a region of diverse and changing communities. The Town is a member of the Northwest Regional Planning Commission and borders Richford, Enosburgh, Enosburg Falls, and Franklin in Franklin County. It is linked to these communities via roadways, waterways, recreation resources, contiguous forestland and wildlife habitat, and through the sharing of important community facilities and services. In addition, many of Berkshire's residents have strong social and economic ties to the region's important employment and cultural centers. As the chart below shows, Berkshire's population growth is relatively higher than neighbors.

Land Use

Berkshire is predominantly a rural town and is one of the most important agricultural towns in Northwest Region and State of Vermont. Agricultural land accounts for around 65% (17,500 acres) of total land acreage. Roughly 29% (7,832 acres) of this acreage is forested land associated with farming operations with the remainder equally divided between cropland and pastureland. Farming operations in Berkshire are predominantly dairy farms. Maple sugaring is another important type of agricultural operation in Berkshire.

Figure 1: Current Land Use

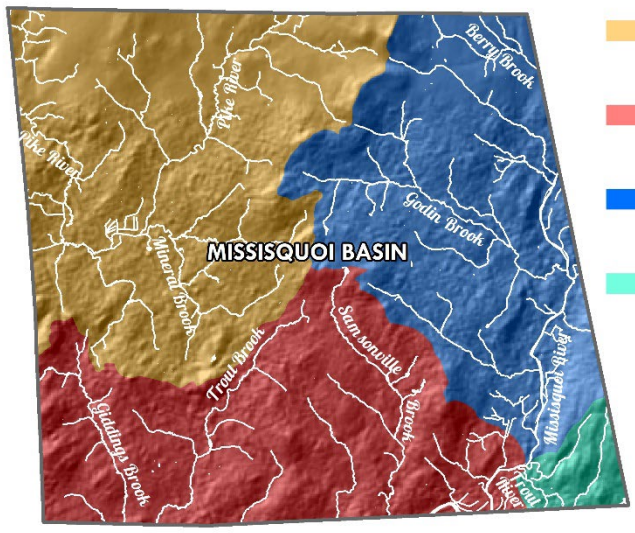


Most of the forested acreage is found on the ridges and hilltops of north central Berkshire and on other areas of steep slope or wet soil scattered throughout the Town. Residential land use accounts for less than 5% of the Town's total land acreage. Most of this is concentrated on relatively small lots of one acre or less in Berkshire's three hamlets: West Berkshire, East Berkshire and Berkshire Center. There is very little commercial land uses, and no industrial land uses in Berkshire. Commercial land uses exist primarily in East Berkshire in relatively small lots. Berkshire has zoning and subdivision regulations.

Water Resources

Berkshire is located within the Missisquoi Basin (Map 4.9), a network of rivers and streams stretching across northern Vermont and ending in Missisquoi Bay and Lake Champlain. The Missisquoi River and its tributaries drain most of Berkshire. The Missisquoi crosses the southeast corner of Berkshire and flows in a southwesterly direction through Town. A major tributary, the Trout River, flows into the Missisquoi at East Berkshire. Other tributaries include Trout Brook and Giddings Brook in the southwest corner of Town.

Figure 2: Watershed Map, Berkshire, VT



The Pike River and its tributaries drain the northwest part of Town into Missisquoi Bay. This river originates in the north central hills of Berkshire, flows southwest where it joins with Mineral Brook, and then flows northward into Franklin where it receives water from Lake Carmi. It then reenters Berkshire and exits at the Canadian border.

Demographics and Housing

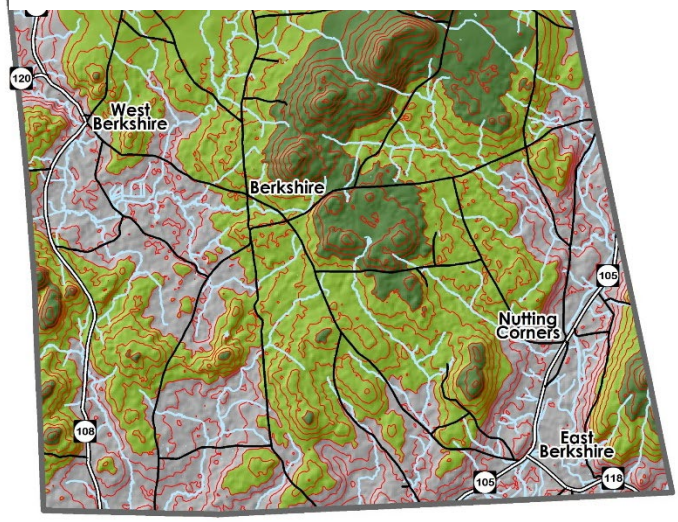
According to 2020 U.S. Census Bureau data, the total population of Berkshire, Vermont is 1,547. In 2010, the population was 1,692. The percent of population changes between 2010 – 2020 is -3.7%. Approximately 10.85% of the population is age 65 or older, while 26% is under 18 years of age and 9% are under the age of 5. Additionally, 8% of the population under age 65 has a disability. The median household income is $71,406, while 14.6% of the population is living below the poverty line.

Per the 2020 US Census Bureau, Berkshire is predominantly white. The percentage of residents that reported nonwhite is 3.68% with Hispanic or Latino compromising the majority of nonwhite residents (1.62%). American Indian or Alaskan Native are second (0.84%), then Asian (0.7%) followed by Black or African American (0.32%) and "Some Other Race" (0.19%).

Berkshire is expected to grow as a bedroom community to supply housing to workers in adjoining and nearby towns. Based on existing household sizes (roughly 2.87 persons per year-round housing unit and current population projections, Berkshire should need at least 104 new year-round housing units by 2030 to house the projected population.

There were 32 new housing units built between 2020-2024 in Berkshire. From 2013-2018, there was an average of 6 new building permits passed per year. Within the NW Regional Plan, it is expected that Berkshire will retain its rural, agrarian character. Continued economic health for the Town lies in the protection of its agricultural resource base and maintaining a viable agricultural industry, principally dairy, supplemented by tourism and other related land uses. It is also anticipated that the Town will not be the site of significant urban-type development over the life of the Regional Plan. Growth in the adjacent urban service areas; however, is expected to increase the pressure for residential development on roads leading into Berkshire from these centers. It is recommended within the Regional Plan that most new residential growth occur in and between the communities of West Berkshire

Figure 3: Topography



and Berkshire Center, on soils suitable for on-site systems.

Transportation

Berkshire residents, as most residents of rural towns, depend greatly on privately owned motor vehicles and the local road network to get around. Berkshire has a total of 63.8 miles of traveled roads within the Town, including 12.6 miles of state highway, and 51.2 miles of Town highway (Class II and Class III). There are also 9.2 miles of Class IV roads, including pent roads, within the Town.

There are four state highways in Berkshire: VT 105, VT 108, VT 118 and VT 120. The unincorporated village of West Berkshire is located at the crossroads of VT 108 and VT 120. The unincorporated village of East Berkshire is located at the crossroads of VT 105 and VT 118.

The railroads, once so important to the Berkshire community, have all but vanished from the Town. No state rail improvements are scheduled.

Presently the nearest rail service for freight is in Richford (Canadian Pacific) and St. Albans (New England Central). Amtrak passenger service is also available from St. Albans.

Berkshire has no air service within the Town. The Franklin County Airport in Highgate supplies local air service. Larger interstate and international flights are available at the Burlington Airport, and at Mirabel and Trudeau airports in Montreal, Quebec.

Emergency Services

Berkshire has a volunteer fire department. Berkshire does not have a municipal police department and relies on the Vermont State Police, Franklin County Sheriff and Border Patrol for law enforcement.

The Community Health Center in Enosburg Falls and the Richford Health Center provide care by general practitioners and pediatricians, as well as many other health-care services. Berkshire contributes funds to both Enosburgh and Richford to support ambulance services, which provide transportation to the nearest hospital, the Northwest Medical Center in St. Albans, 25 miles away. Other physicians, dentists, and optometrists maintain private practices in either of these adjacent communities. Healthcare facilities are also considered adequate for the near future.

Electrical Service

Berkshire is served by two electric utility companies: the Village of Enosburg Falls Electric Light Department serves the southwestern area and Vermont Electric Cooperative serves the remainder of town.

Water and Wastewater

Most residents get their water supply from on-site wells and springs. The community of East Berkshire is served the East Berkshire Fire District #1, which as of 2015 provides water to approximately 86 customers. Users include tenants in apartment buildings, private homes, and five businesses. The existing source for this system fs a series of springs located in the Town of Enosburg that, through a common collection pipe, feed a concrete reservoir situated on a knoll southeast of the community at an elevation of 580 feet. The reservoir at the Treatment Plant has a capacity of 80,000 gallons.

There are no wastewater facilities in Berkshire. Residents are served by private on-site sewage systems. There is no plan to develop a wastewater system in the near future.

5. RISK ASSESSMENT / VULNERABILITY ANALYSIS

Identifying and profiling hazards and assessing vulnerabilities

The risk assessment process is a critical component of hazard mitigation planning. It involves identifying potential hazards, assessing vulnerabilities, and evaluating the potential impacts of those hazards on the community. It measures the potential loss of life, personal injury, economic impact, and property damage resulting from natural hazards by analyzing the vulnerability of people, the built environment, the economy and the natural environment.

Due to changes to the community profile, potential impacts of climate change, historical data and social and economic challenges, the hazard ranking varied from the 2017 Local Hazard Mitigation Plan. The Planning Team discussed how factors such as climate change, land use, and demographic shifts may increase the town's vulnerability to various hazards. Climate change is expected to intensify these risks by increasing the frequency and severity of extreme weather events and altering weather patterns. Additionally, demographic changes can significantly influence the town's level of risk. An aging population, higher population density, growing socioeconomic disparities, cultural and linguistic diversity, overall population growth and urbanization, the presence of transient and migrant groups, and a rising number of individuals with disabilities or access and functional needs all contribute to heightened vulnerability.

The Planning Team made decisions by majority consensus.

Table 3: Hazard Assessment Ranking Criteria

Score	**Frequency of Occurrence:** Probability of a plausibly significant event impacting the community or regional scale based on previous occurrences and climate change projections.	**Potential Impact:** Severity and extent of damage and disruption to built and natural environments, people, and the economy
1	Unlikely:<1% probability of occurrence per year	Negligible: isolated occurrences of minor built or natural environmental damage, potential for minor injuries, health, or well-being impacts, or minimal economic disruption.
2	Occasionally: 1–10% probability of occurrence per year, or at least one chance in next 100 years	Minor: isolated occurrences of moderate to severe built or natural environmental damage, potential for injuries or health or well-being impacts, minor economic disruption.
3	Likely: >10% but <75% probability per year, at least 1 chance in next 10 years	Moderate: severe built or natural environmental damage on a community scale, injuries, fatalities or impacts to individual and community well-being, short-term economic impact.
4	Highly Likely: >75% probability in a year	Major: severe built or natural environmental damage on a community or regional scale, multiple injuries or fatalities or severe long-term impacts to individual and community well-being, significant long-term economic impact.

The Hazard Assessment for the Town derives a relative risk *Score* which is the average of the sum of *Potential Impacts* multiplied by the *Probability* for each hazard. See Table 4. The relative risk score is categorized as:

- Low Risk: 0 – 5
- Moderate Risk: 6 – 11

- High Risk: 12 – 16

All hazards identified in the state hazard mitigation plan were considered for incorporation into the Berkshire Local Hazard Mitigation Plan. The hazards with the highest risk scores are flooding, fluvial erosion and severe winter storm (ice storm) and strong winds (windstorm, thunderstorm, tornado, hurricane /tropical storm).

Table 4: Hazard Assessment

		Potential Impact				Average	Total Score*:
Hazard	**Probability**	**Infrastructure**	**Life**	**Economy**	**Environment**		
Flooding and Fluvial Erosion	4	4	3	3	4	3.5	14
Severe Winter Storm (Ice Storm)	4	3	3	2	1	2.25	9
Strong Winds (Windstorm, Thunderstorm, Tornado, Hurricane/Tropical Storm)	4	1	2	3	1	1.75	7
Extreme Heat	3	1	2	2	2	2	6
Extreme Cold	3	1	3	2	2	2	6
Invasive Species	3	1	1	2	3	1.75	5.25
Infectious Disease Outbreak	3	1	2	3	1	1.75	5.25
Drought	2	1	1	1	1	1	2
Landslides	2	1	1	1	1	1	2
Hail	2	1	1	1	1	1	2
Wildland Fire	1	2	2	2	2	2	2
Dam Failure	1	2	2	2	2	2	2
Earthquake	1	2	2	2	2	2	2

Table 5: Hazard Risk Summary

Hazard Type	Probability	Impact / Magnitude	Risk	Vulnerability
Flooding and Fluvial Erosion	Highly Likely	Negligible to Major	High	Loss of road access, power loss, telecommunications loss. Roads, bridges, commercial and residential structures, homes located in SFHA. People with disabilities and functional access needs.
Severe Winter Storm / Ice Storm	Highly Likely	Negligible to Moderate	Moderate	Roads, commercial and residential structures, telecommunications, Town Office, Fire Station, Post Office and utilities. People with disabilities and functional access needs.

Strong Winds (Windstorm, Thunderstorm, Tornado, Hurricane/Tropical Storm)	Highly Likely	Negligible to Moderate	Moderate	Falling limbs and/or trees, power loss, telecommunications loss, structural damage to commercial and residential structures, roof damage, older mobile homes, barns, barn roofs. Business losses from telecom outages.
Extreme Heat	Likely	Negligible to Moderate	Moderate	Commercial structures, farms, livestock, private wells, public structures (water reservoir, water pumping station and wastewater treatment plant), residential and seasonal homes and vulnerable populations.
Extreme Cold	Likely	Minor	Moderate	Power transformers, village water and sewer lines, residential and commercial structures, roads, culverts, Town Office, Fire and Rescue buildings, delivery services, livestock, pets, people with disabilities and functional access needs, HVAC workforce.
Invasive Species	Likely	Minor	Low	Town forests and trails, rivers and stream, commercial agriculture, farms, livestock, residential gardens. Local wildlife populations. Recreation and agricultural economies.
Infectious Disease Outbreak	Likely	Minor to Major	Low	All sectors of the community especially people with disabilities or functional access needs, health center, town operations, schools and businesses.
Drought	Occasionally	Minor to Major	Low	Commercial structures, farms, livestock, private wells, public structures (water reservoir, water pumping station and wastewater treatment plant), residential and seasonal homes and vulnerable populations.
Landslides	Likely	Negligible to Minor	Low	Transportation infrastructure and residents along Goose Pond and River Roads. People with vulnerabilities or functional access needs. Water quality.
Hail	Occasionally	Negligible to Minor	Low	All public and private structures particularly roofs, vehicles, utilities telecommunications, crops and gardens.
Wild Fire	Unlikely	Minor	Low	Residential homes, commercial structures, utility poles and lines, road closures, fires in rural areas lacking fire breaks. People with disabilities and functional access needs for evacuations or air quality issues.
Dam Failure	Unlikely	Moderate to Major	Low	Transportation infrastructure and residential and agricultural structures along Routes 104 and 104A, Silver Lake Road, and north end of Nichols Road. Utlilites in downstream areas. Rail line in neighboring Georgia.

Earthquake	Unlikely	Negligible to Major	Low	Infrastructure damage to transportation network. Structural damage to residences, commercial buildings, Town Office, Fire and Rescue buildings, Town Garage, Water and Waste Water Depts., and utilities. People with disabilities and functional access needs for evacuations or sheltering in place.

Major Disaster Declarations in Vermont

Refer to Appendix C for a list of active and previous disaster declarations.

2020 Pandemic

During the 2020 pandemic, the Town faced significant challenges such as limited local healthcare resources and economic disruptions, especially for small businesses. Social distancing measures led to the closure of local schools, restaurants, businesses, and shops, causing financial strain. The Town also saw shifts in community dynamics, with many residents relying more on neighbors and limited local services for support. The municipal offices adapted by finding ways to stay connected through continuity of operations planning that enabled staff to work remotely while still carrying out business operations, hold virtual governance committee meetings to conduct Town business, and implementing State protective guidelines for municipal departments to ensure all departments could continue to operate safely. The lessons learned from 2020 will serve the Town well should another pandemic occur.

Climate Change

Climate change is real. The impacts are witnessed today, with more frequent and intense extreme weather events like heavy downpours, shorter frost-free growing season and warmer nighttime temperatures. Although Berkshire contributes minimally to global climate change, it must address the local consequences by building resilience and capacity. These impacts pose challenges in terms of economic or infrastructure vulnerabilities, and for native species and habitats. While some effects of climate change may be positive, the negative impacts—such as threats to agricultural production, increased flooding, and reduced snow cover affecting winter recreation—are of serious concern for their economic, social, and environmental consequences.[1]. Table 6 summarizes the future effects of climate change for Berkshire.

Table 6: Future Effects of Climate Change by Hazard for Berkshire, VT

Hazard Event	Future Effects of Climate Change
Flooding & Fluvial Erosion	An increase in annual precipitation rates due to climate change could potentially exacerbate inundation flooding and fluvial erosion events in the future. Since the 1960s, the state of Vermont has seen a 6" increase in average annual precipitation, attributed to the warming of the atmosphere and subsequent increased evaporation rates[2]. Such changes will impact road infrastructure and the storm water infrastructure and wastewater treatment. More residents could experience flooding on their properties where minor drainage issues now may exist. Buildings and home located near the river and tributaries may be a greater risk as frequency of flooding and fluvial erosion increase.
Severe Winter Storm (Ice Storm)	Winter in Vermont has been reported to be warming 2.5 times faster than the global average annual temperatures since 1960, affecting the snow conditions for many sectors of the local economy. Severe winter storms may bring more rain than snow, high winds, and flooding conditions due to decreased ground frost. Warming

[1] Vermont Climate Assessment, (2021) University of Vermont, Gund Institute for Environment.
[2] https://climatechange.vermont.gov/vermont-today

	winters will have a significant effect on maple sugar production that relies on temperatures at or below 0°C / 32°F at night and above freezing during the day for sap to run. For the tourism sector, reduced snow packs will impact nearby Smugglers Notch Ski Resort with less skiers traveling through the Town and frequenting local businesses.
Strong Winds (Windstorm, Thunderstorm, Tornado, Hurricane/ Tropical Storm)	According to the NOAA, as the world warms, the jet stream is expected to get faster, with the fastest winds increasing by about 2% for every degree Celsius (1.8° Fahrenheit) of warming. This could lead to greater increase of high wind events and include record-breaking winds that could cause increased damages notably to rural roads in forested areas, electric utility infrastructure, tree damage, residential roof and siding damage particularly mobile homes, and flying debris.
Extreme Heat	Extreme, prolonged heat will impact the public health sector by placing those with functional access needs at risk; it will impact first response services and local health offices during long spells of heat. The Town will have to continue to monitor local capacities for their predefined cooling sites and first responder resources. Extreme heat can stress the electrical grid as more air conditioners will be put into use. Climate change may intensify mud season by causing earlier snowmelt and increased spring rainfall, leading to softer, more waterlogged soils that can severely damage unpaved roads and make them difficult and at times impassable to navigate for residents.
Structure Fire	Rising global temperatures, prolonged droughts, and more frequent and intense heatwaves can increase the likelihood of wildfires spreading into developed areas, igniting structures at the wildland-urban interface. Additionally, increased use of cooling systems during heatwaves can strain electrical infrastructure, potentially leading to faults or overloads that spark fires. In some regions, the drying of vegetation around homes and buildings, combined with higher wind speeds, may also accelerate the ignition and spread of structure fires.
Extreme Cold	With the climate change trend being towards warmer temperatures, future extreme cold periods beyond the norm are unlikely.
Invasive Species	Rising average annual temperatures will have potential impacts on forests and the ag sector of the local economy. Stress will occur on native species as the climate becomes more favorable for southern species. Local impacts will be on the forest products, agriculture, and tourism industry. Particularly concerning are pests like the Asian longhorned beetle (not yet found in Vermont), emerald ash borer, and hemlock woolly adelgid, which have already killed millions of trees across North America. Vulnerability: Agricultural losses, private property (crops, greenhouses, orchards, flower gardens, community trees). Overgrowth can impact powerlines and culverts.
Infectious Disease Outbreak	The Vermont Department of Health defines an infectious disease as one that 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). Rising temperatures will enable more diseases and their carriers to spread further north, where harsh winter conditions previously limited their expansion.

	All sectors and populations of the community including essential services, ambulance service and local health offices. public health sector, people with disabilities and functional access needs including elderly.
Drought	Warmer temperatures over prolonged periods without precipitation will lead to drought conditions. Warmer winters that lead to reduced snowpack would mean water sources are not getting recharged. This will impact those who rely on wells and impact the Town's water supply and distribution system. Drought conditions could also lead to increased wildfire risks which will impact the fire department resources and put private and public properties at risk.
Landslides	Increased rainfall, particularly intense or prolonged storms, can saturate soil and destabilize slopes, while rapid snowmelt and ground frost thaw further contribute to ground instability. Additionally, clear cut practices that strip large areas of vegetation from hillsides, reducing soil cohesion and increasing landslide risk during subsequent rains. These changes may lead to more frequent, widespread, and severe landslides, posing growing threats to infrastructure, ecosystems, and human safety, especially in mountainous areas.
Chemical, Biological, Radiological, Nuclear (CBRN	May increase the likelihood of hazardous materials incidents by causing more frequent and intense flooding, severe storms, and erosion that can damage storage facilities, transportation routes, and utility infrastructure. Floodwaters can spread contaminants over larger areas, increasing risks to public health, drinking water supplies, and natural resources. Above ground fuel storage tanks could become dislodged by rising waters. Higher temperatures may also increase the volatility of certain chemicals and place additional stress on storage and containment systems.
Hail	Greater increase in hailstorm activity would increase damages to public infrastructure such as the public works vehicles, public building roofs, and private property.
Wildfire	Warming temperatures coupled with drought and greater frequency of wind could create a greater frequency of wildfires occurring. While much of the Town areas are developed, the likelihood of wildfire affecting them is very low. However, as has occurred in some suburban settings in Colorado in recent years, wildfire fueled by high winds could cause damage to residential areas in the Town areas. This would impact the fire department and Vermont Electric Co-op infrastructure. The tourist economy could be impacted due to wildfire smoke. Segments of the population that have functional access needs, particularly those with respiratory issues, would be impacted creating increased demands on ambulatory and health care services.
Earthquake	No known impacts from climate change.
Dam Failure	Climate change may increase the potential impacts of dam failure by contributing to more frequent and intense precipitation events, increased runoff, and flooding that can place additional stress on dam structures and downstream infrastructure. Changes in precipitation patterns, extreme weather, and more frequent freeze-thaw cycles may accelerate erosion, structural deterioration, and maintenance challenges. A dam failure during a future extreme weather event could result in greater downstream flooding, property damage, infrastructure impacts, environmental degradation, and increased risks to public safety.

Hazard Profiles

Flooding/Fluvial Erosion – *Moderate Risk*

Description: - Flooding is the most widespread and destructive hazard in the United States. Flooding has also been the most common and costly hazard to affect Berkshire. Flooding can occur anytime of the year as a result of heavy rains, thunderstorms, tropical storms, hurricanes or Nor'easters. It can result from the overflow of major rivers and their smaller tributaries, or inadequate local drainage. Historically, floods have been a factor in over 80%t of all federally declared disasters. People living in close proximity to bodies of water such as rivers, lakes, and streams are at greater risk from flooding than those not living in the floodplain.

The types of flooding that occur in Berkshire include:

- **Inundation/Surface Water Flooding:** Occurs when heavy rain saturates the ground, causing water to pool in low-lying areas, especially in urban centers like Montpelier.
- **Flash Flooding:** Rapid, dangerous flooding that occurs within six hours of heavy rain, often transforming small, dry streams into torrents.
- **River (Fluvial) Flooding:** Occurs when rivers overflow their banks, common during spring melt or following intense, widespread rainfall.
- **Ice Jams:** Common in late winter/early spring, when thawing rivers break up ice, causing it to block narrow channels and force water into surrounding areas.

Fluvial erosion is the erosion and collapse of riverbanks caused by the natural movement and adjustment of rivers and streams. It typically occurs when a stream becomes unstable and has more energy than is needed to carry its sediment load, often due to channel alterations or runoff events that increase water velocity. Factors contributing to fluvial erosion risk in Berkshire include intense rainfall events, saturated soils, snowmelt, and channel constrictions at bridges or culverts. Land use practices, agricultural activities, and loss of riparian vegetation can further reduce bank stability.

The Vermont State Hazard Mitigation Plan notes that greater than 75% of flood damages in the state, measured in dollars, is associated with fluvial erosion rather than inundation flooding.

Location: The Missisquoi River flows through the Town of Berkshire from the northeast to the southwest and is subject to inundation flooding. This area is composed of relatively undeveloped flood plains and agricultural land. The exception is East Berkshire, located at the junction of VT Route 105 and VT Route 118. The three bridges located in East Berkshire are not subject to flooding, however, portions of the state highways and the Missisquoi Valley Rail Train, a recreation path, are occasionally subject to flooding. The Pike River, Mineral Brook, Trout Brook and Trout River are tributaries of the Missisquoi River in Berkshire. River banks are generally steep and bordered by wide flood plains. The Pike River and Mineral Brook both have mapped floodplain and are subject to inundation.

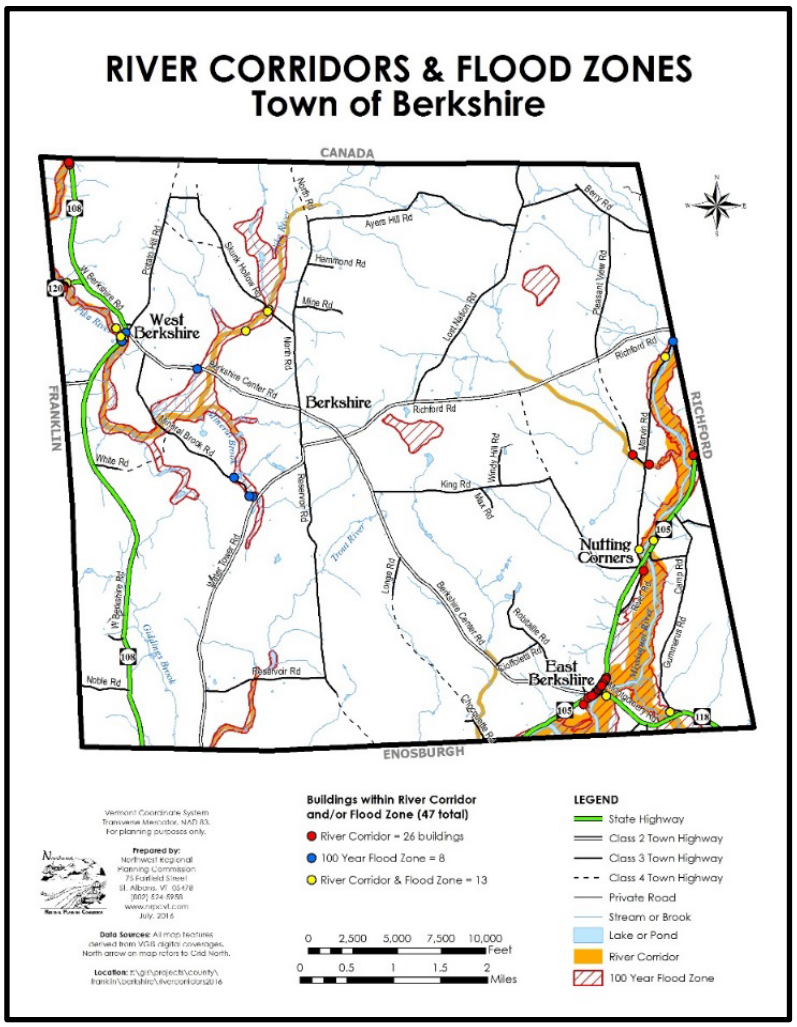
Compared to other Vermont communities that suffer from flood damage due to extensive flood plain development, the Town of Berkshire has not been subjected to large or frequently occurring floods.

The following map was created by the Northwest Regional Planning Commission (NRPC). This map shows the special flood hazard areas (SFHAs) that FEMA has designated in Berkshire (as digitized by NRPC), as well as the River Corridors that VT ANR has designated. It should be noted that the current map effective date (as of this plan writing) for the Flood Insurance Rate Maps (FIRMS) for the Town of Berkshire is 6/1/1983.

The orange shaded areas are SFHAs, red hash-marked areas are FEMA SFHA and the orange shaded areas are the ANR River Corridors. A large river corridor exists along the Missisquoi River in eastern and southeastern Berkshire. SFHA also

exists in much of this area. River Corridor has also been mapped along the Pike River in northeast Berkshire. SFHA has been mapped for larger segments of the Pike River, Mineral Brook and several wetland complexes in central and northeastern Berkshire.

Figure 4: River Corridors and Flood Zones



There are no official floodways available by FEMA in Berkshire. SFHAs span more stream length than the River Corridors. It is worth noting that river corridors are only mapped for streams with watershed of two or more square miles, but they do also apply to the area within fifty feet of top of bank for all mapped streams in the Vermont Hydrogeography Dataset.

Probability**:** Plan participants agreed that there is a *high probability* of flooding and fluvial erosion to occur annually. Flooding and fluvial erosion may occur multiple times during the year and can occur in any month, but the severity of flooding and fluvial erosion varies. Flooding and fluvial erosion from ice jams is considered rare. Flash floods typically occur during summer when a large thunderstorm or a series of rain storms result in high volumes of rain over a short period of time. Higher-elevation drainage areas and streams are particularly susceptible to flash floods. Flash floods are likely in Berkshire, and potential damage to Route 105 in Berkshire and neighboring town of Enosburgh, could limit access to town, as it is the major transportation corridor through the community. Flooding and fluvial erosion are considered highly likely by the town.

The town contains numerous streams and the Missisquoi River that are susceptible to channel migration, bank instability, and erosion during periods of heavy rainfall, rapid snowmelt, and flooding. Given projections for more frequent and intense storm events in the Northeast, Berkshire is likely to continue experiencing recurring fluvial erosion that threatens transportation infrastructure, agricultural land, utilities, and development located near stream corridors.

Extent: There is a stream gauge on the Missisquoi River located to the northeast of East Berkshire. This is the closest gauge to Berkshire. The highest recorded measurement was 23.10 feet, which was measured on November 4, 1927. Flood height is 13 feet, which has exceeded 8 times since 2000. According to NOAA, gauge heights at this location will result in the following results:

Figure 5: Flood Impacts: Missisquoi River Stream Gage in East Berkshire

Gauge Height	Potential Effects

23	Devastating flooding occurs. This stage equals the Great Flood of 1927. Bridges on Routes 118, 108, and 105 will be covered in water, and may be destroyed. Large sections of Routes 118, 108, and 105 and local roads will be covered in water. Water will inundate homes in East Berkshire and Enosburg Falls.
17	Severe flooding will occur from Richford downstream to Sheldon along the Missisquoi. Water will enter homes in East Berkshire, and cover portions of Route 118 near East Berkshire and Route 105 between East Berkshire and Enosburg Falls. Missisquoi Street in Enosburg Falls will flood. Flooding of farmland will be widespread along the Missisquoi in Franklin county. This stage is equivalent to the FEMA 1 Percent Annual Chance Flood.
16	There will be widespread flooding along the Missisquoi from Richford to Sheldon. Water will cover portions of Route 105 between Enosburg Falls and East Berkshire, and will approach Route 236 in Sheldon and Route 118 in East Berkshire. There will be extensive field flooding.
14	Widespread flooding of low lying fields and roadways will occur from Richford to Enosburg. Water will approach Route 118 at East Berkshire, and Route 105 between Enosburg Falls and East Berkshire. Yards will be flooded in East Berkshire.
13	Widespread flooding of low lying fields and some low lying roads will occur along the Missisquoi from Richford to Enosburg. Water will enter the yards of riverside homes in East Berkshire.

Extent for inundation flooding: The National Weather Service Reports that river gauge heights on the Missiquoi River in East Berkshire have exceeded 13 feet (flood height) approximately 47 times since 1918 (with increased frequency since the 1990s).

Extent for fluvial erosion: The worst area that is causing issues in the Town of Berkshire is on Marvin Road. The north section of this road is located on the banks of the Missisquoi River and has seen significant erosion over the past several years. Some of the roads have been protected through the installation of rip rap along the bank of the river, but several sections still need to be protected. Two structures on this section of road are located within the River Corridor or special flood hazard area (SFHA). Fluvial erosion also threatens portions of East Berkshire and West Berkshire (along the Pike River). Accurate extent data for this section of fluvial erosion is unknown, but the fluvial erosion could impact about a ¾ of a mile section of Marvin Road.

There is a 26 percent chance of experiencing a flood during the life of a 30-year mortgage compared to a 4 percent chance of a fire. Berkshire's zoning bylaw is NFIP compliant.

Impact: The Committee classified the impact of flooding and fluvial erosion as *negligible* to *major.* Flooding and fluvial erosion primarily impacts transportation infrastructure, residential basements and driveways. The southern portion of Berkshire receives more impacts from flooding and fluvial erosion along the Missisquoi River according to plan participants. On rare occasions, Mineral Brook, Marvin Road and VT 108 have been temporarily closed due to flooding and residents experience some flooding in their basements. When closures occur, they are brief from a few hours to a few days depending on the flood event. Much of the damage from flooding in Berkshire is due to fluvial erosion rather than inundation flooding, which is the type of flooding targeted through the NFIP.

Town Vulnerability

- **People:** Residents in low-lying areas near the Lamoille River along the Missisquoi River, Trout River and Pike River and tributary streams are vulnerable to property damage, displacement, transportation disruptions, and potential safety risks during major flood events. Residents could be isolated during a severe flood event along VT105. Properties located along these areas vulnerable to stream bank failure from fluvial erosion. Older residents and people with disabilities and functional access needs, such as lack of transportation options, may have difficulty evacuating. These events can cause injuries or fatalities to people who do not evacuate in time. Delayed evacuation can be caused by flash flood events, or by individuals who are hesitant to leave their houses. The elderly and residents with other special needs may potentially be impacted more than other residents due to mobility issue. This can cause added strain to volunteer first response agencies within the town.
  Built Environment: Flood events can cause damage to town and private property, including roads (i.e., Routes 105 and 108), culverts, driveways, bridges, wells, water and wastewater facilities, private septic systems, and buildings. These impacts could cause disruption of the transportation systems to and from the community and county.

  Roads, bridges, culverts, utilities, and buildings located within river corridors are susceptible to undermining, washouts, and structural damage caused by channel migration and streambank erosion. Town roads subject to fluvial erosion events along the road shoulder or near culvert inlets during periods of high precipitation and rapid run-off within proximity of the Missisquoi River, Trout River and Pike River and their tributaries including Reservoir Road, Marvin Road; and Mineral Brook are areas that are impacted by fluvial erosion.

  There are river embankments along the road that are susceptible to erosion whenever the river rises and residential structures located along these areas are vulnerable to damages from stream bank erosion and related failure. The road shoulder in several areas along River Road and VT105 Road show evidence of erosion during high water. Structures could be damaged and the state would need to temporarily close the road.
  Natural Environment: Flooding and fluvial erosion can destabilize streambanks, increase sediment transport, degrade aquatic habitats, and impact water quality in the Missisquoi River, Pike River and Trout River watersheds.
  Economy: Flooding and fluvial erosion can impose significant costs on the Town of Berkshire through costly infrastructure repairs, property and agricultural land losses, emergency streambank stabilization and recovery measures, long-term maintenance expenses, and business interruptions. Road washouts may make it difficult for residents to commute to and from work and could disrupt fuel deliveries and the movement of goods and services into and out of the community, reducing economic activity during recovery periods.

Potential Future Impacts

Climate Change: Climate change is expected to increase the frequency and intensity of heavy precipitation, producing more frequent high-flow events that can increase flooding, stream velocities, bank erosion, and channel migration. The 2019 Halloween storm caused more than $6 million in infrastructure damage after producing 3–5 inches of rain in a single day in northwestern Vermont, demonstrating the potential impacts of intense storms. More frequent severe storms and saturated soils may damage roads, wastewater and stormwater infrastructure, while residences, farms, and other properties near rivers and streams may experience flooding or land loss for the first time. Agricultural businesses may also be affected by saturated soils and loss of productive farmland. Increased erosion can contribute sediment and nutrients to waterways, degrading water quality and disrupting riparian ecosystems. Overall, the Town can expect increased infrastructure damage, costly repairs, property relocations, and potentially more property buyouts.
Changes in Land Use / Development: New residential and commercial development in Berkshire is encouraged to implement stormwater mitigation strategies, otherwise known as Low Impact Development (LID). The main aim of LID is to design a site that prevents and minimized environmental degradation. Common LID techniques that mitigate the adverse impacts of stormwater runoff include minimize total land disturbance, reduce the amount of impervious surfaces and protect existing natural areas like forest stands and stream buffers.

By establishing the Flood Hazard District within Berkshire's Zoning Bylaws, the Town qualified for FEMA's National Flood Insurance Program (NFIP), allowing property owners in high-risk zones to purchase flood insurance while promoting community safety and minimizing public and private losses. Additionally, river corridor regulations expand flood plain protections by accounting for changes in stream and river channels. Berkshire remains committed to enforcing these regulations to maintain NFIP eligibility and protect residents, property, and infrastructure. This strict oversight limits development in vulnerable areas, offsetting the risks of road and driveway expansions which may alter drainage patterns, increase runoff, and constrain natural channel movement.

Changes in Demographics: Berkshire has experienced low population growth and remains attractive to families due to its rural nature. Repeated flood events and increasing flood-related costs could discourage development in high-risk areas, shift growth toward higher ground, and place financial burdens on homeowners, renters, and businesses. Like much of Vermont, Berkshire is likely to see an aging population over time. Older residents can be disproportionately affected by flooding because evacuation, recovery, and home repairs may be more difficult. Repeated flood events could encourage some seniors to move closer to services outside of town into less vulnerable communities. Older adults, lower-income households, and residents with limited resources may face greater challenges recovering from flood damages.

History: See Appendix F for history of flooding/fluvial erosion.

Severe Winter Storms (Ice Storm) – *Moderate Risk*

Description: Severe winter storms with snow, ice and freezing temperatures in various combinations are fairly common in Berkshire. Such storms are accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines. Winter storms can cause roofs to collapse and limit access to areas and buildings around Town. Extreme cold often accompanies a severe winter storm or is left in its' wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening.

A **Nor'easter** is a large coastal storm that forms along the Atlantic coast and produces strong northeasterly winds, heavy precipitation, and prolonged impacts such as snow accumulation, ice storms, high winds, and flooding. In Vermont, Nor'easters are a major source of winter weather hazards and can affect entire communities through power outages, hazardous travel conditions, and damage to infrastructure.

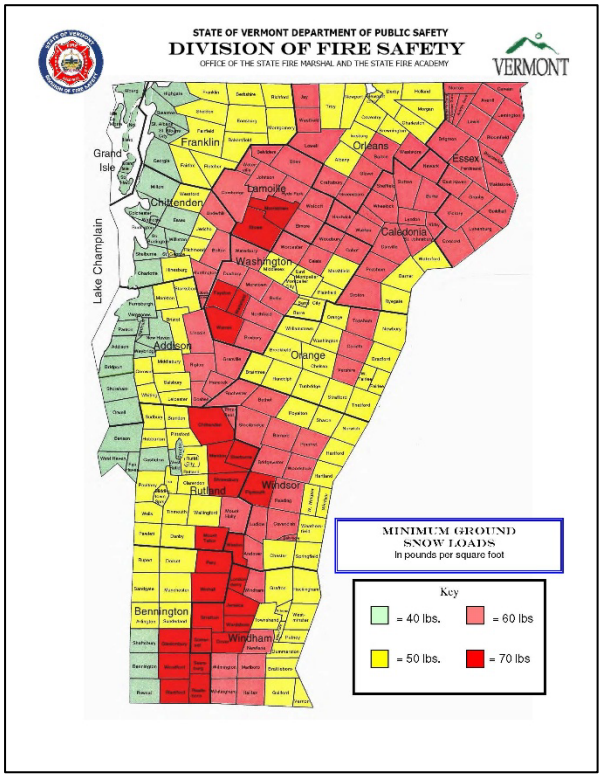
The National Weather service defines a **blizzard** as "a storm which contains large amounts of snow or blowing snow, with winds in excess of 35 mph and visibilities of less than 1/4 mile for an extended period (at least 3 hours).

An **ice storm** is a winter weather hazard characterized by the accumulation of freezing rain that forms a layer of ice on surfaces.

Construction standards for snow load (see map) indicate that structures in Berkshire should be built to withstand loads of 50 pounds per square foot. This would indicate an average depth of snow of 40 inches or 10 inches of ice on a square foot of roof surface. At that point, design standards would be exceeded, and the structure runs the risk of collapse. Given this standard, a snowstorm which dumped 40 inches of snow or 10 inches of ice would likely result in a few collapsed roofs, especially on structures which are not built to these standards.

Location: A winter storm has the potential to affect all areas of Berkshire, making it a town-wide hazard rather than one confined to a specific location. Heavy snow, ice accumulation, freezing rain, strong winds, and extreme cold can impact residential neighborhoods, Berkshire Center, the school, roads, agricultural lands, public facilities, and utilities throughout the community. Higher-elevation and more remote areas may experience greater snow accumulations and more difficult travel conditions especially in eastern areas of Town. Widespread power outages can occur from downed trees and utility lines. Because these storms affect the entire town simultaneously, all residents, businesses, and public assets in Berkshire are considered exposed to this hazard.

Figure 6: Minimum Snow Loads for Construction: Berkshire (50lbs/sq. ft.)



Probability: The probability of severe winter storm (ice storm) is considered *highly likely* by the committee. Severe winter storms (ice storms) occur annually in Berkshire, typically in the form of a Nor'easter. Nor'easters are more common and occur most often in the winter and early spring, but also sometimes during the fall. Blizzards occur less frequently.

Extent: The extent of a severe winter storm (ice storm) typically includes the disruption of transportation networks, school closings and telecommunications and power outages. Travel is often hazardous with decreased visibilities and slippery roads. Heavy wet snows occurring during early fall and late spring and ice storms in the winter months are the cause of most power failures. Cold temperatures coupled with power outages place residents at risk especially those who don't have secondary heating sources independent of the electricity such as wood or pellet stoves. Vulnerable populations such as the elderly, those dependent on medical equipment and specialized health or physical care are at risk to severe winter storms (ice storms) . Also at risk are farms and associated structures and livestock. Barns can collapse due to heavy snow loads. Dairy cattle are susceptible to mastitis if they are unable to be milked.

Nor'easters can leave inches of rain or several feet of snow, and sometimes last for several days.

Blizzards can cause hazardous travel conditions, road closures, power outages, damage to infrastructure, and disruptions to emergency services, affecting entire communities Even less common but potentially more damaging are ice storms which can negatively affect the entire community by creating dangerous travel conditions, damaging trees and utility infrastructure, disrupting essential services, and causing prolonged power outages during cold weather.

Figure 7: Record Snow Falls, Burlington, Vermont (September-November)

September - November					
Highest			**Lowest**		
Rank	Snowfall	Year(s)	Rank	Snowfall	Year(s)
1	24.0"	1900	1	0	2009/1948/1937/1915
2	23.0"	1921	2	0.1"	2004
3	21.9"	1906	3	0.4"	2010/1953/1930
4	20.4"	2002	4	0.5"	2003/1946/1941/1934/1918
5	19.4"	1910	5	0.7"	1999/1960/1894

6	19.2”	1971	6	0.8”	1982
7	18.8”	1968	7	0.9”	1988/1929
8	16.1”	1997	8	1.0”	1931
9	16.0”	1977	9	1.3”	1964
10	15.6”	1969	10	1.4”	1939
Source: National Oceanic and Atmospheric Administration					

Figure 8: Record Snow Falls, Burlington, Vermont (Mar-May)

March - May					
Highest			**Lowest**		
Rank	Snowfall	Year(s)	Rank	Snowfall	Year(s)
1	52.7”	1933	1	0.1”	1945
2	47.8”	2001	2	1.0”	1903
3	45.7”	1971	3	2.0”	1910
4	37.7”	1974	4	2.7”	1927
5	36.4”	1916	5	3.1”	1934
6	36.1”	1997	6	3.2”	1991
7	34.4”	1994	7	3.9”	1946
8	33.9”	1983	8	4.0”	1905
9	31.0”	2007/1972	9	4.1”	1915
10	30.1”	2011	10	4.2”	1921
Source: National Oceanic and Atmospheric Administration					

The town can keep the roads open and treated for most storms and any loss of power is usually limited to hours, except during the Ice Storm of 1998 when most of the town was without power
for three to four days.

Some of the worst historical winter storms in Berkshire have left snow depths of 14” (March 2001), wind speeds up to 40 mph (January 1998), and ice accumulations of 2-4” (January 1998 and December 2013).

Impact: The impact of severe winter storm (ice storm) is considered *negligible* to *major* by the committee based on history. Severe winter storms (ice storm) in Berkshire, typically cause power outages, light property damage, and travel disruptions. Heavy accumulations of ice and dense, wet snow weigh down trees and utility lines across leading to snapped limbs, downed power lines, and structural damage to homes, vehicles, and barns. Debris from fallen trees frequently blocks local roadways, creating hazardous travel conditions and hindering emergency response and utility restoration efforts. During major historic icing events, residents in Berkshire have experienced prolonged power loss lasting several days while utility crews worked on repairs.

Berkshire’s recent history has not recorded any loss of life due to severe winter storms (ice storms). The Town public works department is equipped to handle most winter emergencies, including maintaining road accessibility through various snow and debris removal equipment. The town has emergency backup power at the Town Office, Fire Station, Highway Department and School. The utility companies now manage tree and vegetation removal along power line corridors greatly reducing the duration of power interruptions.

Town Vulnerability:

People: Severe winter weather and ice storms events can cause injuries or fatalities to people who cannot or do not shelter-in-place, or who do not have adequate shelter. Delayed sheltering-in-place can be caused by no-notice events, or by individuals who do not heed the warning. The elderly, the unhoused, residents with special needs and those without proper transportation may potentially be impacted more than other residents.
Built environment: Severe winter storms (ice storms) can cause damage to public and private property, including buildings (roof collapse), blocked egress routes, frozen pipes, downed powerlines, and road infrastructure (i.e., Routes 105 and 108). Drifting snow can be problematic in some areas of town along Water Tower Road, Reservoir Road and Richford Road. Impacts from severe winter storms could cause disruption of the transportation system to and from the community and county.
Natural environment: Severe winter weather and ice storms events can cause damage to the environment with downed trees. Areas in town that may be more vulnerable are those areas where the utility company hasn't maintained utility corridor along Lost Nation Road, Berkshire Center Road and Pleasant Valley Road.
Economy: Severe winter weather and ice storms events can cause economic impacts to town assets, residents and businesses. Impacts include disruption or closure of impacted businesses, town office and departments, and response and recovery costs, including employee overtime, time and equipment spent clearing roads, sanding roads, fuel costs and maintaining equipment. Commuters may be unable to get to and from work. Schools and businesses may be closed. Delivery of fuels and goods to and from town may be interrupted. Power could be disrupted causing disruptions in financial transactions for stores and restaurants.

Potential Future Impacts:

Climate Change: Winter in Vermont has been reported to be warming 2.5 times faster than the global average annual temperatures since 1960 [3]. Typical winter weather conditions will be impacted including river ice reductio and shifting agricultural production times. Warmer winters will also mean that ground freezing will likely be impacted, and rain precipitation could saturate soils causing more flooding. Warmer winters will affect crucial Vermont industries like maple sugaring. Maple sugaring relies on a specific temperature range for sap to flow, typically occurring when nighttime temperatures drop below freezing (0°C / 32°F) and daytime temperatures rise above freezing. Warming winters will also impact the tourist industry for those traveling through town to Jay Peak Resort and for local business that receive winter snowmobile users on the Missisquoi Valley Rail Trail.
Changes in Land Use/Development: Berkshire's relatively low growth rate likely will experience fewer future impacts. New development could place additional demands on transportation networks, utility systems, and emergency services however there are no known large-scale developments being planned. Conversely, resilient development practices, redundant energy systems, scheduled equipment maintenance, capital planning and land-use planning can reduce Berkshire's vulnerability by improving access, minimizing power disruptions, and enhancing the community's ability to withstand and recover from winter storm impacts.
Changes in Demographics: Berkshire's population isn't expected to grow significantly based on recent trends. However, there could be greater demands as growth occurs on road maintenance, emergency response, sheltering, utility restoration, and public safety services during snowstorms, ice storms, and blizzards. An aging population may increase the demand for emergency assistance, medical services, and accessible transportation during severe storms, while population growth can place additional pressure on infrastructure and emergency response resources. Increases in populations with disabilities and functional access needs, such as individuals with limited mobility, may also increase the challenges associated with preparedness, response, and recovery from winter storm events.

History: See Appendix F.

[3] Vermont Climate Assessment (2021), University of Vermont, Gund Institute for Environment.

Strong Winds (Windstorm, Thunderstorm, Tornado, Hurricane/Tropical Storm) – *Moderate Risk*

Description: FEMA's National Risk Index defines severe winds as damaging winds that exceed 58 mph. Locally, wind caused damages have occurred with sustained winds greater than 30 mph with gusts greater than 40 mph. Strong winds pose a threat to lives, property, and vital utilities primarily because of flying debris or downed trees and power lines.

Strong wind can be the result of the following:

- **Wind Storm:** high wind event without precipitation.
- **Thunderstorm:** high wind event with the potential for compounding impacts due to precipitation (i.e. flood inundation, fluvial erosion, lightning, and/or hail.
- **Tornado**: a violent rotating column of air extending from a thunderstorm, not common in Vermont.
- **Hurricane/Tropical Storm:** the most significant impacts from hurricanes/tropical storms in Vermont are inundation flooding and fluvial erosion. Wind implications of hurricanes/tropical storms are addressed below.

Wind Storm: The National Weather Service (NWS) issues a Wind Advisory when winds are sustained at 31 to 39 mph for at least one hour or any gusts from 46 to 57 mph. The NWS will issue a High Wind Warning for wind speeds that are 58 mph or higher. Additionally, the NWS also has classifications for Tropical Storm Wind Warning and Hurricane.

Thunderstorm: Thunderstorms vary in size and type, each posing unique hazards. They can produce powerful downburst winds known as microbursts and macrobursts, which radiate outward from the base of a storm and can exceed 80 mph, with microbursts being particularly dangerous to aircraft due to their concentrated impact area. Ordinary cell thunderstorms consist of a single updraft and downdraft, bringing strong winds, rain, lightning, and hail. In contrast, multicell cluster thunderstorms contain multiple ordinary cells and are especially prone to flash flooding. Squall line thunderstorms form long, narrow bands—sometimes over 100 miles—with their strongest winds and rains concentrated at the leading edge. The most intense and destructive type is the supercell thunderstorm, which can last the longest and is responsible for nearly all tornado formation, along with producing lightning, hail, and flash flooding. (see: Hail and Flooding & Fluvial Erosion).

In Berkshire, high winds typically occur alongside severe thunderstorms, with straight-line winds often causing the majority of thunderstorm-related wind damage. These winds can be mistaken for tornadoes due to the comparable wind speeds and damage patterns, but unlike tornadoes, they do not involve rotating air. While thunderstorms and their associated hazards can happen at any time of year, they are most common during the spring and summer months.

Tornado: A tornado is a rapidly rotating column of air that extends from a thunderstorm to the ground, capable of causing extreme destruction. The most intense tornadoes can produce wind speeds exceeding 250 mph, leaving damaged paths that may span over a mile in width and stretch up to 50 miles in length. Tornado intensity is measured using the Enhanced Fujita Scale, which rates wind speeds on a scale from EF0 to EF5.

Hurricane/Tropical Storm: A hurricane is a tropical cyclone with sustained winds that have reached speeds of 74 mph or higher. A storm reaches hurricane status only after strengthening over a period of days or even weeks. A tropical storm has a maximum sustained wind speed of 39 to 73 mph and typically forms over warm ocean waters. As a hurricane moves to coastal areas, wind speeds decrease, and the hurricane may be downgraded to a tropical storm. This is the case in many of the tropical storms that have reached Vermont. The Atlantic Ocean hurricane season occurs approximately from June 1 through November 30, with most of the hurricane activity occurring between mid-August through October.

Location: Strong wind (windstorm and thunderstorms) is common in Berkshire and can occur anytime during the year. The entire town can be affected as pressure gradients move through the area. Southerly and westerly winds tend to be stronger as they move through the Champlain Valley or across Lake Champlain. The town has experienced a variety of

high wind events from storm systems that track from eastern New York and Ontario, and across Lake Champlain as well as Quebec from the north. There are no confirmed tornado events or hurricanes in Berkshire. The town is far inland from the Atlantic Ocean and is unlikely to receive a direct hit from a hurricane, however the remnants of tropical storms with accompanying thunderstorms, winds, rain and less often, hail as an accompanying hazard have occurred.

Probability: The probability of a strong wind event in Berkshire is considered *high likely* based on history. NOAA's National Climatic Data Center records indicate that Franklin County has experienced 141 high wind, strong wind or thunderstorm wind events over the past 58 years resulting in over $4,700,000 in cumulative property damage. Of those, 77 are classified as severe thunderstorms with wind speeds of 50 kts or greater. Participants estimate that strong wind events occur at least once per month, in the form of thunderstorms and windstorms typically between May and September and less common as Tropical Storms between mid August and October and as severe winter storms (Nor'Easter and blizzard) from November 1 through March 30th.

Those hail events that do occur tend to be highly localized and limited to a small area. Hail is profiled later in this section.

Tornadoes can occur under the right conditions but in Vermont they occur typically between March and August. There no recorded tornadoes in Berkshire.

Tropical Storms and Hurricanes typically occur during the official Atlantic Hurricane Season from June 1 through November 30. Activity typically peaks between mid-August and late October,

Extent: NOAA storm event reporting defines wind categories as follows:

High Wind: Sustained non-convective winds of 40 mph (35 knots) or greater lasting for 1 hour or more, or wind gusts of 58 mph (50 knots) or greater. These winds are not directly associated with thunderstorms.

Strong Wind: Non-convective winds below High Wind criteria but still capable of causing damage or disruption. Typically includes sustained winds or gusts between 40 and 57 mph that result in impacts.

Thunderstorm Wind: Convective wind produced by a thunderstorm with measured or estimated gusts of 50 knots (58 mph) or greater, or winds causing damage consistent with those speeds. Thunderstorm Wind is one of NOAA's primary severe weather event categories.

The **Beaufort Wind Scale** is a standardized system used to estimate wind speed based on the observable effects of wind on land and water. It is commonly used in weather forecasting, marine navigation, and emergency management to communicate wind intensity.

Figure 9: Beaufort Wind Scale (Source: NOAA)

Force	Wind (Knots)	WMO Classification	On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, Smoke rises vertically.
1	1-3	Light air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh breeze	Moderate waves 4-8 ft taking longer form, may whitecaps, some spray	Small trees in leaf begin to sway

6	22-27	Strong breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (18-25 ft) waves of greater length, edges of crests beginning to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs.
10	48-55	Storm	Very high waves (29-41 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft) waves, foam patches cover sea, visibility reduced	Widespread structural damage.
12	64+	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced	Widespread structural damage.

Strong wind events often accompany thunderstorms. Lightning strikes in Franklin County average between 4-6 strikes per square mile each year based on data collected by NASA 's Earth information System. Within Berkshire, the low estimate is 160 strikes per year, and the high estimate is 240 strikes per year. NOAA's severe weather data inventory lists 156 strikes in Berkshire and the immediate area from 2019-2024.

The **Enhanced Fujita (EF) Scale** is used to rate the intensity of tornadoes based on the damage they cause to buildings, trees, and other structures. I

Figure 10: 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 NOAA)*

According to the State Hazard Mitigation Plan, Vermont has experienced 49 tornadoes, 14 of which were magnitude F2 (significant) and 19 magnitude F1 (moderate) on the Enhanced Fujita Scale. F2 tornadoes have maximum wind speeds of 111 to 135 mph, while F1 tornadoes range from 86 to 110 mph.

While tornados are a rare occurrence in the state, microbursts and straight line winds have occurred more often. According to NOAA, a microburst is a downdraft (sinking air) in a thunderstorm that is less than 2.5 miles in scale. Straight-line winds are powerful wind gusts produced by a thunderstorm's downdraft that move horizontally across the ground in a single direction without any rotational motion. They occur when rain-cooled, dense air sinks rapidly within a thunderstorm, hits the ground, and bursts outward.

Some microbursts and straight line winds can pose a threat to life and property. They are not widely recognized as tornadoes, but they can cause comparable, and in some cases, worse damage than some tornadoes produce. In fact, microburst wind speeds as high as 150 mph are possible in extreme microburst cases which is the equivalent of an EF3 tornado. Straight line winds can reach 100 mph causing damage equivalent to an EF0 or EF1 tornado.

Hailstorms usually occur in Vermont during the summer months and accompany thunderstorms and strong wind events. There have been 33 recorded hail events in Franklin County between 1998 and 2024. Hail is considered an infrequent occurrence and is profiled later in this section.

The **Saffir-Simpson Hurricane Wind Scale** is a 1 to 5 rating based only on a hurricane's maximum sustained wind speed. *This scale does not consider other potentially deadly hazards such as flooding, and tornados.*

Figure 11: 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	**Sustained Winds**	**Types of Damage 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 framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
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 or higher 137 kt or higher 252 km/h or higher	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: (NOAA)

Hurricanes have never occurred in Vermont due to the state's location far from the Atlantic coastline. In general, severe hurricanes are considered highly unlikely, nor do they pose a recurring threat for Berkshire or the state in general. Berkshire has experienced five tropical storms and their remnant since 2004, with varying degrees of impact with the worst being in 2017 where multiple broken poles and downed lines that caused power disruptions for several days.

Impact: The impact of strong winds in Berkshire is considered *negligible to moderate* by the committee depending on wind type, strength, duration and local conditions. The most common impacts from strong wind events include downed trees and limbs, power outages, roof and siding damage, blocked roads, and damage to agricultural buildings.

Most wind events experienced in the community are associated with severe thunderstorms, winter storms, or strong pressure-gradient wind events rather than hurricanes. While tornadoes, microbursts, straight line winds and the remnants of tropical storms are relatively rare, they have the potential to produce localized areas of severe or catastrophic damage.

Vermont Electric Cooperative utility lines and infrastructure are in process of being reinforced due to damaging winds and are vulnerable to toppling trees. A right-of-way vegetation management plan is in place for the utility corridors to help mitigate damages. Strong wind events with associated power outages can have a short-term impact on the local economy due to business closures.

Commercial and residential structures, seasonal homes, public buildings (Town Office, Fire Station, Town Garage, Elementary School), barns, livestock, churches, and utilities could all be damaged by strong wind events. The committee determined that utility lines are the most at risk from strong wind as trees and branch can fall on the utility corridor and disrupt power throughout town.

There is power surge equipment installed for electronic equipment at the Berkshire Fire Station, Town Garage Town Office, and School. The Highway Department is equipped with associated debris removal equipment. Emergency generators are located at the Fire Station, Town Garage, Town Office and School which serves as the community's primary shelter.

Town Vulnerability:

People: Strong Wind events can cause injuries or fatalities to people who do not shelter-in-place in time, or who do not have adequate shelter. Delayed sheltering-in-place can be caused by no-notice events, or by individuals who do not heed the warning. The elderly, residents with special needs and those without proper transportation may potentially be impacted more than others. Communication systems are vulnerable, as the loss of phone service poses challenges for residents—particularly vulnerable populations. With landline networks now relying on fiber lines that share poles

with electrical service, phone access depends on short-lived battery backups during outages. Cell service is commonly used but often unreliable in certain areas, complicating efforts to reach emergency services.

Built environment: Strong wind events can cause widespread power outages that disrupt businesses and threaten public safety. Damages from lightning could come in the form of destroyed electrical appliances, transformers, capacitors, structure fires, or tree strikes that could cause wildland fires. Private properties in Berkshire have experienced lightning strikes. High elevations in foothills of the Green Mountain Range and areas around bodies of water such as rivers and ponds are more susceptible. Mobile homes can be vulnerable due to their light weight and unanchored foundations. Older mobile homes, built before 1994, may be especially susceptible to more severe winds according to data from the Urban Institute. There are 60 mobile homes dispersed widely throughout Town with no density in any particular area.

Natural environment: Wind events can cause damage to the environment with downed trees, and uprooted trees and plants. Corn and other crops could be damaged or destroyed by wind events.

Economy: Strong wind event can cause disruption or closure of public offices, businesses, recovery costs, including employee overtime, and time and equipment spent on repairs. Commuters may be unable to get to and from work. The school may be closed, impacting families whose parent, parents or legal guardians work during school hours. Delivery of fuels and goods to and from town may be interrupted. Power could be disrupted causing disruptions in financial transactions for stores and restaurants. Agriculture based businesses could have crops destroyed by high winds.

Potential Future Impacts:

Climate Change: According to NOAA, future impacts of wind events are varied. Warming temperature are predicted to increase the severity of wind speeds. Strong winds can damage roofs, windows, and siding, and can cause structural damage to roofs at 55–63 mph. Homes with siding are particularly vulnerable to wind damage, and stucco can also be damaged by water. For mobile homes winds can cause serious damage to anchored mobile homes at speeds over 80 mph and can destroy poorly constructed or unsecured mobile homes at speeds of 60 – 73mph. Older barns can be toppled.

Changes in Land Use/Development: As residential, commercial, and industrial development expands, more structures may be vulnerable to roof damage, fallen trees, power outages, and debris-related hazards during wind events. Development in previously undeveloped areas may also increase the need for utility and transportation infrastructure that can be affected by high winds. However, proper vegetation management can help reduce future wind-related damages.

Changes in Demographics: Population growth may result in more homes, businesses, and municipal facilities that could be affected by downed trees, power outages, and structural damage. An aging population, individuals with disabilities and functional access needs may face greater challenges during prolonged power outages or recovery efforts. As Berkshire's population grows and changes, demand for emergency response, sheltering, utility restoration, and public assistance following high wind events may also increase.

History: See Appendix F.

Extreme Heat – *Low Risk*

Description: Extreme heat refers to prolonged periods of excessively hot weather, often accompanied by high humidity which can pose serious health, safety and infrastructure risk. In Berkshire, extreme heat typically occurs during the summer months when daytime temperatures rise well above average—often exceeding 90°F (32°C)—and nighttime temperatures remain elevated, preventing cooling.

Location: All areas of Berkshire are susceptible to extreme heat events.

Probability: The probability of extreme heat in Berkshire is considered likely by the committee. While historically rare in northern Vermont, climate change is contributing to more frequent and intense heat waves in the region. The number of days with temperatures exceeding 90°F (32°C) is projected to rise over the coming decades. These events are becoming more common during the summer months, particularly in July and August, and may also begin occurring earlier and later in the season.

Figure 12*: Heat Index for Burlington, VT*

Top 10 Daily Max HI* (1947-)		
Rank	**Temperature**	**Date(s)**
1	111.4	8/26/1948
2	110.4	7/2/2002
3	108.6	6/23/2025, 7/27/1949
4	107.4	6/19/1995
5	107.3	8/1/2006
6	106.9	7/21/1994, 8/25/1948
7	106.5	7/20/1977
8	106.0	8/1/1975, 7/29/1947
9	105.8	8/1/2006
10	105.7	7/28/1949

Source: NOAA

Extent: The severity of these events can vary based on humidity levels, wind conditions, and the persistence of high-pressure systems. During more intense heat waves, the heat index—a measure that combines temperature and humidity—can reach dangerous levels, significantly increasing health risks, stressing energy and public health systems. Prolonged heat events coupled with drought conditions could cause private wells to dry and impact the East Berkshire Fire Districts water system.

Agricultural impacts may include crop damage, heat stress in livestock and reduced productivity. Additionally, local events and outdoor activities may be canceled or scaled back, and economic losses may occur in sectors like farming, recreation, and tourism.

Heat advisories, watches, and warnings are issued by the National Weather Service and local authorities to alert residents to the risks of impending heatwaves. Places with limited tree cover and ventilation may experience more intense local effects, known as the urban heat island effect, though this is less pronounced in rural communities like Berkshire.

The Vermont Department of Health's Heat Vulnerability Index (HVI) references Berkshire. The Town's HVI is average (-0.5 to 0.5) compared to the rest of the state with an average of 5 days per year with maximum temperatures of at least 87°F.

Figure 5.1: *High Temperature Records*

June 23rd High Temperature Records				
Location	**Temp**	**Old Daily Record**	**June Ranking**	**All Time Ranking**
Burlington	99	96 (2020)	2nd	Tied 5th
Plattsburgh	101	95 (1983)	1st	Tied 1st
Saranac Lake	90	89 (1907)	Tied 25th	X
Massena, NY	92	92 (1975)	Tied 17th	X
Montpelier	93	90 (1975)	Tied 6th	Tied 16th

June 24th High Temperature Records				
Location	**Temp**	**Old Daily Record**	**June Ranking**	**All Time Ranking**
Burlington	97	96 (2003)	Tied 3rd	Tied 20th
Plattsburgh	99	95 (1975)	2nd	Tied 5th
Saranac Lake	90	89 (2003)	Tied 25th	X
Massena, NY	93	92 (1957)	Tied 9th	X
Montpelier	93	90 (1995)	Tied 6th	Tied 16th

Impact: The impact of extreme heat in Berkshire was determined by the committee to be minor to moderate. Extreme heat in Berkshire typically lasts for one to several days and up to a week, with daytime temperatures exceeding 90°F and limited overnight cooling. Because Berkshire is located in rural northern Vermont where the heat island effects are non-existent due to lack of development.

Prolonged high temperatures lead to heat-related illnesses such as heat exhaustion and heat stroke, especially among at-risk populations. First response agencies may see increased demand, and public safety services may be strained. Extreme heat can also cause infrastructure stress, including power outages (brown outs) due to high energy demand for cooling systems.

Town Vulnerability:

People: Heat events can cause injuries or fatalities to people who do not heed heat advisories. People with disabilities or functional access needs may be more susceptible to heat related illnesses or injuries such as heat stroke. Older adults have a reduced physiological ability to regulate body temperature, while infants and children rely entirely on caregivers and dehydrate faster. First response services (fire, rescue, law enforcement) could be impacted with larger crowds being drawn to the town beaches and marinas and increased recreational boaters, cyclists and tourists.

Built Environment: Heat events can cause a strain on the town's electrical system, leading to brown or blackout events. Extreme heat can also cause thermal expansion of concrete and steel and swelling on connection bridges.

Natural Environment: Heat events can increase the occurrences of droughts and wildfires. Droughts can cause minor to catastrophic issues for the natural environment. Local wild plants and crops may be lost during a prolonged drought event. Additionally, a drought can lead to streams and groundwater being depleted, which impacts wild and domesticated animals.

Economy: Heat events can cause economic impacts to the towns' operations. Impacts include disruption or closure of municipal departments as well as private businesses from staff with heat related illnesses or power disruptions. It may actually help the local economy as more in-state and out of state tourists are drawn to the town's beaches and marinas.

Potential Future Impacts:

Climate Change: Climate change has the potential to increase extreme heat occurrences in Berkshire and New England. Older adults are physiologically more sensitive to heat stress, cardiovascular strain, and dehydration. Many older homes lack central air conditioning. High heat days drive up local electricity demand for cooling, putting strain on regional rural power grids. Berkshire's economy relies heavily on commercial agricultural operations. Outdoor farmworkers face severe heat stress during critical summer harvest and maintenance months. Agricultural crops, vineyards and orchards productivity could be impacted by warmer winters and hotter summers. There is increased likelihood of future drought events, both in frequency and magnitude.

Change in Land Use/Development: No changes to asset impacts due to extreme heat events as a result of development or land use changes could be identified.

Change in Demographics: Berkshire's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase vulnerabilities of the population.

History: Per the State Hazard Mitigation Plan, the following extreme heat events occurred:
June 18, 2020: Areas of Vermont and New York experienced the 2nd longest heatwave duration with temperatures in the 90s for six days straight in northwestern Vermont. Burlington recorded the highest temperature in its history on June 22nd and 23rd with a reading of 96°F. Eight of fourteen of Vermont's counties recorded high temperatures during this period. One death in Orleans County was associated with this heat wave.

July 1, 2018: High temperatures affected all fourteen counties in Vermont through Independence Day. Temperatures reached the mid-90s, and heat indices were recorded within the range of 95 -110°F. The heat wave continued for 6 consecutive days, and Burlington, VT saw the warmest 5 day stretch since 1892. It is important to note that the all-time minimum temperature also broke a previous record of 78 degrees Fahrenheit, on July 2nd, 2018. Four deaths were attributed to this event, one recorded in Washington County and three in Chittenden County, all related to excessive indoor residential temperatures. Nearly 100 heat-related emergency department visits occurred state-wide during this heat wave, and more than 10 percent of Emergency Medical Service calls on July 1st were heat related.

March 17, 2012: Winter of 2011-12 had temperatures that averaged 4-5°F above normal and snowfall 40-60% of normal. This combination accounted for snow pack across the region to be largely below normal or even non-existent by mid-March. In Vermont, temperatures climbed into the 70s March 18 and low-80s March 19-22. Record heat was recorded across all of Vermont with maximum temperatures 30-40°F above normal and some daily records being broken by 10°F or more. This event caused an estimated reduction of 30% of maple sugar production, resulting in an estimated impact of nearly $10 million. In addition, there was significant loss of ski industry revenue due to a 25-50% reduction in snow loading.

July 21, 2011: Temperatures across much of southern Vermont warmed into 90s with dew points in the 70s, combined with the hot temperatures and resulted in heat indices of 100°F to 104°F. This was the 2nd day of a 3 to 4-day heat wave across a large portion of Vermont with heat index values of 100°F to 108°F across the Champlain and Connecticut valleys as well as some interior valleys. One death is attributed to this event in Windsor County.

August 1-2, 2006: A heat ridge moved into Vermont during the early morning August 1. Temperatures soared into the 90s but significantly more important were dewpoints that reached the middle to upper 70s to produce excessive heat index values of 100°F to 105°F, some of the highest values in nearly a decade.

Additionally, areas of Vermont and other states in New England experienced a heatwave with temperatures in the 90s for three days starting on June 17, 2024.

Extreme Cold – *Moderate Risk*

Description: In Berkshire, the summers are comfortable, wet, and partly cloudy and the winters are freezing, snowy, and mostly cloudy. Over the course of the year, the temperature typically varies from 7°F to 76°F and is rarely below -11°F or above 83°F.

Extreme cold events commonly occur during the winter months and may be intensified by wind chill, which increases the rate of heat loss from the human body and can lead to frostbite or hypothermia within minutes.

Figure 13: Average Monthly Temperatures for Berkshire, VT

Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	26° F	28°F	38°F	51°F	65°F	73°F	79°F	77°F	70°F	57°F	43°F	32°F
Low	13° F	14°F	23°F	34°F	46°F	55°F	61°F	60°F	53°F	43°F	31°F	22°F

Location: All areas of Berkshire are susceptible to extreme cold events.

Probability: The committee determined the probability of a extreme cold events to be *highly likely* but duration varies from less than 12 hours to several days. Berkshire is located along the border to Canada making it prone to Arctic air masses, which regularly bring extreme cold. According to NOAA, extreme cold temperatures are a recurring winter hazard in northern Vermont. The region typically experiences multiple periods of subzero temperatures each winter.

Extent: The National Weather Service typically defines extreme cold conditions through wind chill advisories and warnings. In the context of hazard mitigation, extreme cold is considered a recurring natural hazard with the potential for widespread impacts.[4]

- **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.

Figure 14: Wind Chill Temperature Index

Wind (mph)	Temperature (°F)																	
	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-58	-63
10	34	27	21	15	11	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-38	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-83	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-52	-60	-67	-74	-81	-88	-95
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
Frostbite times	None		>2 hours				≤30 minutes		≤10 minutes		≤5 minutes							

The extent of extreme cold in can be severe, with temperatures often dropping well below freezing and sometimes reaching as low as -20°F to -30°F during winter months. This extreme cold, coupled with wind chills that can plunge even lower, poses significant risks to public health and infrastructure. Prolonged periods of subzero temperatures can lead to

[4] [4] https://www.weather.gov/safety/cold-wind-chill-warning

deep soil freezing, particularly during extended cold spells from late fall through early spring. Frozen soil can hinder agricultural activities by preventing the absorption of water and nutrients, which impacts crop growth and planting schedules.

Extended periods of extreme cold increases the risk of hypothermia, frostbite, and other cold-related illnesses, particularly among vulnerable populations such as older adults, young children, and those without adequate heating.

Cold weather can also cause water pipes to freeze and burst and fire hydrants to freeze impairing a response to structure fires. It can strain heating and electrical systems and increase the likelihood of power outages. Transportation routes may be disrupted by icy roads. There are also higher costs for heating, home and vehicle maintenance. These impacts can affect the entire community and become more severe when extreme cold occurs for an extended period or coincides with other winter weather events.

Impact: The impact of extreme cold in Berkshire was determined by the committee to be *minor to major*. Extreme cold temperatures are anticipated annually, and the town is proactive in addressing operational issues associated with cold spells such as ensuring fuel delivery for heating of municipal buildings, maintaining public works equipment for extreme cold operations, having emergency backup power at the fire station, rescue station, highway and town office. Having a shelter plan for day and overnight shelters. School closures have occurred from extreme cold to protect children from exposure while waiting at bus stops.

Prolonged periods of extreme cold can impact public health and safety, transportation infrastructure, public utilities, private wells, the East Berkshire Fire District water supply, public and private heating systems, agricultural operations, and the local economy.

Town Vulnerability:

People: Extreme cold can cause hypothermia, frostbite, and other cold-related illnesses, particularly among people with disabilities and functional access needs such as older adults, young children, the unhoused and those without adequate heating. Private water lines could freeze. The East Berkshire Fire District's (private) water supply could be affected cutting off water to an economically distressed part of town.

Built Environment: Prolonged cold temperatures can damage buildings, freeze water and sewer lines, increase energy demand, and strain utility infrastructure. It also complicates construction and infrastructure projects, as frozen ground makes it difficult to dig or lay foundations, repair utilities, or manage drainage systems. Frozen soil can lead to frost heaves, where the expansion and contraction of frozen ground causes damage to road infrastructure, driveways, and foundations. It can lead to frozen water lines. Heating systems are vulnerable to freezing during subzero events, especially in older home s or uninsulated areas. The cold also puts a strain on the local energy grid due to the increased demand for heating.

Natural Environment: Extreme cold can stress wildlife, alter ecosystem processes, and affect the health and survival of sensitive plant and animal species.

Economy: Extreme cold can increase heating and maintenance costs, disrupt transportation and outdoor work, reduce productivity, and create financial burdens for households, businesses, and municipal services.

Potential Future Impacts:

Climate Change: Although extreme cold events may occur less frequently and with shorter duration, they are likely to become more unpredictable due to changes in the jet stream influenced by Arctic warming. As winters warm, more frequent freeze-thaw cycles are expected, with temperatures regularly rising above and falling below freezing. These cycles can significantly impact transportation infrastructure, causing potholes, frost heaves, and damage to roads, bridges, and building foundations. Additionally, extreme temperature fluctuations during winter months can create unstable river ice conditions causing ice jams and localized flooding. Warming

temperatures and reduced extreme cold may increase pest survival and expand habitats for disease-carrying species like ticks, posing greater risks to agriculture, forests, and public health.

Change in Land Use/Development: As extreme cold events become less frequent, future land use and development may shift to accommodate longer growing seasons and reduced heating demands. However, sudden cold snaps could still pose risks to infrastructure, agriculture, and natural systems unaccustomed to variable winter conditions. Development plans may need to account for these fluctuations by incorporating resilient building designs and land management practices.

Changes in Demographics: Berkshire's population is not expected to grow significantly over the next five years. Population growth can place additional demands on heating systems, electrical infrastructure, emergency services, and public shelters during prolonged cold periods. Increased development may also expand the amount of infrastructure vulnerable to frozen water lines, utility disruptions, and transportation challenges. Vulnerable populations, including older adults, young children, and lower-income households, may require additional assistance during extreme cold events. As a result, future population growth could increase both the number of people affected and the resources needed to prepare for, respond to, and recover from extreme cold conditions.

History:

January 27-29, 2022: An arctic air mass from Ontario brought Bitterly cold wind chills ranging from -20°F to -30 °F occurred late Wednesday night into midday Saturday. Actual temperatures dropped to -15°F to -25°F on the morning of the 27th and -5°F to -10°F below on the morning of the 29th.

January 20-22, 2022: An Arctic air mass settled over the region Thursday night and remained through Saturday. In Franklin County, wind chills dropped to a bitterly cold -20°F to 30°F overnight Thursday into Friday morning. Actual temperatures fell to -10°F to -20°F below zero early Friday morning, and -15°F to -30°F, by Saturday morning.

January 11-15, 2022: On the morning of the 11th (Tuesday), low temperatures ranged from 0 to -10°F, with wind chills between -15°F and -25°F. Daytime highs only reached the single digits above zero, with wind chills remaining below zero. That night, temps briefly dropped below zero before rising, but south winds of 10–20 mph still produced wind chills of -10°F to -20°F. Numerous school districts closed school and after school activities due to the cold and COVID related complications according to local media.

January 5-7, 2018: A surge of cold Arctic air brought an extended stretch of extreme cold. The most severe wind chills occurred on the mornings of January 6 and 7, when frigid temperatures combined with westerly wind gusts of 30 to 40 mph, producing widespread wind chills between -20°F and -40°F. In response to the dangerous cold, numerous warming shelters were opened throughout Vermont.

February 1–28, 2015: From late January to early March, a persistent deep cold trough dominated the Northeast, resulting in the coldest February on record for much of Vermont and nearby areas. Temperatures averaged 13–17°F below normal. Many locations stayed below freezing for 25–45 straight days. February saw 15–20+ days with temperatures below 0°F, and wind chills reaching -30°F or lower on several occasions. According to the National Weather Service, it was the coldest month since December 1989 or January 1994. Several communities set record cold temperatures.

December 8, 2008: An Arctic front swept across northern NY and New England, bringing the season's first Arctic air mass. By the morning of Dec. 8, temps ranged from 5°F above to -10°F, with NW winds at 10–20 mph and higher gusts. Wind chills reached -15°F to -25°F across northern Vermont during the early to mid-morning hours.

February 27, 2006: During the early morning hours of the 27th, an Arctic air mass settled over Vermont. A strong pressure gradient between high pressure in central Canada and low pressure over Labrador generated brisk winds. These winds, combined with frigid temperatures, resulted in wind chills ranging from -15°F to -30°F.

January 13-16, 2004: An arctic front moved through the area Tuesday, January 13th. Wind chills during Tuesday night, Jan 13th through noon on Wednesday, January 14th were generally -25°F and -45°F. Arctic high pressure then settled across the area on the 14th.

January 17-19, 1997: An outbreak of arctic air resulted in extreme wind chills across much of Vermont. These wind chills frequently ranged from -30°F to -60°F.

Figure 15: Japanese Knot Weed Infestation, Source: VT Invasives.org

Invasive Species – *Moderate Risk*

Description: Invasive species are non-native plants, animals, or pathogens that spread rapidly in an ecosystem, causing harm to the environment, local economies, or public health. These species can outcompete native species, disrupt ecosystems, and cause significant ecological and economic damage. Invasive species can be plants, animals, fungi, or microorganisms. They often have high reproductive rates, few natural predators in their new environment, and the ability to thrive in a wide range of conditions.

Location: All ecosystems in Berkshire are susceptible to invasive species from the Trout River, Pike River and Missisquoi River to the Town Forests to agricultural crops to residential vegetable and flower gardens and properties along the riverbanks.

Probability: The probability of invasive species introduction and spread in Berkshire is considered *highly likely* by the committee. Berkshire Center, West Berkshire and East Berkshire are located near active agricultural lands, forests, and waterways which increase the likelihood of exposure to new invasives. Climate change and increased human movement (e.g., transportation, trade, and recreation) further elevate the risk by creating more favorable conditions for species to establish and spread. Several invasive species are already present in the region, indicating a continued and persistent threat.

Extent: The extent of an invasive species hazard in Berkshire can range from localized infestations (e.g., roadside patches of wild parsnip) to widespread ecological disruption (e.g., emerald ash borer infestation across forested areas). The severity of impact depends on the species involved, the size of the infestation, and how quickly it is detected and managed. Invasives can affect forest health, agricultural production, recreational access to rivers and trails, and even public safety in the case of toxic plants. Japanese Know Weed infestations are becoming widespread along rivers with some speculation that flooding may carry seeds down river to germinate in invasive free areas. Invasive species may cause overgrowth or damage to various built environments, such as powerlines and culverts. The damage can be minor to catastrophic. Over time, the cumulative effects can lead to long-term ecological changes and economic losses.

Figure 16:Emerald Ash Borer, Source, VT ANR

Impact: The impact was ranked as *minor* to *major* in Berkshire according to the committee due to the type and locations of damage that would occur. Ash trees that were infected and killed by Emerald Ash Borer tend to topple more easily than non-infested ash trees where the County forester described the inner layers as Styrofoam-like. Infected trees require careful removal to mitigate the spread of the infecting borers. There can be high costs associated with the safe removal. Vermont' Forests, Parks and Recreation offers "*Slow the Spread"* guidelines for moving firewood infected with emerald ash borer. Riverbank overrun with Japanese Knotweed prevent recreational activities by limiting access to the river and from the river.

Town Vulnerability:

People: Health and safety risks from toxic or harmful plants such as wild parsnip or giant hogweed include severe skin burns or rashes when touched, particularly during outdoor activities like mowing, hiking, or farming. Invasive insects, such as ticks, can increase the risk of vector-borne diseases like Lyme disease.

Built Environment: The emerald ash borer threatens ash trees near roads, utility lines, and buildings. Dead or weakened trees pose a risk of falling and damaging power lines, homes, or roads, increasing maintenance and emergency response costs. Invasive roots, such as those from Japanese knotweed, can damage foundations, pavement, and drainage systems. Invasives growing in stormwater systems such as tile drains or ditches can clog drainage pipes and culverts or block flow, worsening local flooding or erosion.

Natural Environment: Invasive plants like Japanese knotweed, honeysuckle, or wild parsnip can outcompete native vegetation, leading to the decline of native plants that local wildlife depends on for food and habitat. Forests are particularly at risk from pests like the emerald ash borer, which can cause widespread tree mortality, reduce forest canopy cover, and disrupt wildlife corridors.

Economy: Timber and forestry impacts from species like emerald ash borer can reduce income from woodlots and lead to costly tree removal near homes, roads and utility corridor. Landowners, loggers and farmers may face rising costs related to invasive species control, lost productivity, or degraded soil and pasture conditions. Long-term impacts may include reduced timber value, increased infrastructure maintenance costs, and diminished recreational and tourism opportunities.

Potential Future Impacts:

Climate Change: According to the Department of Health, deep cold spells can play a crucial role in controlling insect pests by limiting overwinter survival, reducing the number of generations, and slowing the spread of invasive species and insect-borne plant diseases. A decline in extreme cold due to climate change may lead to increased pest resistance, greater risks to agriculture and forests, and a wider spread of harmful species like ticks with Lyme disease, which are typically limited by colder climates. As northern and high-elevation areas of Vermont warm, they may become more suitable habitats for ticks and their hosts, such as mice. Reduced snowpack from warming winters could still expose these hosts to freezing during sudden cold snaps. [5]

Changes in Land Use/Development: Increased urbanization, agriculture, or deforestation can disturb native ecosystems, making them more vulnerable to invasive species. Development often creates fragmented landscapes and edge habitats that favor fast-growing, opportunistic invaders over native species. Additionally, increased human activity and infrastructure (e.g., roads, landscaping, water management) can unintentionally introduce and spread invasive species into new areas.

Changes in Demographics: Changes in Demographics: Berkshire's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

History:
According to the VT ANR's Invasive Pests Status Map, Japanese knot weed was found in the Jay Forest in 2019.

Emerald Ash Borer was first detected in Vermont in 2018 and in Berkshire in 2023.

In 2020, the Missisquoi River Basin Association mapped knotweed locations in the basin which included the banks of the Trout River from Longley Bridge into Enosburgh Town.

According to ANR, Japanese knotweed is an invasive species that is commonly found along riverbanks and along disturbed land like roadsides or old agricultural fields. Japanese knotweed covers miles of river front property in Vermont, throughout the Missisquoi River Basin and beyond.

Infectious Disease Outbreak – *Moderate Risk*

Description: An infectious disease outbreak is the occurrence of cases of a disease caused by bacteria, viruses, parasites, or fungi that exceed normal expectations within a specific area or population. These outbreaks can spread quickly and unpredictably, posing significant threats to public health, healthcare systems, and local economies.

Location: An infectious disease outbreak can affect the entire geographic area of Berkshire, including residential neighborhoods, schools, public buildings, and workplaces. Due to the Town's small size and interconnected nature, diseases can spread rapidly through person-to-person contact in shared spaces such as the Town office, school and community events. Regional travel, commuting patterns, and school attendance can also contribute to the introduction and transmission of disease from surrounding towns and counties and Canada. Berkshire has a port of entry to Canada which receives traffic tourists who are passing through town to other areas or to recreate on the Missisquoi Valley Rail Trail.

Probability: The probability of future infectious disease outbreaks in Berkshire is considered *likely* by the committee. Seasonal illnesses like influenza and tick-borne diseases such as Lyme disease are regularly reported according to Northern Tier Center for Health. The risk of larger outbreaks—such as COVID-19 or other emerging infectious diseases—remains elevated due to factors like proximity to Canada, travel, climate change, and population movement. Public health trends and past events suggest that the community will continue to face infectious disease threats in the foreseeable future.

Extent: Outbreaks may persist from a few days to several years, depending on factors such as the type of pathogen, the effectiveness of the public health response, and the level of immunity within the population. Certain diseases also follow seasonal trends, such as influenza peaking in winter and vector-borne illnesses becoming more prevalent in warmer months. Rarely a larger scale virus outbreak, such as the global Covid-19 in 2020, can gradually spread and overwhelm health care institutions, facilities, systems, resources, and supply chains at the local, state, federal and international levels.

People with disabilities and those with access and functional needs may be especially vulnerable during a disease outbreak, although anyone can be affected. Outbreaks can strain local healthcare facilities, sometimes requiring temporary modifications to public spaces, such as converting schools into triage centers. The natural environment may also play a role in the origin or spread of disease, necessitating measures like water treatment to prevent further

transmission. Economically, outbreaks can disrupt or shut down businesses and lead to additional costs for public health responses, such as running immunization clinics.

Impact: The committee categorized the impact as *negligible to moderate*. An outbreak has the potential to be widespread and disruptive. Public health may be significantly affected, especially among vulnerable populations like seniors, children, and individuals with preexisting conditions. Healthcare facilities and services may become overwhelmed, and essential services such as schools, emergency response, and municipal operations may be interrupted. Prolonged outbreaks or pandemics can result in business closures, economic losses, mental health challenges, and long-term community strain. Quarantine measures, supply chain disruptions, and public health mandates may further impact daily life and local resilience.

Town Vulnerability:

People: Infectious disease outbreaks can result in illness, hospitalization, and death, particularly among people with disabilities and functional access needs such as older adults, young children, and individuals with underlying health conditions. Widespread outbreaks can also affect mental health and disrupt daily activities, education, and access to essential services. Berkshire Elementary School is highly vulnerable to infectious diseases due to high concentrations of individuals in enclosed spaces, close person-to-person contact, and shared supplies. Furthermore, developing immune systems, suboptimal hygiene practices, and inadequate ventilation in older buildings can accelerate transmission rates among students and staff.
People who recreate in the town forest or along the Rail Trail or Missisquoi River may be exposed to ticks, mosquitoes and other biting and stinging insects.
Built Environment: Infectious diseases can disrupt the operation of Berkshire Elementary school, daycares, municipal facilities (town office, highway department) and critical infrastructure by reducing staff availability and increasing demands on public services. The Town Office and School buildings may require enhanced sanitation measures, temporary closures, or operational modifications to reduce disease transmission.
Natural Environment: Infectious diseases generally have limited direct impacts on the natural environment, but increased use of medical supplies, disinfectants, and waste disposal can create localized environmental pressures. Some diseases may also affect wildlife populations.
Economy: Disease outbreaks can lead to workforce shortages, reduced business activity, increased healthcare costs, and disruptions to local commerce and tourism. Long-term economic impacts may include lost productivity, increased public expenditures, and financial strain on households, businesses, and the town and state government.

Potential Future Impacts:

Climate Change: Climate change has the potential to increase the frequency and intensity of disease outbreak events through various mechanisms. Temperature changes may increase vector-borne disease and pathogen survival. Extreme weather events can disrupt infrastructure, leading to breakdowns in sanitation, clean water supply, and healthcare services. Climate-induced displacement and migration can lead to overcrowded living conditions, which can facilitate the spread of infectious diseases.
Changes in Land Use/Development: No asset impacts related to infectious disease outbreak events were identified as being affected by changes in development or land use.
Changes in Demographics: Population growth may increase opportunities for disease transmission through greater interaction in schools, workplaces, public facilities, and community events. An aging population may be more susceptible to severe illness and may place greater demands on healthcare and support services during an outbreak. Additionally, vulnerable populations, including individuals with underlying health conditions, limited access to healthcare, or economic constraints, may face greater challenges in preventing infection and recovering from illness, potentially increasing the overall impact on the community.

History: According to the State Hazard Mitigation Plan, the following Per the State Hazard Mitigation Plan, the following disease outbreak events have occurred in Vermont:
• 1918, 1957, 1968: Pandemic Influenza.
• 2009: H1N1 strain.
• 2015: Sika virus.
• 2020 - 2021: COVID-19.

Drought – Low Risk

Description: Drought is a prolonged period of abnormally dry weather characterized by a deficiency in precipitation, resulting in water scarcity and environmental stress. Droughts can have significant impacts on agriculture, water resources, ecosystems, and socio-economic systems. Droughts manifest gradually and can vary in duration, intensity, and spatial extent. They may be triggered by natural climate variability, such as atmospheric circulation patterns, or exacerbated by human activities, such as land use changes and water management practices.

Location: All areas of Berkshire are susceptible to drought. Ground water is currently the source of all drinking water in Berkshire. Most ground water comes from rain and snow that seeps into sandier soils and cracks or spaces in underlying bedrock, which then travels into storage areas called aquifers. In this way, the ground water supply is replenished or recharged. The water table defines the upper limit of saturation, and may vary with the seasons. Areas covered with glacial till, which include much of Berkshire, are usually poor recharge areas due to the high clay content of the soils and the presence of a fragipan. More permeable sand and gravel deposits such as those in the western part of Town, and fractured bedrock at higher elevations with little soil cover, are generally good recharge areas.

The community of East Berkshire is served the East Berkshire Fire District #1, which as of 2013 provided water to approximately 64 customers on the system.

There are four Water Supply Source Protection Areas in Berkshire. Two are protected through local zoning:

- North side of Reservoir Road associated with two gravel wells that supply the Enosburg Falls Water System
- Dairy Center water supply - Located on the border of Enosburgh and Berkshire on Route 105.

Probability: The probability of drought in Berkshire is considered *likely* by the committee.

Extent: Droughts can affect large geographic regions, including urban and rural areas, agricultural lands, forests, and waterways. Drought severity is often categorized based on indicators such as precipitation deficits, soil moisture levels, streamflow, and water storage reservoir levels. Severe droughts can lead to significant water shortages, ecological disturbances, and socio-economic impacts. Severe droughts can result in reduced water availability for drinking, bathing, irrigation, and commercial uses, leading to economic losses, environmental degradation to stream habitats, wetlands, and forests and social disruption. In Berkshire, where residents, businesses and agricultural operations rely on private wells, a sustained drought would require emergency measures such as having water trucked in to the community. This occurred 2 times for the East Berkshire Fire District#1 during the two recent drought cycles.

Impact: Drought conditions in Berkshire can affect residents primarily through reduced groundwater availability, impacts to private wells, increased wildfire risk, and higher costs for households and farms. Residents who rely on private wells or springs may experience declining water levels, reduced water pressure, or wells running dry. Shallow wells, dug wells, springs, and wells located on higher ground are particularly susceptible to drought-related water shortages.

Drought can also affect drinking-water quality. Lower groundwater levels may cause sediment or contaminants to enter

a water supply, resulting in changes in water color, taste, or odor and increasing the need for water testing or treatment. Residents without adequate water may need to obtain bottled or hauled water, and replacing or deepening a well can create significant financial costs.

Drought can reduce crop and pasture production, livestock water availability, and winter feed supplies, potentially increasing operating costs and affecting farm income. Vermont's 2025 drought demonstrated that prolonged dry conditions can create both immediate and longer-term impacts on farms and agricultural households.

Reduced stream and groundwater levels may affect recreational opportunities and local ecosystems, while prolonged drought can place additional stress on trees, lawns, gardens, and other vegetation.

Town Vulnerability:

People: The residents of Berkshire rely on private wells or springs. Extended dry periods lower groundwater tables, leading to reduced well yields, loss of water pressure, or wells running completely dry. Berkshire has a higher percentage of elderly residents than the state average, who are more susceptible to heat stress and water supply disruptions during drought conditions. East Berkshire Fire District#1 water system could be impacted by drought conditions affecting 64 customers.

Built Environment : Overall vulnerability on built environment is low. Private wells and East Berkshire Fire District #1 are the primary vulnerabilities. Wells may need to be drilled deeper as water tables drop which is costly. Town buildings, elementary school, fire station, and other facilities that depend on wells or small water systems could experience operational difficulties if their water sources decline.

Natural Environment: Prolonged dry conditions can reduce soil moisture, streamflow, groundwater, and wetland water levels, placing stress on forests, vegetation, aquatic ecosystems, and wildlife. Drought-stressed forests and vegetation are also more susceptible to wildfire, insects, and disease. These impacts can reduce habitat quality, agricultural productivity, and overall ecosystem health.

Economy: For agricultural operations, reduced crop and pasture production, livestock water shortages, and increased costs for feed and water can reduce farm income and increase operating expenses. Drought may also affect other local businesses through reduced household spending, water-supply problems, and disruptions to recreation and tourism. Prolonged drought could result in increased costs for residents, businesses, and the Town while reducing local economic activity.

Potential Future Impacts:

Climate Change: Drought is projected to become longer, more frequent and more severe. Prolonged dry spells lower groundwater tables causing water pressure to drop, sediment in drinking water or wells simply running dry. This creates a financial burden on residents who would need to dig new wells. Climate change threatens the agriculture economy and adds financial strains on farm families. Prolonged drought also increases wildfire risk which would place added burden on Berkshire's volunteer fire department's ability to respond to multiple incidents.

Change in Land Use/Development: No changes to asset impacts due to drought events as a result of development or land use changes could be identified.

Change in Demographics: Increasingly frequent or prolonged drought could affect Berkshire's demographics by placing additional financial pressure on households, farms, and residents dependent on private wells. Households with limited financial resources may be less able to adapt to rising water-supply costs. Over time, persistent drought-related impacts could influence where people choose to live and work in Berkshire and increase the need for assistance to vulnerable residents.

History:

Since 2020, Vermont has experienced several periods of abnormally dry and drought conditions, with 2025 standing out as the most severe drought in the period. The U.S. Drought Monitor has tracked drought conditions in Vermont weekly since 2000, using classifications from D0 (Abnormally Dry) through D4 (Exceptional Drought).

2025: Vermont experienced its most severe drought since the U.S. Drought Monitor began in 2000. Drought developed rapidly during the summer and intensified through September and October. By September 4, the entire state was experiencing at least moderate drought, with 65.7% in D1 and 34.4% in D2.V
June 2020 to October 202: Much of the State was under Moderate Drought to Abnormally Dry conditions.

September to October of 2020: Drought conditions occurred for 29.4% of the State.

Per the Vermont State Hazard Mitigation Plan: "The droughts in the mid-1960s were the most severe in Vermont. Every county in the State experienced Exceptional Drought (D4) conditions in May of 1965. Since the 1960s Vermont has experienced several less severe periods of drought. There were two declared statewide droughts in June and July 1995. The drought persisted through the summer of 1995, and a third, more severe drought affected Southern Vermont in August of that year. In 2001-2002, Vermont was affected by a Severe Drought (D2), which peaked at over 14% of the State at the D2 level between November and December of 2001 and nearly 100% of the State in at least Moderate Drought (D1). Portions of Vermont were in Severe Drought (D2) from October 2016 through April 2017, peaking at 29.15% of Vermont in October and November 2016 and 80% of the State was in at least Moderate Drought (D1) (Figure 50). Moderate Drought conditions returned in October of 2017 and again in June 2018. From September to November of 2018 the State experienced another Severe Drought.

Landslides – *Low Risk*

Description: A landslide is the downward movement of rock, soil, or debris on a slope due to gravity. Landslides can be triggered by factors such as heavy rainfall, rapid snowmelt, earthquakes, or human activity (like construction or deforestation.

Common Landslide Failure Types (USGS, ANR, VGS):

- **Translational Slides:** Common on slopes underlain by dense till or sandy-to-clayey deposits.
- **Rotational Slumps:** Typically found in sandy or clayey lacustrine deposits where the material has enough internal cohesion to slide as a unit.
- **Gullies:** Deeply incised channels that often have active landslides at their heads or along their sidewalls.

According to the VT Geological Survey and VT Agency of Natural Resources, there are several natural and human caused factors of landslide susceptibility including:

- Soil Composition: The presence of unconsolidated glacial lakebed deposits, which lose strength when saturated.
- Stream Erosion: The Missisquoi River naturally undercuts its banks, over-steepening them and triggering failures.
- Precipitation: Intense rainfall events or rapid snowmelt saturate the soil, increasing pore-water pressure and reducing slope stability.
- Changes to Land Use: Adding excess loads to slopes or altering drainage patterns, can exacerbate natural instabilities.

Location: In Berkshire, small landslides occur on steep river banks, especially where the soil is saturated or disturbed. They are concentrated along the Missisquoi River and Trout River. These areas often feature steep banks composed of unstable glaciolacustrine (glacial lake) deposits, which are highly susceptible to erosion and subsequent failure. They can pose risks to public safety by damaging structures and transportation infrastructure. The statewide landslide inventory does not contain any recorded landslides specifically within Berkshire.

Probability: The probability of small-scale landslide occurring in Berkshire is considered *likely* by the committee. USGS and FEMA maps indicate that Berkshire has low incidence of reported landslides. The town contains steep slopes, streambanks, and areas with erosion prone soils that can become unstable during periods of heavy rainfall, flooding, rapid snowmelt or prolonged soil saturation.

Extent: Heavy rainfall, rapid snowmelt, flooding, or fluvial erosion can destabilize slopes and cause soil, rock, and debris to move downhill, damaging roads, driveways, utilities, agricultural land, and nearby structures. Landslides may also block transportation routes, disrupt access for emergency services, damage residential foundations and contribute sediment and debris to streams and drainage systems.

Impact: The impact of landslides is *negligible* to *minor* according to the committee based on previous occurrences. Landslides that have occurred in Berkshire were small and localized but potentially damaging. They occurred on steep stream banks, and areas experiencing erosion or saturated soils. Although large landslides are uncommon in Berkshire smaller slope failures and bank collapses can result in costly repairs to public roads and private properties and pose risks to public safety and infrastructure.

Town Vulnerability:

People: Landslides can threaten public safety by causing injuries, fatalities, property damage, and isolation when roads or access routes are blocked. Individuals living, working, or traveling near steep slopes are particularly vulnerable during periods of intense rainfall or rapid snowmelt. Repairs can be costly. Several residents in East Berkshire could be affected by small landslide along the riverbank. Older residents or individuals with functional access needs may require assistance in an evacuation situation.

Built Environment: Landslides can damage or destroy roads, bridges, utilities, buildings, and other infrastructure through slope failure, soil movement, and debris deposition. Transportation corridors and infrastructure located on or below unstable slopes are especially susceptible to disruption and costly repairs. Areas along the Missisquoi River in East Berkshire have experienced small bank slumping which can be costly to stabilize and/or repair.

Natural Environment: Landslides can alter landscapes, remove vegetation, increase sediment delivery waterways in the Missisquoi River watershed, and degrade water quality and aquatic habitats. While landslides are a natural geomorphic process, large or frequent events can significantly affect ecosystem stability and watershed function.

Economy: Landslides can result in substantial costs related to emergency response, infrastructure repair, slope stabilization, and property damage. Economic impacts may also include transportation disruptions, reduced access to businesses and services, commuting workers, and long-term maintenance expenses for affected areas.

Potential Future Impacts:

Climate Change: Expected to increase the frequency and intensity of heavy rainfall, which will raise the risk of landslides by saturating soils and destabilizing steep slopes. Landslides could increasingly damage roads, culverts, and utilities, disrupt emergency access, and threaten homes located near hillsides and riverbanks. Secondary impacts may include increased sediment in streams, reduced water quality, and long-term erosion that further weakens slopes and increases future hazard risk.

Changes in Land Use/Development: There are no known large developments anticipated in Berkshire. Berkshire land use regulation and zoning bylaws limit development on steep slopes. However, expanded impervious surfaces and altered drainage patterns can concentrate runoff which would accelerate erosion and cause slope failures. Over time, development in marginal or unstable areas may increase damage to infrastructure and raise long-term maintenance and costs for the town.

Changes in Demographics: Berkshire's rate of population growth is low and is not expected to impact landslide risk. An aging population or households with limited mobility may face greater safety risks and recovery challenges during landslide events and evacuations.

History: There is no recorded history of landslides occurring in Berkshire.

Hail – *Low Risk*

Description: Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the thunderstorm that produces it.

Location: Hailstorms are random in nature and can impact any area or structure within the town.

Probability: The committee classified the probability of hail event as *unlikely.* There have been 15 recorded hail events in Franklin County between 1980 and 2024.

Extent: Hailstorms typically accompany thunderstorms between June and September. They are relatively infrequent, brief in duration, highly localized, and typically cause limited damage due to the generally small hail size—less than 1 inch in most cases. However, when larger hail does occur, it can result in significant damage to crops, property, and structures. The extent of damage is difficult to predict and quantify, as hailstorms are random in nature and can impact any area or structure within the town.

For TORRO Scale (hailstorm intensity), please refer to the State Hazard Mitigation Plan.

Figure 17: Tornado and Storm Research Organization Hailstorm Intensity Scale

TORRO Scale	Intensity Category	Typical Hail Diameter (mm.)	Probable Kinectic Energy, J-m^2	Typical Damage Impacts
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-15	>20	Slight general damage to plants, crops
H2	Significant	10-20	>100	Significant damage to fruit and crops, damage to glass and plastic structures, pain and wood scored
H3	Severe	20-30	>300	Widespread glass damage, vehicle bodywork damage
H4	Severe	25-40	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60	-	Bodywork of grounded aircraft dented; brick walls pitted
H7	Destructive	50-75	-	Severe roof damage, risk of serious injuries

H8	Destructive	60-90	-	Severe damage to aircraft bodywork
H9	Super Hailstorms	75-100	-	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100	-	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Impact: The committee rated the impact of hail as *negligible*. Hailstones can damage crops, vehicles, roofs, and siding. Typically, hail is small and rarely damages crops such as corn and hay to the level of causing financial losses for farmers. There are no reports of injuries from hail.

Town Vulnerability:

People: Hailstorms can cause injuries from falling ice, particularly to individuals outdoors, and may create hazardous travel conditions that increase the risk of vehicle accidents. Severe hail events can also disrupt daily activities and emergency response operations.

Built Environment: Hail can damage roofs, siding, windows, vehicles, agricultural structures, and other exposed infrastructure, resulting in costly repairs and maintenance. Critical facilities and utility systems may also experience localized damage during severe storms.

Natural Environment: Hail can damage crops, gardens, forests, and other vegetation by stripping leaves, breaking branches, and reducing plant productivity. Repeated or severe hail events can negatively affect agricultural yields and ecosystem health.

Economy: Hailstorms can lead to substantial economic losses through property damage, vehicle repairs, crop losses, insurance claims, and business interruptions. Recovery and repair costs can place financial burdens on property owners, agricultural producers, and local governments.

Potential Future Impacts:

Climate Change: Climate change can influence hailstorms in complex ways. Warmer temperatures increase atmospheric moisture and energy, which can lead to more intense thunderstorms—potentially making hailstorms more severe. However, higher temperatures near the surface may also melt smaller hailstones before they reach the ground, possibly reducing the frequency of smaller hail events.

Changes in Land Use/Development: There are no planned large developments in Berkshire in the next 5 years. Increased residential development in rural areas and farmland conversion could heighten vulnerability to hail-related damages.

Changes in Demographics: Berkshire's population is not projected to change significantly in the next 5 years.

History: According to NOAA, there have been 66 hail events in Franklin County since 1986. Only two recorded events for Berkshire during that time period.

July 16, 1996: 1.00 in. hail was recorded in Berkshire.

July 3, 2025: A cold front moved across a moderately unstable airmass across northern NY and VT during the afternoon and early evening hours on July 3rd. Several broken lines of thunderstorms moved across northern NY into VT, some producing damaging winds or hail of one inch in diameter or greater. Approximately 10,000 customer were left without power. 1.00 in hail was recorded in East Berkshire.

Major Fire – Wildland – *Low Risk*

Description: Wildfire is an uncontrolled fire that burns in forests, grasslands, brush, or other natural areas, often fueled by dry vegetation, wind, and weather conditions. Wildfires can spread rapidly and pose serious threats to public safety, property, infrastructure, and natural resources. According to the US Forest Service wildfires can be caused by a variety of natural and human-related factors:

1. Lightning Strikes – One of the most common natural causes, especially during dry conditions, lightning can ignite trees or brush and lead to rapidly spreading fires.
2. Campfires and Outdoor Burning – Unattended or improperly extinguished campfires, burn piles, or fire pits can easily ignite nearby vegetation.
3. Discarded Cigarettes – Lit cigarettes thrown from vehicles or dropped on dry ground can start fires, especially during hot, windy weather.
4. Equipment Use and Malfunctions – Sparks from chainsaws, lawnmowers, or power lines can ignite fires in dry conditions.
5. Arson – Intentionally set fires remain a leading cause of wildfires in some regions and are particularly dangerous due to their unpredictability.
6. Agricultural and Debris Burning – Improperly managed burns on farmland or residential properties can escape control and ignite wildfires.
7. Drought and Climate Conditions – While not direct ignition sources, prolonged drought and warmer temperatures create extremely dry vegetation, increasing the likelihood and severity of wildfires when ignition does occur.

Location: In Berkshire, wildfire risk is generally concentrated in forests, fields, and undeveloped land outside of the Berkshire Center, East Berkshire and West Berkshire where residential properties border wooded or brush-filled zones. Although these areas are at a lower risk, wildfires can still threaten structures, utilities, and transportation routes, especially where development meets natural vegetation—commonly referred to as the wildland-urban interface (WUI).

Probability: The committee rated the probability as *unlikely*, however the fuel potential for large fires exists.

Extent: The town remains vulnerable during dry periods, particularly in spring and late summer when vegetation is highly flammable. The fire chief noted wildfires generally come in the form of grass fires of less than 5 acres in size. The potential extent of damage could be significant due to the large areas of forested land and limited wildfire protection from the on-call Fire Department. Major wildfire events have not occurred in Berkshire and data on past damages is limited.

Wildfires pose a risk of injury or death to individuals who are unable to evacuate promptly. Delays in evacuation may result from sudden onset fires or from individuals who ignore warnings. Vulnerable populations—such as the elderly, people experiencing homelessness, residents with disabilities and functional access needs, are likely to face greater risk. Also, there is public health risk from smoke that reduces air quality, especially for people of all ages with respiratory issues such as asthma.

Impact: The committee rated the impact of wildfire as *negligibl*e to *minor*. There have been no large wildfires in Berkshire, but if a wildfire were to occur, it could pose significant risks to public safety, property, and the environment especially in the wooded areas. Impacts may include the destruction of homes, barns, and other structures; loss of

livestock or crops; interruption of utilities and services; and damage to critical infrastructure such as power lines or roads. Smoke from wildfires can also pose health risks, especially for individuals with respiratory conditions. In more severe cases, wildfires can lead to evacuations, economic losses, environmental degradation, and long-term recovery challenges. The psychological and social impacts on residents, especially those who lose property or face evacuation, can also be substantial.

Town Vulnerability

People: Wildfires can threaten lives through direct exposure to flames, smoke inhalation, and rapidly changing fire conditions that can force evacuations with little warning. They also impact public health over a broader area by degrading air quality and increasing respiratory and cardiovascular risks. People with disabilities or functional access needs (i.e. the elderly, those without housing, those without proper transportation) may potentially be impacted more than other residents.

Built Environment: Wildfires can destroy or severely damage homes, businesses, utilities, transportation corridors (i.e., VT105, VT108) and critical infrastructure (town garage, power infrastructure), especially in wildland–urban interface areas. Post-fire conditions can also increase risks to structures from debris flows and reduced slope stability.

Natural Environment: Wildfires can lead to significant environmental damage by destroying vegetation, altering wildlife habitats, and contributing to soil erosion. They also release large amounts of pollutants and greenhouse gases into the atmosphere, reducing air quality and impacting overall ecosystem health. While ire is a natural ecological process, high-intensity or frequent fires can degrade forests and reduce biodiversity.

Economy: Wildfires can result in significant economic losses through property damage, firefighting and emergency response costs, business interruptions, and impacts on tourism, forestry, and agriculture. Long-term recovery may also require substantial investments in rebuilding, landscape restoration, and can lead to higher insurance costs and reduced property values.

Potential Future Impacts:

Climate Change: Climate change has the potential to increase the frequency and intensity of wildfires due to rising temperatures and changing precipitation patterns.

Change in Land Use/Development: There are no large developments planning in the next 5 years. However, increased residential development in rural areas, particularly through subdivisions and large lot estates, increases wildfire risks due to land clearing and proximity to forested areas. Increased development leads to greater human activity, and infrastructure needs that could increase risk.

Change in Demographics: Berkshire's population is not projected to change significantly in the next five years. The risk of wildfires on the population are expected to remain the same.

History: The fire department does not keep detailed records for wildfires, so no details of past wildfires are available other than what was recorded in the State Fire Marshal's Report.

June 5 – 8, 2023: An air quality alert was issued for the entire state due to wildfires in Canada.

July 5 – 7, 2002: Smoke, from many forest fires across the Nemiscau region of northern Quebec, carried into Vermont from the evening hours of July 5 to the late evening of July 7. Advisories were issued warning people with respiratory problems to remain indoors and all individuals to curb outside activity. No major problems were reported to the National Weather Service because of this smoke.

Dam Failure – *No Risk*

Description: Dam failure can take several forms, including structural collapse or a breach. Dam failure can take several forms, including a collapse or breach in the structure. While most dams have storage volumes small enough that failures have few or no repercussions, dams storing large amounts can cause significant flooding downstream.

Location: There are no dams in Berkshire other than beaver dams. The town is not impacted by dam failures of any kind.

Probability: The committee classified the probability of dam failure as *unlikely* because there are no dams in town other than beaver dams.

Extent: Extent of damages from a beaver dam failure would be flooded roads and temporary closure depending on size of dam and failure.

Impact: Roads and culverts may be impacted should a beaver dam fail. The damage would be limited given the size of the dams.

Town Vulnerability:

People: None.
Built Environment: None. No dams are being proposed.
Natural Environment: Beavers would relocate if their dam failed.
Economy: Minor related to clean up of beaver dam failure.

Potential Future Impacts:

Climate Change: None.
Change in Land Use/Development: None.
Change in Demographics: None.

History: None.

Earthquake – *Low Risk*

Description: An earthquake is the shaking of the surface of the Earth resulting from a sudden release of energy in the Earth's lithosphere that creates seismic waves.

Location: While earthquakes occur on fault lines, the entire town of Berkshire is susceptible to an earthquake.

Probability: The committee considered Earthquakes as an unlikely event for the town and region based on history.

Extent: An earthquake is measured by magnitude, energy released by an earthquake, and intensity, effect and damage caused by the earthquake. The most commonly used scale is the Richter Scale. Although difficult to predict, given the State's historical earthquake data, Berkshire may anticipate an earthquake measuring very low on the Richter Scale.

All of Vermont is classified as an area with a low to moderate seismic activity. This can be compared to the west coast of the U.S., which is classified as "very high" and the north-central states classified as "very low." Earthquakes have been felt in Berkshire and remain a geologic possibility.

Impact: The committee rated the impact of an earthquake as *negligible* to *major.* Earthquakes can vary in size and intensity, and they may cause ground shaking, surface rupture, and secondary effects like landslides, tsunamis, or structural damage. Historically, earth quakes cause very slight almost undiscernible ground tremors.

Town Vulnerability: Earthquakes in Vermont are typically small tremors so the possibility of a threat to the following is low.

People: Earthquakes can cause injuries or fatalities from collapsing structures, falling objects, and secondary hazards, while also disrupting access to emergency services, healthcare, and essential resources.
Built Environment: Ground shaking can damage buildings, roads (US Route 2 and causeway), bridges, utilities, and critical facilities, resulting in structural failures, service interruptions, and costly repairs.
Natural Environment: Earthquakes can trigger secondary hazards such as altered stream channels, increased erosion, and cause bank failures. In Berkshire, this could impact lakeshore properties that are located well above the mean water level. Additionally, groundwater systems could be affected, leading to changes in private and public water supplies.
Economy: Earthquakes can generate significant economic losses through property damage, infrastructure repairs, business disruptions, emergency response costs, and long-term recovery efforts.

Potential Future Impacts:

Climate Change: Climate change primarily affects atmospheric and oceanic processes, but there is emerging evidence suggesting that it can indirectly influence seismic activity, including earthquakes[6]. It is not currently possible to predict when or where an earthquake may occur.
Changes in Land Use/Development: No large residential or commercial developments are expected to occur in next 5 years. Any increase in the number of residential homes, residential and commercial developments and infrastructure would cause greater potential for property damage, service disruptions, and economic losses if an earthquake were to occur.
Changes in Demographics: Berkshire's population demographics are not projected to change significantly in the next five years. Population growth could increase demands on emergency response, healthcare services, and recovery resources potentially resulting in greater economic losses and disruption to community services following an earthquake.

History: According to the VT Geologic Survey, the two strongest recorded quakes measured in Vermont were of a magnitude 4.1 on the Richter scale. One was centered in Swanton and occurred in 1943, and the second occurred in 1962 at Middlebury. The Swanton quake caused little damage, but the Middlebury quake did result in broken windows, cracked masonry and falling objects around the Middlebury area.

Earthquakes centered outside of the state have also affected Vermont. Two quakes of magnitude 5.5 occurred in New Hampshire in 1940. In 1988, an earthquake with a magnitude 6.2 was centered in Saguenay, Quebec and caused shaking in the northern two thirds of Vermont. On June 23, 2010, a magnitude 5.2 earthquake in Ottawa was felt in the area. No damage was reported.

6. COMMUNITY CAPABILITIES

A hazard mitigation capabilities assessment evaluates a community's ability to reduce and manage risks associated with natural hazards. This assessment involves analyzing existing policies, programs, and resources to identify strengths and

[6] DeLoss, J. (2024, December 18). *CSU study links climate change and earthquake frequency*. CSU SOURCE. https://warnercnr.source.colostate.edu/climate-change-earthquake-frequency/

areas for improvement in mitigating hazards. The four key types of mitigation capabilities include planning and regulatory, administrative, and technical, financial and education and outreach. Below are the definitions of each key type:

- **Planning and regulatory:** Planning and regulatory capabilities are the codes, ordinances, policies, laws, plans and programs that guide growth and development.
- **Administrative and Technical:** Administrative and technical capabilities are the participant's staff, skills, and tools. These capabilities can be used for mitigation planning and to conduct specific mitigation actions.
- **Financial:** Financial capabilities are the resources to fund mitigation actions.
- **Education and Outreach:** Education and outreach capabilities are programs and methods that can communicate about and encourage risk reduction.

How This Plan Will Improve Existing Capabilities

Berkshire has a low population and a limited staff. Regulatory capabilities are low. Berkshire's mitigation capabilities that reduce hazard impacts or that could be used to implement hazard mitigation activities is limited. As Berkshire goes through the update process for the planning mechanisms outlined in Table 7, the Town will look to the Hazard Mitigation Plan to help guide land use district decisions, and guide goals and policies for those districts.

Updates to each of the planning mechanisms outlined in Table 7 are handled by the identified responsible party. There is no timeframe for updating the referenced plans and regulations to better incorporate hazard mitigation, however, as each document is updated, the Hazard Mitigation Plan will be reviewed for incorporation. For example, The Local Emergency Management Plan is updated after Town Meeting each year, including updates to vulnerable geographic locations, as well as locations of residents and businesses who may be in harm's way. This information will be used to update the Local Hazard Mitigation Plan.

The goals of this Hazard Mitigation Plan will be incorporated in the upcoming Municipal Plan update to ensure that emergency preparedness and mitigation planning efforts are included, with particular attention to the identified mitigation actions. Additionally, the Hazard Mitigation Plan will be used to help prioritize high risk areas and target priority projects through Vermont's Municipal Roads General Permit Program and related funding. This will ensure this plan is utilized and project follow-through occurs

Table 7: Policies and Plans

Town Policies and Plans			
Existing Protection	**Description / Responsible Party**	**Effectiveness/Enforcement/ Hazard that is addressed**	**Gaps in Existing Protection / Improvements Needed.**
Planning and Regulatory Capabilites			
Town Plan	Policies and vision for future land use. Adopted in 2020. Planning Committee Chair	Policies that provide protection and limited development in wellhead protection areas, wetlands, steep slopes, and shallow soils.	The plan would benefit from list specific infrastructure projects (e.g. culvert and bridge

		Flooding, Fluvial Erosion, Severe Winter Storm (Ice Storm), Strong Winds (Windstorm, Thunderstorm, Tornado, Hurricane/Tropical Storm), Extreme Heat, Drought, Cold, Invasive Species, Infectious Disease Outbreak,	upgrades, river corridor setbacks, relocation of vulnerable roads) with prioritization, estimated costs, funding sources and schedule.
Land Use and Development Regulations	Land Use Regulation. Adopted 2025. Development Review Chair	Restrictions on development in potentially hazardous areas such as steep slopes, floodplains, and water resource areas. Flooding, Fluvial Erosion, Severe Winter Storm (Ice Storm), Strong Winds (Windstorm, Thunderstorm, Tornado, Hurricane/Tropical Storm), Extreme Heat and Drought, Structure Fire, Cold, Landslides, Hail.	Will need updating to address new FEMA flood mapping estimated to be released in 2027. Does not include river corridor regulations.
Building Inspection, Code Enforcement & Fire Safety Ordinance	Restrictions on development in potentially hazardous areas such as steep slopes, floodplains, and waters source areas. Zoning Administrator	The Town does not currently have a building code and does not currently plan to adopt one, however, new construction is expected to meet state building code and energy requirements. Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	The Town may consider adopting building codes in the future.
Local Emergency Management Plan	Summary of response and notification procedures. 2025 EMD	Updated annually. Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado,	Does not include continuity of operations annex.

		tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	
Fire Mutual Aid	Franklin County Mutual Aid Agreement. Amended and adopted 2017.	Assistance from area fire, rescue, municipal and public works departments. Severe winter storm (ice storm), flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	Update to reflect current FEMA rates.
Bridge and Culvert Inventory	Municipal transportation infrastructure inventory following AOT criteria. DPW Director	On-going update. Utilizes AOT criteria and identifies overall condition of infrastructure which guides priority decisions on public projects. Severe winter storm (ice storm), flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane)	Updates needed to meet recent upgrades.
Road Erosion Inventory	Identifying location and severity of road erosion on road segments are within 1,000 feet of surface waters. DPW Director	Road Erosion Inventory completed in 2022. Town applies for funding annually to address road erosion issues. Highly effective in addressing flooding/fluvial erosion, severe winds (windstorm, thurnderstorm, tornado, tropical storm, hurricane) and winter storm (ice storm)	Does not include private roads.
Administrative and Technical Capabilities			
Existing Protection	Description	Staffing	Improvements Needed
Selectboard	Locally elected governing body	5 members (volunteer)	Volunteer positions. Provide

	responsible for decision making		additional hazard mitigation and emergency preparedness training to elected officials.
Town Clerk / Treasurer	Manages town records and funding	1 full-time 1 part-time	Implement continuity of operations planning (COOP) and cross training for backup capacity.
Zoning Administrator	Enforces development regulations and supports land use planning.	1 part-time	Increase coordination with emergency management and attend substantial damage determination training.
Road Foreman Road Crew	Manages road network. Assist Road Foreman with road maintenance.	1 full-time 2 part-time.	Consider training staff to assist with FEMA preliminary damage assessments and documentation coordination.
Fire Chief	Lead and manage the fire department, directing emergency response operations, overseeing fire prevention and public safety programs, and coordinating preparedness, response, and recovery efforts for hazards and disasters within the community.	1 volunteer.	Challenges related to limited daytime response availability for volunteer department, volunteer recruitment and retention, training capacity, maintenance and administrative workload.
Financial Capabilities			
Existing Protection	**Description / Responsible Party**	**Effectiveness/Enforcement/ Hazard that is addressed**	**Gaps in Existing Protection / Improvements Needed.**

Annual Town Budget	Approved by residents in March and is primarily funded through property taxes with additional support from state aid, grants and other local revenue sources. Selectboard Chair	Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	Consider creating specific line item for hazard mitigation planning and implementation.
In Kind Services	Donations and volunteer support from residents. Town Manager	Volunteers can assist with everything from event planning, municipal governance and emergency response support by increasing community capacity. Volunteers leverage local skills, labor, and resources without adding financial strain. Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	Need system for tracking donations and volunteer time for in-kind match. Identify volunteer coordinator for community.
Emergency Relief and Assistance Fund (ERAF)	The Emergency Relief Assistance Fund (ERAF) provides State funding to match Federal Public Assistance after federally declared disasters. Selectboard Chair	Ensures communities have planned for emergencies and incentivizes additional resiliency measures (stream corridor protections) for additional match reduction. Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	Ensure highest possible protection. Missing FEMA approved mitigation plan.

Education and Outreach			
Existing Protection	**Description / Responsible Party**	**Effectiveness / Enforcement / Hazard That is Addressed**	**Gaps in Existing Protections / Improvements Needed**
Town Website and Social Media Sites	Municipal communications (such as warnings for Town Meeting, public hearings, and Selectboard meetings) follow standard Vermont statutory open meeting and public warning requirements (1 V.S.A. § 312).	The Town relies heavily on traditional, static web infrastructure and regional third-party sites rather than active, direct emergency alert tools managed locally through its municipal website or dedicated social media. The website and town's social media lacks an automated home-page banner system or real-time breaking news feed, making it slow and inefficient for urgent, rapidly changing conditions. Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought, hail, major fire - wildland, landslide earthquake.	The official town website functions primarily as an administrative document hub. During an emergency, it lacks an automated home-page banner system or real-time breaking news feed, making it slow and inefficient for urgent, rapidly changing conditions.
Social Media Emergency Preparedness Messaging	Provides residents with timely information about hazards, preparedness actions and available resources before, during, and after emergencies. Town Administrator	Aids dissemination of official municipal updates quickly, reduces misinformation, and improves public awareness and community resilience. Severe winter storm (ice storm), invasive species, flooding / fluvial erosion, strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), extreme heat, cold, infectious disease outbreak, drought,	Can be limited by inconsistent staffing, outdated contact information, and the inability to reach residents who do not use social media or lack internet access. Research and consider purchasing an

		hail, major fire - wildland, landslide earthquake.	emergency / mass notification system or dedicating a municipal VT Alert administrator. Actively promoting public sign-ups for VT-Alert on municipal channels to ensure residents receive direct emergency broadcasts.

Administrative and Technical

The Town is governed by a volunteer Selectboard. Paid staff includes a Town Clerk, a Town Treasurer, 2 assistant Town Clerk/Treasurers, one part-time Zoning Administrator, one full-time road foreman and two full-time road crew members.

The Town has a Planning Committee and Development Review Board comprised of volunteers and supported by one part-time Zoning Administrator. The Zoning Administrator is response for the floodplain management program and continued compliance. Landuse development projects that require permits are reviewed for compliance with the Town's Land Use Regulations which include a Flood Hazard district with support from the State Agency of Natural Resources, and they include site visits and permitting as applicable. Any permits for conditional uses within the Flood District, such as substantial improvement to existing structures, new construction, recreation or open-air markets, etc. Are allowed only by approval from the Town's Development Review Board.

There is one full-time road foreman and a two-person highway crew who are responsible for maintaining miles of highway. The road crew is constantly maintaining roads during the winter months limiting their availability for other projects.

The Fire Department is comprised of volunteer members consisting of one Fire Chief and an average of 15 volunteers. The Fire Department can usually meet the demand for service in town. However, more extensive services and equipment are available from Enosburg and Richford, if needed and there is a mutual aid agreement with neighboring departments if circumstances warrant.

Law enforcement protection is provided by the State Police, barracked in St. Albans. It should also be noted that although no official contract exists with the Franklin County Sheriff's department, they will respond to a 911 call if they are in the area.

Municipal Funds

The Town's capital budget is prepared and voted on every year during Town Meeting. Specific-use monies are then available to be drawn down throughout the year but only for a specific purpose such as paying for a reappraisal, capital equipment fund, and fire department and highway department trucks and equipment, etc. The Selectboard, Town Clerk, Town Treasurer and department heads annually prepare budgets for general government expenses and highway

expenses including payrolls.

Grand List

The Listers and Tax Collector manages the municipal Grand List (property assessments), forming the foundation for property tax revenue that funds the majority of the town budget. The Fire Department, the Cemetery Commission, Library, Recreation Commission, Rescue Department each prepare an operating budget for their needs. At Town Meeting in March, these budgets are each presented to the taxpayers who vote to approve the allocation, with or without voter amendments. In early July, once the town has received both the updated Municipal Grand List from the Town Listers and the School Tax rate for the school district, the selectboard sets the Town tax rate for the coming year.

Table 8: Grand List , Berkshire

Structure Type	Municipal Total Value (including land)	No. of Parcels
All-season single family residence	$99,411,600	515
Seasonal Homes	$2,124,200	13
Mobile Home	$10,269,400	96
Commercial	$1,909,900	12
Farm	$37,541,100	53
Other (Utilities, Woodland, and Miscellaneous)	$15,030,700	89
Telecom	$630,400	4
Total	$166,917,300	772

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is a federal program in the United States aimed at providing insurance coverage for properties at risk of flooding. The NFIP was established in 1968 with the passage of the National Flood Insurance Act to address the lack of affordable flood insurance in high-risk areas and to reduce the financial burden on taxpayers for flood disaster relief. At the time of this writing.

NFIP Participation and Adoption of NFIP Standards

The federal government makes flood insurance available to the citizens of the community because the town has adopted flood plain regulations. FEMA originally published a flood hazard study and Flood Insurance Rate Maps for Berkshire in 1983. Berkshire is a member in good standing with the NFIP (CID 500049). The adopted 2025 Berkshire Land Use Regulations regulate development in the NFIP floodplain as delineated in the Flood Insurance Rate Maps. The town is committed to enforcing floodplain regulations and ordinances to be eligible to participate in the NFIP program and protect the people and property of Berkshire by restricting development in flood prone areas.

At the time of this writing, FEMA is in process of updating the FIRMs for the region which are due to be released in 2027.

Staffing, Enforcement and Continued Compliance in the NFIP

The Zoning Administrator enforces existing flood plain regulations and reviews future development proposals. If the Zoning Administrator is unavailable, the Selectboard may designate an alternate official to perform these duties to ensure regulatory continuity. Appeals of decisions made by the Zoning Administrator are handled by the Development

Review Board (DRB), the community's designated Appropriate Municipal Panel under 24 V.S.A. § 4461. The Town works with the elected officials, the Northwest Regional Commission, VT Agency of Natural Resources and FEMA to correct and prevent any compliance issues.

River Corridor Bylaws

Berkshire does not have a River Corridor Bylaw that protects areas along rivers and streams that are prone to erosion and flooding. However, the town's Development Regulations contain stream buffer and corridor protection rules. The regulations establish a mandatory vegetated buffer strip measured horizontally from the top of the bank of all streams, rivers, and designated watercourses. A minimum 50-foot naturally vegetated buffer is required from the top of the bank of all streams and rivers. The buffer width may be expanded by the Development Review Board (DRB) if the adjacent land features steep slopes (>15%), unstable soils, or critical wetlands, in order to ensure adequate filtration and bank stability. The Zoning Administrator is responsible for monitoring compliance.

Substantial Damage and Substantial Improvement

A permit and conditional use approval is required for substantial improvement of existing buildings. It is issued by the zoning administrator following review by the development review board. Prior to issuing a permit, a copy of the application and supporting documentation shall be submitted by the administrative officer to the State National Floodplain Insurance Program Coordinator at the Vermont Agency of Natural Resources, Department of Environmental Conservation, River Management Section. Substantial improvement includes any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the start of the construction of the improvement. This term includes structures which have incurred substantial damage. Substantial damage includes damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged conditions would equal or exceed 50% of the mark value of the structure before the damage occurred.

Repetitive Loss

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart.

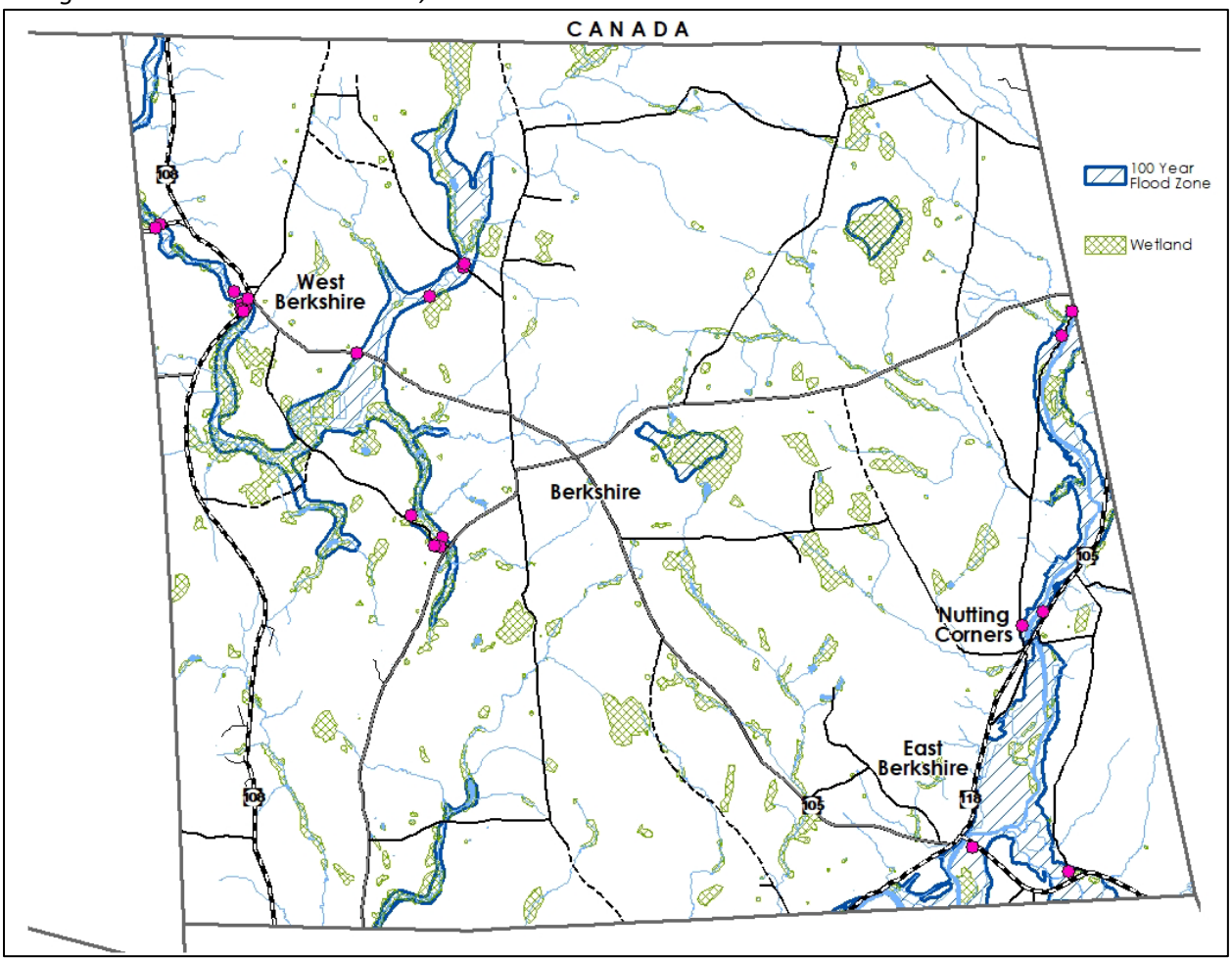
According to FEMA repetitive losses / BCX claims that there are 3 active NFIP policies in Berkshire. There have been 12 claims since 1978 totaling $14,776. There are 2repetitive loss properties and 0 Severe Repetitive Loss / Severe Loss Structure properties under the "Broadened Severe Loss" (BCX) classification.

Structures in the Special Flood Hazard Areas and River Corridor Hazard Area

A GIS based overlay analysis was conducted using FIRM data with the location of the Vermont E-911 Esite data. There are approximately 21 structures within FEMA designated Special Flood Hazard Areas (SFHA). The map below shows structures (purple) located with the SFHA in southern Berkshire along the Missisquoi River, Pike River and Trout River. Of the 21 structures depicted as pink circles in the map below, 18 are single family residences, 2 are mobile homes, and 1 is a camp.

It is important to note the number of structures in the VT ANR mapped River Corridor. There are 20 structures in the River Corridor. As noted in this plan, most of the destruction caused by flooding in Vermont is caused by fluvial erosion, which is the hazard mapped by the River Corridor.

Figure 18: Structures in the SFHA, Berkshire



Critical Facilities

A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the appropriate jurisdictions, or fulfills important public safety, emergency response and/or disaster recovery functions.

Vermont's Emergency Relief Fund (ERAF)

ERAF provides state funding to match FEMA Public Assistance after federally declared disasters. Eligible public costs are generally reimbursed by FEMA at 75% with a 7.5% State match. The state will increase its match to 12.5% or 17.5% if communities take steps to reduce flood risk as described below. To receive the 12.5% state match rate, communities must have the following:

1) NFIP Participation
2) Municipal Road and Bridge Standards
3) Local Emergency Management Plan

4) FEMA approved Local Hazard Mitigation Plan

To receive the 17.5% state match rate, communities participate in FEMA's Community Rating System or adopt fluvial erosion hazard or adopt river corridor protection bylaw that meets or exceeds the Vermont Agency of Natural Resources regulations.

7. MITIGATION STRATEGY

Local Hazard Mitigation Goals Developed for this Plan

The Hazard Mitigation Goals as outlined below were developed by consensus among the emergency management stakeholder group during meetings for the Town of Berkshire Hazard Mitigation Plan.

General Goals:

- Reduce the loss of life and injury resulting from all hazards.
- Reduce the impact of hazards on the town's water bodies, natural resources, and historic resources.
- Reduce the economic impacts from hazard events.
    - Minimize disruption to the road network and maintain access,
    - Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters,
    - Ensure that community infrastructure is not significantly damaged by a hazard event.
    - Being proactive in implementing any needed mitigation projects for public infrastructure such as roads, bridges, culverts, municipal buildings, etc.
- Encourage hazard mitigation planning to be incorporated into other community planning projects, such as the Town Plan, Capital Improvement Plan, and Town Local Emergency Operation Plan
- Ensure that members of the general public continue to be part of the hazard mitigation planning process.

Relevant Town Plan Policies that Support Mitigation (Town Plan Adopted October 5, 2020)

GOAL 3 To protect the citizens, property and economy of Berkshire and the quality of their rivers as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas and river corridors.

Policies:

- Local climatic and weather conditions, and impacts on local air quality, should be considered in planning for suitable use of the land.
- Regional, state, national, and international efforts to improve and protect environmental quality shall be supported at the local level.
- New residential and commercial development in Berkshire is encouraged to implement stormwater mitigation strategies, otherwise known as Low Impact Development.
- Intensive land development, including structures, shall be discouraged on slopes greater than 25% and as much vegetative cover as possible shall be maintained.
- Any development activity that degrades surface and/or ground water quality shall be discouraged.
- Streams, rivers, ponds, and wetlands shall be maintained in their natural state, and be protected from pollution

through appropriate health and land use regulations. Local regulations shall provide buffer areas to maintain the environmental, recreational, and scenic value of water courses, water bodies, and shorelines.

- Development within close proximity of streams and rivers shall be compatible with the natural beauty of the area, shall protect existing vegetation, shall be set back sufficiently to prevent erosion along streambanks or pollution from subsurface sewage disposal systems, and where possible shall retain visual and physical access to the water bodies.
- Development shall be carefully sited in areas with a depth to ground water of two feet or less, or in ground water Source Protection Areas.
- Prohibit land development resulting in the loss of wetland storage capacity or additions to the marsh areas of any substances which are likely to increase the concentration of materials beyond the assimilative capacities.
- The public acquisition of land, development rights, or conservation easements shall be considered where appropriate to ensure long-term protection of particularly important critical areas and maintain open space.
- Encourage the protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion.
- Utilize River Corridors as defined by VT DEC to discourage future development in high riak areas for flooding or erosion hazards.
- Maintain standards higher than the NFIP minimum for land development in the Special Flood Hazard Area and restrict uses to agriculture, recreational and open space in order to increase public safety and reduce future damages.
- Incorporate mitigation measures when developing improvements or expansion of municipal infrastructure.
- Promote energy planning for flood response.
- Incorporate mitigation measures when developing improvements or expansion to municipal infrastructure.
- Promote emergency planning for flood response.

Identified Hazard Mitigation Actions, Programs and Activities

A mitigation action is a measure, project, plan or activity proposed to reduce or eliminate current and future vulnerabilities described in the risk assessment. Mitigation actions help achieve the plan's mission and goals. The actions to reduce vulnerability to threats and hazards form the core of the plan and are a key outcome of the planning process.

FEMA's mitigation action handbook identified actions within the following four categories that need to be considered:

Local Planning and Regulations - These actions include government authorities, policies or codes that influence the way land and buildings are developed and built.

Structure and Infrastructure Projects - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure.

Natural Systems Protections - This type of action can include green infrastructure and low impact development, nature-based solutions, and bioengineering to incorporate natural features or processes into the built environment.

Education and Awareness Programs - These types of actions keep residents informed about potential natural disasters. Educational outreach can help minimize these risks. Many of these types of actions are eligible for funding through the FEMA HMA program.

Prioritizing Mitigation Actions

Mitigation actions are listed in terms of mitigating threat or risk to public health and safety, reduction of hazard to community assets, adherence to the Town plan and local ordinances, cost, and feasibility. Actions are classified as either short - term or long - term activities. Short –term action items are activities which the municipality may be capable of

implementing within one to two years. Long-term action items may require new or additional resources, funding or authorities. On-going action items occur at least once per year. Mitigation actions and their associated scores are listed in priority order, in Table 10 below.

Criteria for Analysis

The following criteria were used establishing an order of project priorities. Each of the following criteria was rated according to a numeric score of "1" (indicating Poor), "2" (indicating Average) and "3" (indicating Good). The highest possible score is 36. The full scoring matrix used is in Appendix B

1) Does the action reduce damage?
2) Does the action contribute to community objectives?
3) Does the action meet existing regulations?
4) Does the action protect historic structures or structures critical to municipal operations?
5) Can the action be implemented quickly?
6) Is the action socially acceptable?
7) Is the action technically feasible?
8) Is the action administratively possible?
9) Is the action politically acceptable?
10) Is the action legal?
11) Does the action offer reasonable benefits compared to its cost of implementation?
12) Is the action environmentally sound?

Projects are classified as either short – term, medium–term or long - term activities.

- Short –term action items are activities which the municipality may be capable of implementing within six months to one year.
- Medium-term action items may be capable of being implemented in one to five years.
- Long-term action items may require 5 to 10 years, new or additional resources, funding, or authorities.

Cost-Benefit Review

Each project will incorporate a full benefit-cost analysis (BCA) following FEMA's BCA methodology and latest software to ensure cost effectiveness and maximize savings. There was a rough cost/benefit analysis performed using criteria in Table 8 with results listed in the Mitigation Actions in Table 10.

Table 9: Cost / Benefit

Cost Estimates	
High	More than $100,000
Medium	Equals $50,000 – 100,000
Low	Less than $50,000
Benefit Estimates	
High	Public Safety
Medium	Infrastructure/Functionality
Low	Aesthetics/General Maintenance

Note: At the time of applying for FEMA's mitigation grant programs, each project listed above will undergo the full benefit-cost analysis methodology (BCA version 4.8 and higher) to maximize savings.

2017 Mitigation Action Updates

Table 10: 2017 Mitigation Actions Update

Hazard Mitigation Action	**Hazard Addressed**	**Responsible Party (underline)** *Supporting party (italic)*	**Priority**	**Status**
Procure and install generator at Town Garage (backup town emergency shelter) and Town Office	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), invasive species, infectious disease outbreak, cold, heat, drought, hail, landslide, major fire - wildland, earthquake, dam failure.	Selectboard Chair *Emergency Management Coordinator*	High	Complete
Install additional rip rap to stabilize and secure Marvin Road	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane)	Road Commissioner *Road Foreman*	High	On-going
Replace undersized culvert on Marvin Road	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane)	Road Commissioner *Road Foreman*	High	Complete
Replace three (3) undersized culverts on Mineral Brook Road	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane)	Road Commissioner *Road Foreman*	High	Complete

Replace undersized culvert on Berkshire Center Road	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane)	Road Commissioner *Road Foreman*	High	Complete
Replace undersized culvert on Reservoir Road	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane)	Road Commissioner *Road Foreman*	Medium	Complete
NIMS/ICS Training for Selectboard and Highway Department	Flooding / Fluvial Erosion, severe winter storm (ice storm), strong wind (windstorm, thunderstorm, tornado, tropical storm, hurricane), invasive species, infectious disease outbreak, cold, heat, drought, hail, landslide, major fire - wildland, earthquake, dam failure.	Selectboard Chair *On-going*	Medium	Complete

2026 Mitigation Actions

Table 11: 2026 Mitigation Actions

Hazard Mitigation Action	**Hazard Addressed**	**Hazard Mitigation Action Category**	**Responsible Party (underlined text = primary POC)**	**Estimated Timeline for Completion**	**Funding Source**	**Action Prioritization and Cost / Benefit**
Update Flood Bylaws to Reflect Changes in FEMA Flood Insurance Rate Maps.	Flooding, fluvial erosion,	Local Planning and Regulations	Zoning Administrator *Development Review Board*	January 2027 - May 2027	General Fund	High Low/High

Hazard Mitigation Action	Hazard Addressed	Hazard Mitigation Action Category	Responsible Party (underlined text = primary POC)	Estimated Timeline for Completion	Funding Source	Action Prioritization and Cost / Benefit
Assess and Stabilize Road Erosion along Ayers Hill Road (stabilize conveyance, upgrade drainage).	Flooding, Fluvial Erosion, Severe winter storm (ice storm), Strong Winds (windstorm, thunderstorm, tornado, tropical storm, hurricane), Landslide.	Structure and Infrastructure	Selectboard Chair *Emergency Management Director*	October 2026 – November 2029	Hazard Mitigation Grant Program (HMGP), Building Resistance Communities and Infrastructure Grant (BRIC), Better Roads Grant, and Local Match	High Medium / High
Remove Problem Beaver Dams throughout Town	Flooding, Fluvial Erosion, Severe winter storm (ice storm), Strong Winds (windstorm, thunderstorm, tornado, tropical storm, hurricane), Landslide.	Structure and Infrastructure	Selectboard Chair *Road Commissioner*	October 2026 – November 2029	Local Funds	High Medium / High
Choquette Road Culvert Upgrade	Flooding, Fluvial Erosion, Severe winter storm (ice storm), Strong Winds (windstorm, thunderstorm, tornado, tropical storm, hurricane), Landslide.	Structure and Infrastructure	Selectboard Chair *Road Commissioner*	October 2026 – November 2029	Better Roads Category A Grant	High Medium / High
Assess and Stabilize Erosion along Marvin Road (armor road embankment, rip rap).	Flooding, Fluvial Erosion, Severe winter storm (ice storm), Strong Winds (windstorm, thunderstorm, tornado, tropical storm, hurricane), Landslide.	Structure and Infrastructure	Road Foreman *Road Commissioner*	January 2027 – November 2029	Hazard Mitigation Grant Program (HMGP), Building Resistance Communities and Infrastructure Grant (BRIC), Better Roads	High High / High

Hazard Mitigation Action	Hazard Addressed	Hazard Mitigation Action Category	Responsible Party (underlined text = primary POC)	Estimated Timeline for Completion	Funding Source	Action Prioritization and Cost / Benefit
					Grant and Local Match	
Educate landowners and residents about best management practices for erosion control, ensuring all have access to information and resources.	Flooding, Fluvial Erosion, Strong Winds (windstorm, thunderstorm, tornado, tropical storm, hurricane), Landslide, dam failure.	Education and Awareness Programs	Emergency Management Director *Missisquoi River Basin Association Director*	November 2026 – December 2030	Town General Funds. Most resources are free.	High Low / High
Add the two remaining groundwater source protection areas to the zoning regulations, including the Perley and Woodward Neighborhood Roads spring supplying the East Berkshire Water Coop and the groundwater source serving Berkshire Elementary School.	Flooding, Fluvial Erosion, Drought, Extreme Heat, Major Fire – Wildland.	Natural Resource Protection	*Road Commissioner* Road Foreman	November 2028	General Funds	Medium Low / High
Update Road Erosion Inventory	Flooding, Fluvial Erosion, Winter Storm (Ice Storm), Strong Winds (windstorm, thunderstorms, tornado, tropical storm, hurricane), landslide.	Local Planning and Regulations	*Road Commissioner* Road Foreman	June 2027 – August 2029	State Better Roads Category A REI Reassessment Grant	Medium Low / High

Hazard Mitigation Action	Hazard Addressed	Hazard Mitigation Action Category	Responsible Party (underlined text = primary POC)	Estimated Timeline for Completion	Funding Source	Action Prioritization and Cost / Benefit
Enhance Public Awareness of home fire risks (smoke alarms, carbon monoxide, fire extinguishers) via social meeting postings and fire department events.	Severe winter storm (Ice Storm), Strong Winds (windstorm, thunderstorms, tornado, tropical storm, hurricane), extreme cold, major fire – wildland, drought, extreme heat, hail earthquake.	Education and Awareness Programs	Fire Chief	December 2026 – December 2030	Town General Fund	Medium Low / High
Infectious Disease Education and Awareness Programs for the Public	Infectious Disease Outbreak,	Education and Awareness Programs	Emergency Management Director *Health Officer, VDH*	January 2027 – December 2030	Town General Fund	Medium Low/High
Work with Vermont Woodlands Association to provide educational tools, webinars, and field guides to help identify invasive species threats	Invasive Species	Education and Awareness Programs	Selectboard Chair *Recreation Director*	January 2027 – December 2030	Town General Fund	Medium Low/High
Remove Properties Prone to Flooding Through Voluntary Buyouts	Flooding, Fluvial Erosion, Landslide, Dam Failure.	Structure and Infrastructure	Selectboard Chair,	October 2026 – November 2029	Hazard Mitigation Grant Program (HMGP), Building Resistance Communities and Infrastructure Grant (BRIC), and Local Match	Medium High / High

Hazard Mitigation Action	Hazard Addressed	Hazard Mitigation Action Category	Responsible Party (underlined text = primary POC)	Estimated Timeline for Completion	Funding Source	Action Prioritization and Cost / Benefit
Implement necessary improvements for compliance with the Municipal Roads General Permit.	Flooding, Fluvial Erosion, Winter Storm (Ice Storm), Strong Winds (windstorm, thunderstorms, tornado, tropical storm, hurricane), landslide.	Structure and Infrastructure	*Road Commissioner* Road Foreman	June 2027 – August 2029	State Better Roads Category A REI Reassessment Grant	Medium Low / High
Maintain vegetated buffers along Missisquoi River, Trout River and local tributaries to reduce erosion, filter runoff, and provide natural flood storage.	Flooding, Fluvial Erosion, Winter Storm (Ice Storm), Strong Winds (windstorm, thunderstorms, tornado, tropical storm, hurricane), landslide.	Natural Resource Protection	*Road Commissioner* Road Foreman. With support from Missisquoi River Basin Association	June 2027 - August 2029	General Fund,	Medium Low / High
Community Education Messaging: How to Prepare for Winter Conditions and Severe Winter Weather via town website postings social media, and community events.	Severe Winter Storm (Ice Storm), Strong Winds (windstorm, thunderstorms, tornado, tropical storm, hurricane), extreme cold, hail, earthquake.	Education and Awareness Programs	Emergency Management Director *Health Officer*	November 2026 – December 2030	Town General Fund	Medium Low / High
Disease Vector Control Training for Municipal Officials (ticks, mosquitos, fleas, lice, etc.)	Infectious Disease Outbreak, Invasive Species	Education and Awareness Programs	Emergency Management Director *Health Officer, VDH*	January 2027 – December 2030	Town General Fund	Medium Low / High

Mitigation Action Changes in Priorities

Mitigation actions changed priorities for several reasons, reflecting the evolving nature of risks, community needs and resource availability. Key factors that drove changes in mitigation actions and priorities may include:

- **Evolving Risk Landscape:**
  - Climate Change: As the impacts of climate change become more pronounced, priorities may shift towards addressing related risks like sea-level rise, increased frequency of extreme weather events, and changing precipitation patterns
- **Updated Hazard Data**:
  - Improved Understanding: Advances in science and technology provide better data and modeling, leading to new insights about hazard risks and vulnerabilities.
  - Recent Disasters: Experiences from recent disasters can highlight previously underestimated risks and lead to a re-evaluation of priorities.
- **Community and Stakeholder Input**:
  - Public Concerns: Community feedback and concerns can bring attention to specific vulnerabilities or areas in need of mitigation.
  - Stakeholder Engagement: Involvement of local businesses, non-profits, and other stakeholders can influence which mitigation actions are prioritized based on their expertise and needs.
- **Changes in Resources:**
  - Funding Availability: New funding opportunities or changes in budget allocations can shift which projects are feasible and prioritized.
  - Technological Advances: New technologies can provide more effective or cost-efficient mitigation solutions, altering priority actions.
- **Policy and Regulatory Changes:**
  - New Legislation: Changes in local, state, or federal regulations can necessitate updates to mitigation priorities to ensure compliance.
  - Policy Shifts: Shifts in government policy focus, such as increased emphasis on sustainability or climate resilience, can change priorities.
- **Demographic and Economic Changes**:
  - Population Growth: Increased population density in certain areas can raise the priority of mitigating risks in those areas.
  - Economic Development: As areas develop economically, there may be a higher priority placed on protecting new infrastructure and investments.
- **Critical Infrastructure Needs:**
  - Infrastructure Vulnerabilities: Identification of weaknesses in critical infrastructure (e.g., utilities, transportation networks) can lead to a prioritization of actions to fortify these systems.
  - Lifeline Services: Ensuring the resilience of essential services like water, power, and healthcare can become a higher priority in mitigation planning.
- **Previous Hazard Mitigation Projects:**
  - Project Completion: The completion of previous hazard mitigation projects may have resolved a hazard in a particular area that was of previous concern.

Integration Into Existing Plans and Procedures

For Berkshire to succeed in reducing long-term risk, information from this Plan should be integrated throughout town operations. Integration actions include:

- The mitigation goals and risk assessment information can be incorporated into the next Town Plan update and into future flood hazard area regulations and river corridor bylaws.

- Funding mitigation actions can be prioritized in the annual budget process.
- Funding mitigation actions can be prioritized in grant research.
- The risk assessment information can be incorporated into future training plans and budgets.
- The hazard mitigation risk assessment and actions can be embedded into the LEMP.

The following hazard mitigation information was captured in the 2020 Town Plan and should be captured in the Town Plan rewrite:

- Flood Hazard Area & Corridor Protection: Restrict development within the Flood Hazard Area Overlay District and river corridors to prevent inundation and erosion damage to public water supply systems, utility infrastructure, and municipal facilities.
- Resource Safeguarding: Protect the citizens, property and economy of Berkshire and the quality of their rivers as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas and river corridors."
- Wellhead & Water Quality Protection: Enforce Wellhead Protection Overlay Districts to safeguard public water supply sources from contamination and environmental hazards.
- Capital Planning & Infrastructure Maintenance: Maintain a comprehensive capital improvement budget and schedule to ensure roads, bridges, and municipal services remain operational during and after major weather events.
- Emergency Service Training & Fire Safety: Partner with the Vermont Department of Public Safety Division of Fire Safety to ensure local emergency responders and firefighters are specifically trained to handle risks associated with structural solar installations and high-voltage grid setups.
- Local Hazard Mitigation Plan (LHMP) Integration: Align local planning objectives with regional and state mitigation frameworks to maintain eligibility for FEMA grants and state funding, protecting municipal facilities and emergency infrastructure.

8. PLAN MAINTENANCE

This Plan is dynamic. To ensure it remains current and relevant, it will be evaluated, monitored and updated every five years in accordance with FEMA guidelines in effect at the time.

Annual Monitoring and Evaluation

Within 12 months of FEMA Final Approval, the Plan will be annually evaluated and monitored as follows:

1. Three months prior to the anniversary of the FEMA Final Approval date, Selectboard Chair will evaluate the effectiveness of the Plan in meeting the stated goals. Items to be considered during this evaluation:
    - What disasters have the town or region experienced?
    - Should the list of highest risk natural hazard impacts be modified?
    - Are new data sources, maps, plans, or reports available? If so, what have they revealed, and should the information be incorporated into the plan?
    - Has development in the town or region occurred and could it create or reduce risk?
    - Has the town adopted new policies or regulations that could be incorporated into this plan?
    - Have elements of the plan been incorporated into new plans, reports, policies or regulations?
    - Are there different or additional community capabilities available for mitigation implementation?

2. Next, the Selectboard Chair will monitor mitigation action progress. Items to consider:
    - Is the mitigation strategy being implemented or anticipated?
    - Were the cost and timeline estimate accurate?

- Should new mitigation actions be added?
- Should proposed actions be revised or removed?
- Are there new funding sources to consider?

The status (e.g. in progress, complete) of each action should be recorded in Table 11. If the status is "in progress" note whether the action is on schedule. If not, describe any problems, delays, or adverse conditions that will impair the ability to complete the action.

3. The public will have an opportunity to review the plan and provide updates a month prior to the Selectboard meeting during the month of the annual anniversary date of FEMA Final Approval. The Town Manager will post hard copies at the Town office and post materials on the Town website and Facebook page for the public. Items to consider for public engagement:
   - Are there any new stakeholders to include?
   - Were there changes in population patterns (migration, density or makeup of socially vulnerable populations?
   - Were there any changes in land use and development?
   - What public outreach activities have occurred? At minimum, the town will publicly post notice of meeting when the plan is being evaluated.
   - How can the public involvement be improved?

4. Based on input received, the mitigation strategy and/or actions will be modified, if needed. The plan status and public input will be reviewed at Trustees meeting during the month of the annual anniversary date of FEMA Final Approval. A report (or public record in the form of meeting minutes) of the annual evaluation and monitoring will be made available to the public on the Town website and captured in the plan.

Table 12: Mitigation Action Status

Mitigation Action Status					
Mitigation Action	**2026**	**2027**	**2028**	**2029**	**2030**
Local Plans & Regulations					
Update Flood Bylaws to Reflect Changes in FEMA Flood Insurance Rate Maps.					
Update Road Erosion Inventory					
Structure & Infrastructure Projects					
Remove Flood-Prone Properties Through Voluntary Buyouts.					
Assess and Stabilize Erosion along Marvin Road (armor road embankment, rip rap)					
Assess and Stabilize Road Erosion along Ayers Hill Road (stabilize conveyance, upgrade drainage).					
Remove Problem Beaver Dams throughout Town					
Choquette Road Culvert Upgrade					
Natural Systems Protection					
Add the two remaining groundwater source protection areas to the zoning regulations, including the Perley and Woodward Neighborhood Roads spring supplying the East Berkshire Water Coop and					

the groundwater source serving Berkshire Elementary School					
Maintain vegetated buffers along Missisquoi River, Trout River and local tributaries to reduce erosion, filter runoff, and provide natural flood storage					
Education & Awareness Programs					
Educate landowners and residents about best management practices for erosion control, ensuring all have access to information and resources.					
Enhance Public Awareness of home fire risks (smoke alarms, carbon monoxide, fire extinguishers) via social meeting postings and fire department events					
Community Education Messaging: How to Prepare for Winter Conditions and Severe Winter Weather via town website postings social media, and community events.					
Hot and Cold Weather Shelter Planning for Local Officials and Volunteers					
Disease Vector Control Training for Municipal Officials (ticks, mosquitos, fleas, lice, etc.)					
Infectious Disease Education and Awareness Programs for Public					
Work with Vermont Woodlands Association to provide educational tools, webinars, and field guides to help identify terrestrial threats like buckthorn, honeysuckle, and the emerald ash bore					

Plan Updating

This plan will be updated at a minimum every five (5) years as follows:

1. Initiate Plan Update – The Selectboard Chair should contact Vermont Emergency Management (VEM) to apply for funding approximately 2 years prior to the plan expiration date. It is assumed that the Town Manager will serve as the primary point of contact for the Plan update.

   Once funding is secured and the grant agreement between the Town and State is in place, the Selectboard Chair can issue a request for proposals (RFP) to procure planning services in accordance with the grant agreement. The RFP should be issued approximately 14 months before the plan expires.

   Once a consultant is procured, the Plan update process can begin with a kick-off meeting including the consultant and local hazard mitigation planning team. The kick-off meeting should be scheduled approximately 12 months before the plan expires. The Town should allot approximately 8 months for the plan update process.

2. The Stakeholder Public Outreach Plan for LHMP should be reviewed and updated. Opportunities for whole community involvement throughout the Plan update process must be factored into the schedule. Whole community involvement must include the effects of climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. These

opportunities may include a community survey, planning workshop, and public meetings at critical milestones agreed to at the project kick-off meeting.

3. Once the local hazard mitigation planning team has prepared a final draft following a public comment period, they can seek authorization from the Trustees to submit the Plan for VEM/FEMA approval. Plan approval is accomplished in two steps. The first step is receiving "Approval Pending Adoption" from the VEM/FEMA review. The Town should submit for "Approval Pending Adoption" approximately 4 months before the plan expires to allow for time to respond to any review comments received by VEM/FEMA. The second step is adopting the plan. Once the Town receives "Approval Pending Adoption", the Town Selectboard should adopt the plan by signing the resolution as soon as their next regular meeting.

4. Once adopted, the Town can submit the Plan and the signed resolution to VEM/FEMA. FEMA will issue the Town a letter with the date of "Final Approval". That date starts the clock on the 5-year cycle.

Appendix A: Resolution for Adoption

RESOLUTION
A RESOLUTION OF THE TOWN OF BERKSHIRE SELECTBOARD ADOPTING THE 2026 TOWN OF BERKSHIRE HAZARD MITIGATION PLAN.

WHEREAS the Town of Berkshire recognizes the threat that natural hazards pose to people and property within The Town of Berkshire; and

WHEREAS The Town of Berkshire has prepared a multi-hazard plan, hereby known as the 2026 Town of Berkshire Hazard Mitigation Plan in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the 2026 Town of Berkshire Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in The Town of Berkshire from the impacts of future hazards and disasters; and

WHEREAS adoption by The Town of Berkshire Selectboard demonstrates its commitment to hazard mitigation and achieving the goals outlined in the 2026 Town of Berkshire Hazard Mitigation Plan.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF BERKSHIRE SELECTBOARD, IN THE STATE OF VERMONT, THAT:

Section 1. In accordance with 24 VSA §872, The Town of Berkshire Selectboard adopts the 2026 Town of Berkshire Hazard Mitigation Plan. While content related to The Town of Berkshire may require revisions to meet the plan approval requirements, changes occurring after adoption will not require The Town of Berkshire Selectboard to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of ____ in favor and ____ against, and ____ abstaining, this _____ day of _____, 2026.

By: _____ (Signature)

_____ (print name)

Appendix B: Mitigation Action Scoring Table

Mitigation Action	Criteria												Total Score
	1	2	3	4	5	6	7	8	9	10	11	12	
Remove Properties Prone to Flooding Through Voluntary Buyouts	3	3	3	2	2	3	3	3	3	3	3	3	**34**
Assess and Stabilize Road Erosion along Ayers Hill Road (stabilize conveyance, upgrade drainage).	3	3	3	3	2	3	3	3	3	3	3	3	**36**
Remove Problem Beaver Dams throughout Town	3	3	3	3	3	3	3	3	3	3	3	3	**36**
Choquette Road Culvert Upgrade	3	3	3	3	3	3	3	3	3	3	3	3	**36**
Assess and Stabilize Erosion along Marvin Road (armor road embankment, rip rap).	3	3	3	3	2	3	3	3	3	3	3	3	**36**
Educate landowners and residents about best management practices for erosion control, ensuring all have access to information and resources.	3	3	3	2	2	3	3	3	3	3	3	3	**35**
Add the two remaining groundwater source protection areas to the zoning regulations, including the Perley and Woodward Neighborhood Roads spring supplying the East Berkshire Water Coop and the groundwater source serving Berkshire Elementary School.	3	3	3	2	3	3	3	3	3	3	3	3	**35**
Update Road Erosion Inventory	2	3	3	3	3	3	3	3	3	3	3	3	**35**
Maintain vegetated buffers along Missisquoi River, Trout River and local tributaries to reduce erosion, filter runoff, and provide natural flood storage.	3	3	3	2	2	3	3	3	3	3	3	3	**34**
Implement necessary improvements for compliance with the Municipal Roads General Permit.	3	3	3	2	2	3	3	3	3	3	3	3	**34**
Update Flood Bylaws to Reflect Changes in FEMA Flood Insurance Rate Maps.	3	3	3	3	3	3	3	3	3	3	3	3	**36**
Enhance Public Awareness of home fire risks (smoke alarms, carbon monoxide, fire extinguishers) via social meeting postings and fire department events.	3	3	3	2	3	3	3	3	3	3	3	3	**35**
Education Messaging: How to Prepare for Winter Conditions and Severe Winter Weather via town website	2	3	3	2	3	3	3	3	3	3	3	3	**34**

postings social media, and community events.													
Disease Vector Control Training for Municipal Officials (ticks, mosquitos, fleas, lice, etc.)	2	3	3	2	3	3	3	3	3	3	3	3	**34**
Infectious Disease Education and Awareness Programs for the Public	3	3	3	2	3	3	3	3	3	3	3	3	**35**
Work with Vermont Woodlands Association to provide educational tools, webinars, and field guides to help identify invasive species threats	3	3	3	2	3	3	3	3	3	3	3	3	**35**

Appendix C: Major Disaster Declarations (Source: FEMA.gov)

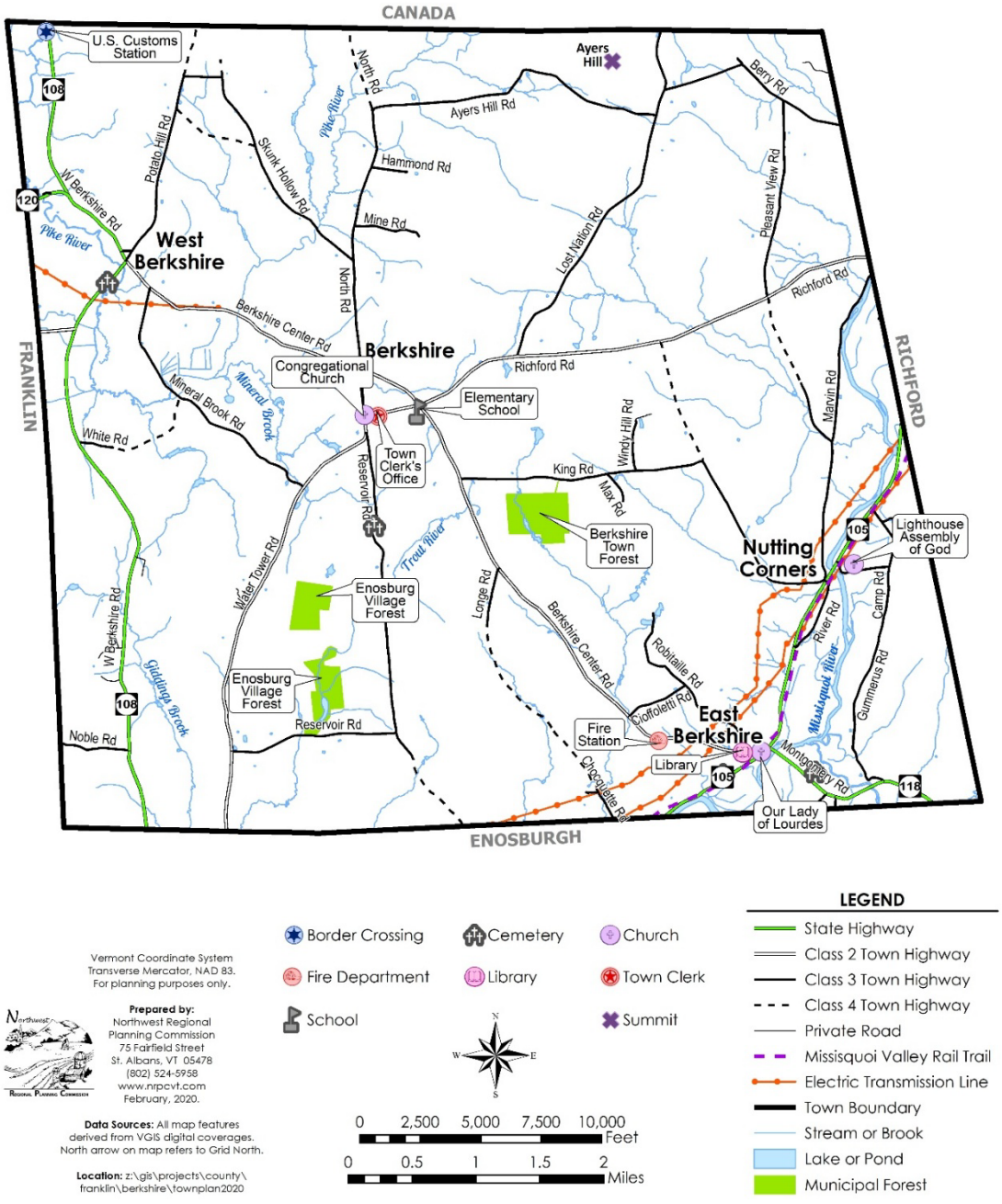
Disaster Date(s)	Declaration Date	Hazard (Disaster Declaration)	Franklin County Declaration? (Yes/No)
Aug 11 – 24, 2024	September 11, 2024	Severe Storms and Flooding (DR-4816)	No
Jul 29-31, 2024	September 26, 2024	Severe Storms, Flooding, Landslides and Mudslides (DR-4826)	No
July 9 – 11, 2024	August 20, 2025	Severe Storms, Flooding, Landslides, Mudslides (DR-3609, DR-4810)	No
Jan 9 – 13, 2024	April 19, 2024	Severe Winter Storm (DR-4770)	Yes
Dec 18 - 19, 2023	March 2, 2024	Severe Storms and Flooding (DR-4762)	No
Aug 3 – 5, 2023	October 6, 2023	Severe Storms and Flooding (DR-4744)	No
July 10 - 14. 2023	July 14, 2023	Severe Storms, Flooding Landslides, and Mudslides (4720)	Yes
July 10 - 14, 2023	July 10, 2023	Severe Storm and Flooding (DR-3595)	Yes
Dec 22-24, 2022	March 20, 2023	Severe Storms (Wind) and Flooding (DR-4695)	Yes
Jul 29-30. 2021	September 29, 2021	Severe Storm and Flooding (DR-4621)	No
January 20 – May 11, 2023	April 8, 2020	COVID-19 (DR-4532)	Yes
October 31 – November 1, 2019	January 17, 2020	Severe Storm (Wind) and Flooding (DR-4474)	Yes
April 15, 2019	April 15, 2019	Severe Storms and Flooding (DR-4445)	No
May 4 – 5, 2018	July 30, 2018	Severe Storm and Flooding (DR-4380)	Yes
October 29 - 30, 2017	January 2, 2018	Severe Storm and Flooding (DR-4356)	Yes
June 29 – July 1, 2017	August 16, 2017	Severe Storms and Flooding (DR-4330)	No
June 9, 2015	July 29, 2015	Severe Storm and Flooding (DR-4232)	No
December 9 – 12, 2014	February 3, 2015	Severe Winter Storm (DR-4207)	No
April 15 - 18, 2014	June 11, 2014	Severe Storm and Flooding (DR-4178)	Yes
December 20 - 26, 2013	January 29, 2014	Severe Winter Storm (DR-4163)	Yes
June 25 – July 11, 2013	August 2, 2013	Severe Storms and Flooding (DR-4140)	No
May 22 – 26, 2013	June 13, 2013	Severe Storms and Flooding (DR-4120)	No
May 29, 2012	June 22, 2012	Severe Storm, Tornado, and Flooding (DR-4066)	No
August 8, 2011	August 29, 2011	Tropical Storm Irene (DR-4022)	No
April 2011	June 15, 2011	Severe Storms and Flooding (DR-1995)	Yes
May 2011	November 8, 2011	Severe Storms and Flooding (DR-4043)	Yes
December 1, 2010	December 22, 2010	Severe Storms (Wind) (DR-1951)	Yes
December 11 – 18, 2008	January 14, 2009	Severe Winter Storm (DR-1816)	No
July 21 – August 12, 2008	September 12, 2008	Severe Storms and Flooding (DR-1790)	No
July 18, 2008	August 15, 2008	Severe Storms, a Tornado and Flooding (DR-1784)	Yes
June 14 - 17, 2008	June 14, 2008	Severe Storms and Flooding (DR-1778)	Yes
September 23, 2004	September 3, 2004	Severe Storms and Flooding (DR-1559)	Yes

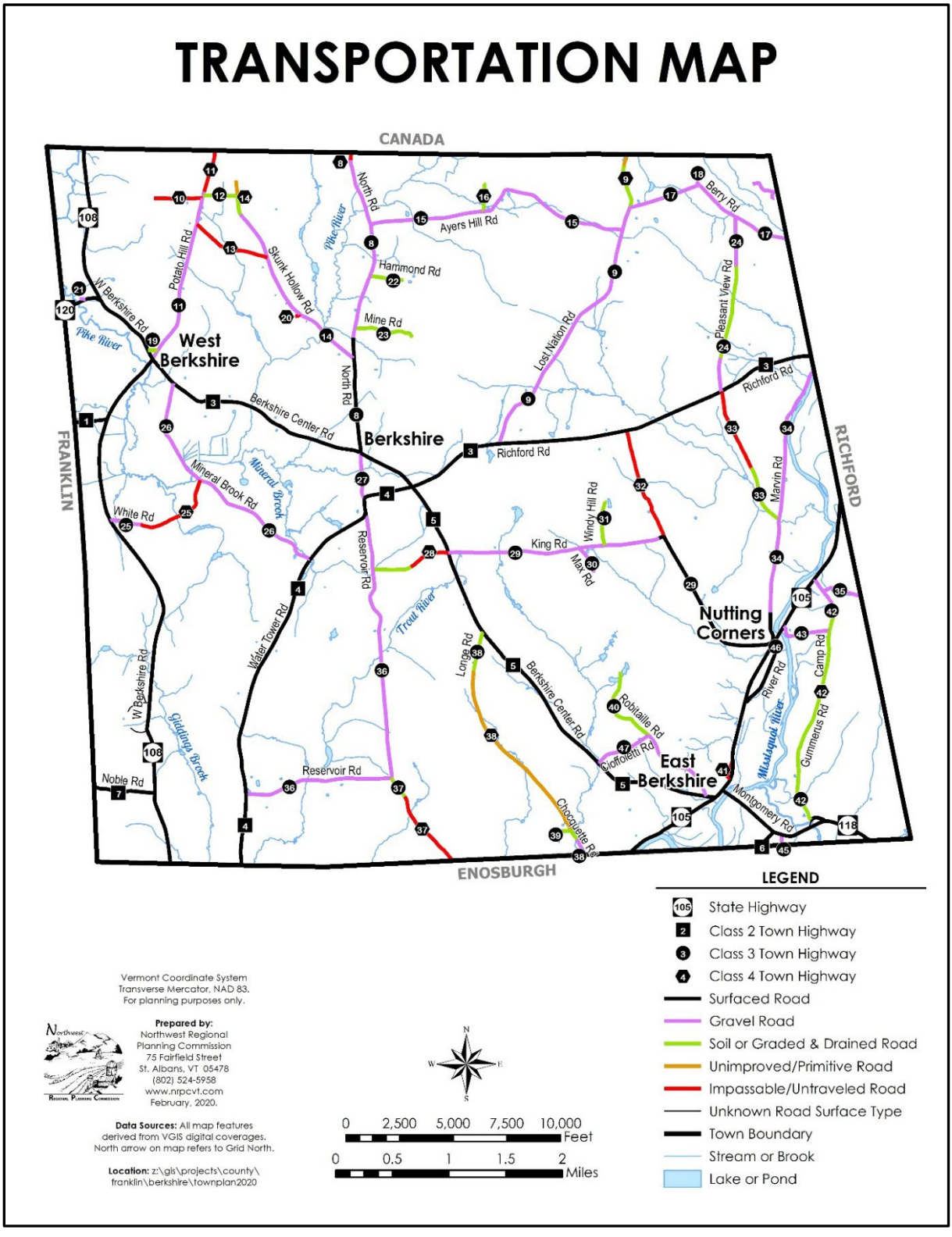
June 5, 2002	June 15, 2002	Severe Storms and Flooding, Severe Wind (DR-1428)	No
June 17 – August 17, 1998	June 30, 1998	Severe Storms and Flooding, Rainfall (DR-1228)	Yes
January 6 - 16, 1998	January 15, 1998	Ice Storms (DR-1201)	Yes
July 14 - 17, 1997	July 25, 1997	Excessive Rainfall, High Winds and Flooding (DR-1184)	Yes
June 12 – 14, 1996	June 27, 1996	Flooding (DR-1124)	No
January 19 – February 2, 1996	February 13, 1996	Storms and Flooding (DR-1101)	Yes
August 4 – 6, 1995	August 16, 1995	Heavy Rain, Flooding (DR-1063)	No
April 24 - May 26, 1993	May 12, 1993	Heavy Rain, Snowmelt & Flooding (DR-990)	Yes
March 11, 1992	March 18, 1992	Flooding, Heavy Rain, Ice Jams (DR-938)	No
July 4 – 23, 1990	July 25, 1990	Flooding, Severe Storm (DR-875)	Yes
August 4 – 5, 1989	September 11, 1989	Severe Storms, Flooding (DR-840)	No
June 6 – 8, 1984	June 18, 1984	Severe Storms, Flooding (DR-712)	Yes
August 5, 1976	August 5, 1976	Severe Storms, High Winds & Flooding (DR-518)	Yes
June 28 - 30, 1973	July 6, 1973	Severe Storm, Flooding, & Landslides (DR-397)	Yes

Appendix D: Extremely Hazardous Sites (EHS) and Critical Facilities, Berkshire, VT

Hazardous.Sites¿Facilities.required.to.report.to.federal?.state?.and.local.governments.under.the. Emergency.Planning.and.Community.Right_to_Know.Act.(EPCRA).of.7❽❹❷.for.chemical. emergencies¡.Sites.listed.are.those.that.store?.and-~~or~~.use.hazardous.substances¡ Critical.Facilities¿A facility.that provides.services.and.functions.essential.to.a.community?. especially.during.and.after.a¡.disaster¡	
Hazardous Material Storage Area/Tier II Site	Berkshire Elementary School 2850 Water Tower Road
Critical Facility Emergency Services	Berkshire Fire Station 2850 Watertower Road
Critical Facility Government	Berkshire Town Hall 4554 Water Tower Road
Critical Facility Transportation Hazardous Material Storage Area/Tier II Site	Berkshire Town Garage 4544 Water Tower Road
Religious Facility	Lighthouse Assembly of God East Berkshire
Religious Facility	Our Lady of Lourdes 2902 VT Route 105, East Berkshire
Hazardous Material Storage Area/Tier II Site	Saints Quick Stop VT105 East Berkshire
Critical Facility Government	USCBP. Station Morse's Line Route 108 West Berkshire
Critical Facility	US Post Office US Route 2

Appendix E: Maps




TRANSPORTATION MAP
CANADA
FRANKLIN
RICHFORD
ENOSBURGH
West Berkshire
Berkshire
Nutting Corners
East Berkshire
Pike River
Mineral Brook
Trout River
Giddings Brook
Missisquoi River
Potato Hill Rd
Skunk Hollow Rd
North Rd
Ayers Hill Rd
Hammond Rd
Mine Rd
Berry Rd
Pleasant View Rd
Lost Nation Rd
Richford Rd
Berkshire Center Rd
Mineral Brook Rd
White Rd
Reservoir Rd
Water Tower Rd
King Rd
Windy Hill Rd
Max Rd
Marvin Rd
Longe Rd
Robitaille Rd
Cioffoletti Rd
Chocquette Rd
River Rd
Camp Rd
Gummerus Rd
Montgomery Rd
Noble Rd
W Berkshire Rd
LEGEND
State Highway
Class 2 Town Highway
Class 3 Town Highway
Class 4 Town Highway
Surfaced Road
Gravel Road
Soil or Graded & Drained Road
Unimproved/Primitive Road
Impassable/Untraveled Road
Unknown Road Surface Type
Town Boundary
Stream or Brook
Lake or Pond
Vermont Coordinate System
Transverse Mercator, NAD 83.
For planning purposes only.
Prepared by:
Northwest Regional
Planning Commission
75 Fairfield Street
St. Albans, VT 05478
(802) 524-5958
www.nrpcvt.com
February, 2020.
Data Sources: All map features
derived from VGIS digital coverages.
North arrow on map refers to Grid North.
Location: z:\gis\projects\county\
franklin\berkshire\townplan2020
0 2,500 5,000 7,500 10,000 Feet
0 0.5 1 1.5 2 Miles

Appendix F: Hazard History

Flooding and Fluvial Erosion

Dates	Description and Extent
July 7, 2024:	This event was a federal disaster declaration from flooding damages caused by Tropical Storm Beryl but it did not include Franklin County. Steady rain fell during the evening hours of July 7th into early morning of July 8th. There were no issues locally from flooding or winds other than branches falling in roads. Other areas of the state, notably St. Johnsbury, Lyndonville and Morgan, received catastrophic damages to public and private properties.
December 18-19, 2023:	(DR-4762): This event was a federal disaster declaration but it did not include Franklin County. Heavy rain and rapid snowmelt caused significant flooding in parts of the Northern Adirondacks and Vermont. This marked the second major flood for Vermont in six months, highlighting the increasing frequency and severity of flooding in the region due to climate change. Unlike the previous flood, which was caused by thunderstorms, this event was primarily driven by persistent rainfall. The Ausable, Lamoille, Otter Creek, Passumpsic, and Winooski River basins were particularly hard hit. Widespread heavy rainfall and substantial snow melt (1 – 1.5 inches) led to saturated soils and ponding of water and runoff across roads into streams and rivers with some river gauges reaching moderate flood levels, including the Missisquoi River. Several roads were damaged and were closed briefly. A few home basements were flooded in East Berkshire- and the surrounding area including Enosburgh Town, Enosburg Falls Village, and Fairfax.
July 7 to July 23, 2023:	This event was a federal disaster declaration (DR 4720) but it did not include Franklin County. During this period, clusters of showers and thunderstorms crossed the state. Torrential downpours were frequent with some storms especially over the southern and central Green Mountains and northeastern Vermont. In portions of northeastern Vermont, considerable flash flooding occurred. Franklin County was largely spared from the severity of damages that occurred in other areas of the state. Showers and thunderstorms with heavy rainfall trained across the affected area during the afternoon hours of July 21. Radar estimates and ground observations showed that between two and four inches of rain fell, leading to scattered reports of flash flooding, most notably in the Enosburgh area where Routes 105 and 108 were closed due to high water and road damage. Additionally, strong southwest to west winds, gusting to 40 to 50 mph and locally higher, developed around sunrise and continued through mid-afternoon before quickly diminishing by evening. These persistent strong winds combined with over-saturated soils, led to numerous downed trees, structural damage and

	escalated power outages to their peak of more than 100,000 outages. Estimated public infrastructure damage exceeded $5 million state-wide.
October 31 to November 1, 2019	(DR 4474): This event is locally referred to as the "Halloween Storm". Steady rain developed during the mid to late evening of October 31st and became heavy at times through the early morning hours. Rainfall amounts from 2.5 to 4 inches fell across northwest and north central Vermont. Numerous rivers including the Missisquoi River and area streams flooded. Several roads were fully or partially washed out in northern areas of the state.
January 13, 2018:	Record high temperatures followed by precipitation caused rapid snow and ice melt. The conditions were perfect for localized flooding along the Missisquoi River and its tributaries. Town properties were spared of significant damages.
April 15-18, 2014:	(DR 4178): Severe storms and flooding affected Caledonia, Essex, Franklin, Lamoille, Orange, Orleans, and Washington Counties in Vermont. A federal declaration was made. In Berkshire, flooding occurred along local roads with an estimated $5,000 in damages.
April and May of 2011	(DR 1995, 4043): The year 2011 was a record year for flooding in the state of Vermont. The first floods occurred over a two-week period in late spring. These floods impacted the northern half of the state, including the counties of Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orleans, Washington, and Windham. The damage totaled over $1.8 million in FEMA assistance. In the spring, heavy rains in late March/early April on top of a deep late season snowpack resulted in riverine flooding and sent Lake Champlain well over the 500-year flood elevation breaking the 140-year-old peak stage elevation. Additional spring runoff events resulted in Lake Champlain being above base flood elevation for more than a month. High lake levels coupled with wind driven waves in excess of 3 feet resulted in major flood damage for shoreline communities. Additionally, flooding caused by Tropical Storm Irene in Southern and Central Vermont was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR 4022). Berkshire was spared from the catastrophic damages that occurred elsewhere in the state. Most damages in the state resulting from Tropical Storm Irene were due to flooding and fluvial erosion.
June 14 - 17, 2008 (DR 1778):	A series of storms affected the entire state. Stronger storms on Monday June 16 produced up to 1 inch hail. These storms also produced heavy rainfall but were moving more quickly. No flooding resulted. On Tuesday June 17th strong thunderstorms produced pea sized hail and heavy rain in the Trout River basin in northwest Vermont. Flash flooding occurred in the eastern parts of Franklin County.
June 4, 2007	(FEMA-1698-DR) Franklin County was on the edge of a strong frontal system that brought heavy rain which damaged roads in the area. Franklin County was not part of the disaster declaration.

August 24, 2007	(FEMA-1715-DR): Franklin County was on the edge of a strong frontal system that brought heavy rain which damaged roads in the area. Franklin County was not part of the disaster declaration.
May 18 and 19, 2006:	A two-day heavy rainfall event brought 3 to 5 inches of rain in Franklin County with locally more than 6 inches along the western slopes of the Green Mountains. Heavy rainfall produced flooding within the Missisquoi and Trout River basins. Numerous roads were flooded and several culverts were washed out. Several basements were inundated. There was approximately $75,000 in property damages from the event.
September 23rd, 2004	(FEMA-1559-DR): A disaster declaration was declared due to severe storms and flooding from August 12th through September 12th, 2004. Franklin County was included in the disaster declaration. Flooding occurred because of heavy rain produced from Tropical Storm Francis. The highway crew replaced one culvert on TH1 (Tyler Branch Road). Estimated cost of repairs from FEMA reports and testimony from the Public Works director were approximately $5,000.
May 18 and 19, 2006:	A two-day heavy rainfall event brought 3 to 5 inches of rain in Franklin County with locally more than 6 inches along the western slopes of the Green Mountains. Heavy rainfall produced flooding within the Missisquoi River and Trout River basins, especially in the Berkshire-Montgomery area. Numerous roads were flooded and several culverts were washed out. Several basements were inundated. There was approximately $75,000 in property damages from the event.
September 23rd, 2004	(FEMA-1559-DR): A disaster declaration was declared due to severe storms and flooding from August 12th through September 12th, 2004. Franklin County was included in the disaster declaration. Flooding occurred because of heavy rain produced from Tropical Storm Francis. The highway crew replaced one culvert on TH1 (Tyler Branch Road). Estimated cost of repairs from FEMA reports and testimony from the Public Works director were approximately $5,000.
June 5, 2002:	Flash flooding occurred in Berkshire due to a heavy local thunderstorm. Road washouts occurred along Route 105 near East Berkshire resulting in $25,000 in damages
February 28, 2000:	A stalled cold front over Northern New England brought steady rain to the area. Ice jams formed along the Missisquoi River which produced 1 to 2 feet of water along Route 105 between Enosburg Falls and East Berkshire. Flooding receded on the 29th. There was an estimated $20,000 in damages. One homeowner on Town Drive reported water in the garage from flooding.
July 4, 1996:	Heavy rain event again overwhelmed local drainages and damaged many local roads.
July 14-15, 1997	(DR-1184): The neighboring Town of Montgomery suffered extensive damage from a flood so severe that it is known statewide as the Montgomery Flood. Late in the night on July 14th through the morning of the 15th, after more than ten hours of almost continuous rain, a wall of water poured into the center of Town.

	Route 118 Bridge in Montgomery Center over the Trout River collapsed, cars were carried away, pavement was ripped up, and huge trees were uprooted.
January 15, 1996	(FEMA 1101-DR):A severe winter storm triggered flooding throughout the Town and County. The flooding damaged many roads in the area.
Floods of large magnitude occurred in Berkshire in 1888, 1895, 1927, 1973, 1976, 1983, and 1997. One of the worst natural floods of historic record in Berkshire probably occurred in the late 1800's according to recollections of the senior citizens in the Town. The summer of 1976 brought the most damaging flooding since *the Great Flood* that occurred on November 3-4, 1927.	
Ice Jam Flooding	
July 21, 2023	Scattered showers and thunderstorms with heavy rainfall affected portions of Vermont during the afternoon on July 21. Storms trained across northern Franklin County leading to scattered flash flooding. Radar estimates and ground observations showed that between two and four inches of rain fell, leading to scattered reports of flash flooding, most notably in the Berkshire-Montgomery area where Routes 105 and 118 were closed due to high water and road damage. Culverts along the state routes were overwhelmed.
January 13, 2018:	Warm, moist air settled across Vermont on January 12th which caused rapid snow melt throughout the day. The temperatures were 25 to 30 degrees above normal. An inch or more of rain fell during the evening which led to rivers reaching bankfull. On January 13th, temperatures fell rapidly, changing the rain to freezing rain, sleet, then snow. Snowfall amounts in northern Vermont ranged from 4 to 8 inches. The combination of earlier thawing and sub-zero temperatures allowed for freeze-up jams to develop and exasperate on-going problems along the Trout River.
February 25, 2017	Vermont experienced flooding due to a combination of factors. Warmer temperatures and rain earlier in the week led to snow melt and significant river rises. This, along with ice breakup, caused ice jams to form. Additionally, a strong cold front brought heavy rain (1/2 to 1 inch) and thunderstorms to parts of the state. Several road closures went into effect in Berkshire. Route 118 was closed briefly from ice jam related flooding along Hill West and West Hill Roads. While the initial warm temperatures brought record highs, the subsequent cold front's heavy rain and thunderstorms caused the most significant flooding issues with road washouts and road closures.
March 6, 1979:	An ice jam event resulted in a flood elevation that was 3 feet above the November 3, 1927 flood. Ice jams impact VT105 in the form of flooding. The Agency of Transportation has jurisdiction over VT105 and state highway crews monitor any flood risks in the area. Impacts are limited as traffic is simply rerouted briefly on secondary roads. Ice Jams are considered a low risk to Berkshire

Severe Winter Storm (Ice Storm)

Dates	Description and Extent
January 25 – 26, 2026	An area of low pressure from the southern Mississippi River Valley to the Carolina coast with strong arctic high pressure north accounted for relatively rare accumulations of snow and ice from New Mexico to the Tennessee river valley on January 24th and 25th. Snow overspread the region during the afternoon with the heaviest into the early morning hours of January 26th with a temporary lull until mid to late morning. Snowfall totals were 8 to 10 inches along the international border with Canada with 10 to 18 inches elsewhere across the region with some localized amounts around 20 inches. There were no power outages, but there were numerous vehicle accidents. Snowfall totals across the county were 10 to 12 inches, including; 11 inches in Grand Isle and 10 inches in Alburgh.
March 28 – 29, 2025	A weak wave of low pressure developed and traveled along a stationary front draped across northern NY and VT during the evening of March 28th and continuing into the 29th. Snowfall amounts ranged from a dusting to a few inches across southern VT to a half foot or more in the northern sections. Meanwhile across the southern tier there was mixed winter precipitation, including freezing rain and icing that accumulated up to a half inch in some locations. Power outages across northern VT, mainly central and southern VT were around 20,000.
February 15 – 16, 2025	Snow overspread the region late Saturday afternoon, snowing heavily during Sunday before ending Sunday night. Some sleet mixed in at times Sunday across northern and central area with a complete changeover to sleet and freezing rain with some ice accumulations in southern areas before changing back to snow during the afternoon and evening. Scattered power outages were reported on February 17th due to strong winds more than 50 mph in northeast VT and in southern VT where it combined with some lightly ice laden trees. Combination of strong winds in excess of 40 mph and deep snow led to a 100-foot barn collapse in the town of Williamstown. The result was the barn was a total loss and at least 6 cows had died. Snowfall totals across Grand Isle County were 10 to 12 inches with brisk winds developing in the evening hours to begin blowing and drifting snow that caused some driving hazards of poor visibility and snow covered roads through February 17th.
April 3 – 5, 2024	A major storm across the Great Lakes remained nearly stationary during the afternoon of April 3rd as a coastal low developed off the NJ-DE that eventually moved to near Cape Cod, MA by midday April 4th. In addition, a strong area of high pressure was in Hudson Bay but was cresting toward northern New England and NY. Windy conditions developed across VT during the afternoon hours of April 3rd and continued into the early morning hours of April 4th. The stronger winds were located across southern VT where some wind gusts exceeded 50-60 mph with approximately 13,000+ outages due to wind. Mixed rain, sleet and snow developed in the afternoon and evening hours of April 3rd and then transitioned to heavy wet snow overnight through midday on April 4th. Snowfall totals ranged from 2 to 6 inches along the immediate lakeshore with 6 to 10 inches within 3-5 miles in the Champlain valley. Other snowfall totals were 8 to 12 inches within the immediate Connecticut River Valley with 12 to 20+ inches elsewhere across the state. Impacts were significant across the region with hundreds of motor vehicle accidents, numerous school closing and more than 35.000 power outages at its

	peak due to snow weighted trees on powerlines.
March 23, 2024	An area of low pressure moved from the southeast United States on March 22nd up the eastern seaboard to the NJ/DE coast by midday on March 24th and offshore by Cape Cod late at night on March 24th. Snow overspread Vermont, south to north, during the early morning hours of March 23rd and then exiting from west to east during the evening hours of March 23rd. The higher snowfall accumulations were across south central and southern VT, except along the MA/VT border where some mixed precipitation types occurred. Snowfall totals ranged from 3 to 6 inches in northwest VT, 6 to 12 inches across the rest of the Champlain Valley and northern VT, 12 to 18 inches in central VT with 18 to 24+ inches across south central VT with these higher totals mainly across Windsor and eastern Rutland counties. Impacts were largely travel related.
April 3-5, 2024:	Mixed rain, wind, sleet and snow developed in the afternoon and evening hours of April 3rd and then transitioned to heavy wet snow overnight through midday on April 4th. Heavy, wet snowfall totals of 8 to 15+ inches were common. Some specific snowfall totals include 18 inches in nearby Enosburg Center, 14 inches in St. Albans and Franklin and 11 inches in Swanton. Impacts were significant across the state with hundreds of motor vehicle accidents, numerous school closing and more than 35.000 power outages at its peak due to snow weighted trees on powerlines.
March 9 – 11, 2024	Heavy wet snow accumulated on the night of March 9th that led to isolated power outages, but the main storm was the wraparound, northwest upslope, powdery snowfall during the night of March 10th through midday March 11th. Storm total snowfall was 8-12+ inches. Some specific snowfall totals include 13 inches in Berkshire.
January 24 – 25, 2024	A stationary surface boundary draped across northern NY/VT, during the evening and overnight hours of January 24th, was the focusing mechanism for moisture that entrained along the boundary and across the area. Temperatures were below freezing across much of central and eastern VT that allowed for several hours of light freezing rain during the evening and overnight hours. Flat ice accumulations were generally 0.1 to 0.2 inches with isolated amounts around 0.25 inches. The main impacts were icy, hazardous travel.
January 16, 2024	A weak coastal storm moved past southern New England on January 16th. Light snow overspread Vermont during the morning and ended during the evening. Snowfall totals ranged from 3 to 7 inches across the region with higher totals in the higher terrain of central VT. The main impacts were numerous traffic accidents, despite the dryness of the snow
January 9 – 13, 2024	(DR-4770): A powerful winter storm tracked from the Pacific Northwest to the Great Lakes, intensifying as it moved. A sharp pressure difference between the Great Lakes and eastern Canada created extremely strong winds across New York and Vermont. These winds caused widespread damage, including downed trees, power outages affecting 80,000 people, and over $1 million in losses. In Franklin County, there were several reports of 50-55 mph winds and NWS estimated wind gusts more than 60 mph. Numerous power outages occurred as well. Several inches of wet snow accompanied the storm, with higher elevations seeing more accumulation. There was an estimated $50,000 in property damages in Eastern Franklin County.
December 11, 2023	A mild, wet December 10th slowly turned snowy from northwest to southeast and higher elevations to lower elevations during the overnight hours and into the

	morning of December 11th before ending by early afternoon. A heavy wet snow accumulated 3 to 6 inches in the valleys with 6 to 10 inches in elevations above 1,200 feet. These accumulations led to scattered power outages in the County and created hazardous travel conditions.
March 14-15, 2023:	A strong winter storm brought heavy snowfall, strong winds, and caused widespread disruptions. Snowfall amounts ranged 6 to 12 inches across most of the state, with some areas in southern and central mountains exceeding 2 feet. Strong north winds gusting up to 45 mph created hazardous travel conditions. The wet, heavy snow caused numerous power outages, impacting nearly 90,000 customers, especially in central and southern Vermont. Dozens of roads were closed due to vehicle accidents, downed trees, and downed utility lines. Many schools, especially in southern areas, were also closed due to the storm.
March 3 – 4, 2023	A double-barreled low-pressure system moved across southern New England on March 4th. Snow and rain mixed developed late at night on the 3rd and continued through the morning hours of the 4th. Snowfall totals were generally 7 to 12 inches across Vermont with 3 to 6 inches across the central and northern Champlain Valley.
February 23, 2023	A weak area of low pressure tracked west to east along a stationary boundary, south of New England during the overnight of February 22nd into February 23rd. The storm was a quick mover with about 6-8 hours of snowfall that accumulated 3 to 8 inches across the region, the heaviest in the southern and central Green Mountains.
January 25 - 26, 2023	Low pressure moved from the Ohio River Valley on Wednesday 1/25 to upstate New York and northern New England on Thursday 1/26. Meanwhile an area of low pressure developed along the associated boundary with the parent low across the tri-state region and moved across eastern New England. Snow overspread Vermont during the afternoon and evening hours of January 25th, heaviest during the evening hours before a lull in the steadiest precipitation as well as a change to mixed sleet and rain occurred during the nighttime hours. Light snow and snow showers redeveloped and moved across Vermont Friday before ending by evening. Snowfall amounts across Vermont ranged from 1 to 3 inches in southern VT, 3 to 6 inches in central VT with 6 to 12 inches in northern VT, especially in the higher elevation
January 19 - 20, 2023	Low pressure moved from the mid-Mississippi Valley on January 19th into New York by January 20th. In the meantime, an area of low pressure was developing across southeast Massachusetts and moving offshore. Snow and sleet overspread Vermont during the evening of January 19th, but then drier air allowed a lull in precipitation for much of the overnight hours before more snow and snow showers redeveloped and fell through the afternoon hours of the 20th.Widespread snowfall totals of 4 to 7 inches were observed, the higher totals across the higher elevations of the Green Mountains.
January 12 -13, 2023	Low pressure moved from the Ohio River Valley on January 12th across central/northern New England on January 13th. Snow overspread northwest Vermont during the evening of January 12th and continued overnight before exiting around midday on the 13th Snowfall totals across the region were generally 2 to 4 inches and restricted to northwest and northern Vermont due to milder temperatures and rain/snow mixed elsewhere across the state.

December 16-17, 2022:	A powerful storm system brought heavy snowfall on December 16th. Snow started during the early morning and continued into the night. Snow mixed with rain in some valleys. The heavy, wet snow caused power outages, impacting over 100,000 customers at its peak. Snowfall amounts ranged from 4 to 8 inches in the valleys, 8 to 14 inches in the north central mountains, and up to 20+ inches in the southern Green Mountains. Specific areas in Franklin County received 6 to 11 inches of snow including 11 inches in Montgomery, 8 inches in St. Albans and 6 inches in Swanton.
March 12, 2022	A series of weak low-pressure areas traversed along a cold front that moved across VT during the day of March 12th. Rain/snow mixed developed in the early morning hours changing to snow around sunrise and continuing until early to midafternoon. Snowfall amounts ranged from several inches in the lower Connecticut River Valley with 4 to 7 inches in the Champlain Valley with 6 to 12 inches elsewhere with the higher amounts mainly in northern sections. The initial wet nature of the snow led to numerous slick and icy roads accounting for numerous vehicle accidents.
February 25, 2022:	A winter storm traveled from the Ohio River Valley to southern New England bringing snowfall to Vermont. Snow began in the early morning and stopped by mid to late afternoon. Snow accumulations ranged from 6 to 12 inches across the state including Berkshire.
February 18, 2022	An arctic front slowly moved from northwest to southeast across VT during the morning hours of February 18th, bringing much colder air. Meanwhile, a weak surface wave was traveling northeast along this boundary. The combination allowed light rain to change to freezing rain and eventually sleet and snow through the midday hours of February 18th. Ice accumulations were generally around a tenth (0.10) of an inch with sleet/snowfall totals of 1 to 2 inches that created hazardous travel.
February 3- 4, 2022:	An arctic front produced a winter storm from February 3rd to 4th. It started with light rain or snow in northern Vermont and southern Quebec. As the cold front moved south, snowfall intensified, reaching moderate to heavy rates at times (>1 inch per hour) across most of the state. Southern areas experienced freezing rain and sleet, leading to ice accumulation and power outages. Total snowfall ranged from 4-8 inches in the south to 12-16 inches in central and northern Vermont including Berkshire.
January 17, 2022	A long tracked and powerful winter storm, with a history from the Mississippi River valley through the southeast and north along the Appalachians into the northeast, impacted VT on January 17th. Snow moved into VT around midnight of January 17th with snowfall rates of 1-2 inches per hour at times during the morning, eventually ending by early afternoon with residual snow showers during the evening and night. General snowfall accumulations in VT was 4 to 8 inches with the complexity of the storm due to its strength and strong low level jet accounted for mesoscale features of snowfall distribution with east-side upslope regions witnessing higher totals and west-side downwind communities witnessing less snowfall. In addition these strong low-level easterly winds did cause some downslope wind gusts (in excess of 50 mph) in the foothills of the western slopes of the Green Mountains and in the higher terrain in northeast VT which resulted in scattered power outages
December 25 – 26, 2021	Low pressure across the Great Lakes on Christmas Eve (December 24th) slowly traveled and transferred energy to a new coastal low near Cape Cod during the night of December 25th. This delivered a wintry mix of mainly light freezing rain

	and freezing drizzle beginning the morning of December 25th and ending as freezing drizzle and light snow on the morning of December 26th. Snow accumulations were an inch or two across the northern mountains and NE VT with ice accumulations generally a tenth of an inch or less, except locally up to 1/4 inch in the lower Connecticut River Valley with little activity along the Canadian border. Significant travel issues across VT during Christmas morning, especially in central and eastern VT with numerous vehicle accidents and the closure of portions of Interstate 89/91 and other roads at times.
December 18, 2021	A weak area of low pressure moved from the Ohio River Valley to southeast of New England on Saturday, December 11th. Snow moved into VT during the early afternoon and exited around midnight. Snow fell moderate at times, especially across central and southern VT. A widespread 4 to 6 inches fell across the northern third of the state with 5 to 8 inches in the central and south-central VT with lesser amounts in extreme southern VT due to mixed precipitation. There were no major impacts.
November 26 – 17, 2021	Weak low pressure moved along a cold front that moved across NY/VT during November 26th. Rain and rain showers transitioned into wet snow beginning at higher elevations around noon and eventually into the Champlain Valley by early evening. Snowfall ranged from a few wet inches in the Champlain Valley with 4 to 8 inches in the some of the higher elevations in the Green Mountains. The wet nature of the snow led to scattered power outages in the foothills.
April 21, 2021	Surface low pressure developed along a frontal boundary and moved northeast across SE New York, western southern New England and central New England on the 21st. Precipitation developed in the morning and mostly in the form of snow or mixed snow and rain, then as the intensity of the precipitation increased during the afternoon and evening hours, fell primarily as wet snow. Snowfall across Vermont ranged from 2 to 6 inches with a few localized amounts around 8 inches. In Rutland and Windsor counties south, it was primarily a rain event. Roads remained primarily wet, thus limited impacts.
February 16, 2021	A cross-country storm system, responsible for heavy snows in Seattle, snow, ice and report cold in the southern Plains and the Tennessee valley moved into New England during the overnight hours of February 15-16th. Snow overspread Vermont around midnight on the 16th, mixing with sleet and freezing rain before sunrise and ending by mid-morning. Combined snow and sleet accumulations were generally 3 to 6 inches with minimal icing from freezing rain. However, many roads were treacherous due to the wintry mix and many schools cancelled classes.
January 2, 2021	A weak to moderate upper level and surface storm system moved across the northeast, including New England late on New Year's into January 2nd. Snowfall was a general 4 to 8 inches across northern VT with the higher amounts across the counties bordering with Canada.
February 6-7, 2020:	A winter storm brought significant snowfall and icy conditions to Vermont between February 6th and 7th. The storm started with light snow and freezing rain. Heavier snowfall arrived on the 7th, with accumulations ranging from 2 to 5 inches in the south to over a foot in the northwestern part of the state. Additionally, ice accumulation up to 4/10 of an inch was reported in the southern part of the state leading to hazardous travel conditions. The storm caused widespread travel disruptions, school and business closures, and power outages for around 10,000 to 20,000 people.
January 23 – 24, 2020	A late season weak area of low pressure moved across the Ohio River valley

	and developed a secondary area of low pressure south of New England during the afternoon and evening hours of March 23rd. Snow moved into northern NY by early afternoon and across Vermont by mid-afternoon. Initially surface/ground temperatures were above freezing but fell below freezing with accumulating snow as the snowfall rates approached up to 3 inches per hour. Total snowfall ranged from 2 to 4 inches in northwest VT to 4 to 7 inches across much of the state with pockets of 7 to 10 inches in eastern VT.
January 18 – 19, 2020	A quick moving area of low pressure, that originated in the Pacific northwest on January 15-16, moved across the central CONUS and eventually across New England on January 19th. Snow moved into northern NY during the afternoon of the 18th and exited by daybreak of the 19th. A widespread 2 to 4 inches fell across the central and southern Champlain Valley of VT, 4 to 7 inches across the rest of central and southern VT and 6 to 10 inches across portions of northern VT.
January 16, 2020	A clipper-like system quickly moved from the lower Great Lakes on the evening of January 15th, across central NY during the early morning hours of January 16th into the Gulf of Maine by midday. A west to east band of moderate to occasionally heavy snow moved across the southern Adirondacks and central VT during the overnight and morning hours of January 16th, where 4 to 8 inches of snow was observed. Lesser snowfall totals were measured across northern NY, northern VT and southern VT.
January 12, 2020	A moisture laden storm system tracked along a old cold front from the Gulf of Mexico up across NY and VT. On Saturday, January 11th, the front was positioned across southern Canada with temperatures in the 50s/60s across VT. As the front slowly progressed south into northwest VT during the late evening and overnight hours, moderate to heavy rain fell across the region. During the early morning hours of January 12th, the cold front slipped south into the southern portions of the Champlain Valley. Widespread 1/4 to 1/2 inches of ice accretion with locally up to 3/4 inch was observed along the international border, resulting in hazardous travel and scattered power outages.
December 29 – 30, 2019	A large, complex winter storm moved across the Great Lakes on December 29th and eventually stalled on December 30th and 31st. Meanwhile, secondary low pressure developed near Pennsylvania on December 30th and moved across southern New England on the 31st. A wintry mix of freezing rain, sleet and some snow moved into Vermont by the evening of December 29th and continued steadily until midday on December 30th before tapering to showers of mixed precipitation and snow on the afternoon of the 30th. Predominantly freezing rain and sleet fell across southern VT with sleet, freezing rain and some snow in central VT with snow and sleet in northern VT. Freezing rain accumulated 1/3 inch or less across Vermont's southern four counties with a sloppy 1-3 inches of snow, sleet and freezing rain in the Champlain Valley and 3 to 7 inches across north-central and northeast Vermont. Main impacts were hazardous road conditions Sunday night (29th) and Monday morning (30th). Strong wind gusts in excess of 40 mph occurred at times along the immediate western slope communities. Approximately 5000 customers were without power for the event, a combination of ice and wind effects.
March 22 – 23, 2019	Low pressure moved from the mid-Atlantic coast on March 21st and intensified rapidly as it moved to just off the Maine-New Hampshire coast on the 22nd. Precipitation started as rain the valleys and wet snow in higher elevations during the overnight of the 21st/22nd and changed to a wet snow for much of the 22nd before ending around daybreak Saturday (23rd) in the mountains.

	Snowfall totals ranged from 3 to 6 inches in the valleys below 500 feet, 6 to 12 inches around 1000 feet and 12 to 20+ inches in elevations above 1500 feet, especially in northern sections of the state. These wet snow conditions and eventual brisk winds of 15 to 25 mph with higher gusts later Friday and Friday night combined with the snow weighted trees and power lines to cause thousands of power outages to approximately 10,000-15,000 customers.
January 29-30, 2019	A storm system across the Great Lakes on the morning of January 29th traversed across NY and Northern New England during the afternoon and nighttime hours. A widespread 3 to 6 inches were observed across much of northern VT with 5 to 10 inches across central and southern VT.
January 19, 2019:	A widespread snowfall of 10 to 16 inches occurred across Franklin County, some specifics include 16 inches in nearby Enosburg Falls, and 13 inches in Swanton.
January 8 – 9. 2019	A weak surface low across the Great Lakes on January 8th received upper atmospheric support during the night of the 8th and developed a significant winter storm off the NH/ME coast by the morning of January 9th as it slowly moved into Newfoundland by January 10th. Precipitation started as light rain, freezing rain and snow across Vermont during the evening of January 8th, changing to accumulating snow after midnight of January 9th. Snowfall was largely confined to mountain communities by midday of January 9th and continued until ending by late evening of January 10th. Snowfall amounts varied greatly (3-18+ inches) with the highest amounts along the west-northwest facing higher elevation communities of the Green Mountains in northern VT, due to a prolonged and climatological wrap-around/northwest up slope event. The heavy wet nature of the initial snowfall, as well as mixed with freezing rain, accounted for hundreds of school closings for the morning of January 9th. Some scattered power outages were observed with the heavy, wet snow as well.
November 27-28, 2018	A storm that brought blizzard conditions to parts of the Midwest on Sunday, November 25th moved into the Ohio River Valley - Southern Great Lakes on 11/26. The storm slowed considerably in the eastern Great Lakes, thus allowing a secondary low pressure system to develop near the Delmarva Peninsula during the evening of 11/26 and proceeded to move to near Boston by the morning of November 27th. Precipitation moved into the North Country by the afternoon of November 26th, falling as snow at elevations above 1500 feet and rain at lower elevations. By early morning of November 27th, the atmosphere cooled enough to allow for precipitation to change over to snow. Highest snowfall totals at elevations above 1500 feet, where more than 12-15 inches fell. The heavy wet snow accounted for more than 40,000 outages, affecting 100,000 customers without power due to snow loading on power lines.
March 13-15, 2018	A Nor'easter swept across eastern New England on March 13th and remained nearly stationary across eastern Quebec/Nova Scotia on the 14th-15th. This allowed a long duration snowfall event across Vermont with snow beginning during the morning of March 13th but the heaviest occurring during the night of March 13th through March 14th. The greatest snowfall occurred across the higher elevations of central and eastern VT with 1 to 2 feet or more being reported. Elsewhere snowfall totals were 8 to 18 inches. Limited impact as accumulating snowfall on roadways was limited to nighttime hours.
March 7 -9, 2018	An upper-level low across New England. snow began by midday and lingered with mountain snow showers on the 9th. Impacts were mainly travel related. Northwest Vermont snow totals ranged from 5 to 8 inches. Some power

	outages were reported.
March 13, 2018:	A nor'easter delivered 8 to 18 inches across Franklin County, with the heaviest snow occurring during the night of March 13th into the following morning. Some specific snowfall amounts include 18 inches in St. Albans and 15 inches in Swanton.
February 7, 2018:	A quick moving low-pressure system brought snowfall rates of an inch or more per hour for several hours. Locally, 8 to 10 inches of snowfall were observed in Franklin County which made for a dangerous evening commute.
December 25, 2017	A clipper storm system moved from the northern Great Lakes on December 24th to New England on Christmas Day with a secondary development off the New England coast. A widespread 4 to 8 inches of snow fell across Vermont.
December 22, 2017	A quick moving storm system moved from the Ohio River Valley across southern New England and brought snow to Vermont during the morning commute and ending shortly after the evening commute. A widespread 5 to 10 inches of snow fell across central VT. The timing and intensity of the snowfall lead to hundreds of vehicle accidents and blocked highways for several hours.
December 13, 2017	On December 12, an energetic winter storm brought widespread snowfall of 4–8 inches across Vermont, with 8–12 inches common in eastern areas and localized totals exceeding 12 inches. Snowfall during both the morning and evening commutes, combined with brisk winds and blowing snow, created hazardous travel conditions across the state.
April 1. 2017	A storm system moved from the Ohio River Valley on March 31st to south of New England and then out to sea on April 1st. Wet snow, occasionally mixed with rain, began across Vermont by midday. Snowfall totals were generally 3 to 6 inches in the Champlain Valley and along the Canadian border with 6 to 12 inches elsewhere. The snow load of the heavy, wet snow did allow for some scattered power outages and numerous vehicle mishaps as well.
March 31, 2017	Wet snow, occasionally mixed with rain began across Vermont by midday on the 31st, but accumulations were limited due to above freezing temperatures and March solar radiation. An increase in snow intensity and lack of solar radiation, along with temperatures near freezing allowed for significant snowfall accumulations above 1000-1200 feet, especially in eastern and central parts of Vermont. Snowfall totals were generally 3 to 6 inches in the Champlain Valley and along the Canadian border with 6 to 12 inches elsewhere. The snow load of the heavy, wet snow did allow for some scattered power outages and numerous vehicle mishaps as well.
March 14 -15, 2017:	A major nor'easter developed off the North Carolina/Virginia coast during the early morning hours of and intensified as it moved north-northeast across southeast New England during the night into central Maine by the morning of March 15th. Snowfall totals across Franklin County generally ranged from 20 to 36 inches including 27 inches in nearby Enosburg Falls, Brisk winds of 20 to 30 mph contributed to white-out conditions at times with considerable blowing and drifting snow. Numerous schools, businesses and local government offices closed with numerous vehicle accidents and stranded vehicles. No significant damages were reported.
February 12, 2017:	Two areas of low pressure from the Great Lakes and Ohio River Valley traveled east across NY and New England. Snow began across Vermont between 10 and 1 pm and fell steadily through the evening hours before slowly tapering during the

	overnight hours. Although a second wave of snow showers fell across the western slopes of the Green Mountains and portions of Northeast Vermont during the 13th. A widespread 6 to 12 inches of snow fell with some localized higher amounts fell across Vermont. Impacts were largely travel related and nearly all school districts cancelled classes for February 13th.
April 6 – 7, 2016	A slow-moving storm in the Great Lakes region delivered mild, moist air into a unseasonably cold, dry airmass across Vermont during the afternoon and evening of April 6th. Snow developed during the afternoon hours and remained nearly stationary across the Canadian border through the evening and night hours. Snowfall ranged from less than an inch across the southern Champlain Valley and southern Vermont to 4 to 6 inches along the Canadian border.
February 15 -16, 2016	A coastal low across the Carolinas on the morning of February 16th raced northward across the Champlain Valley of VT/NY during the day. This allowed for a wintry mix of snow, sleet, freezing rain and rain across the region and a strong east-southeast wind across portions of Vermont. Snowfall averaged 2 to 4 inches across much of Vermont with only 1 to 2 inches in the immediate Champlain Valley. Ice accretion was mainly a tenth of an inch or less. Main impacts were slick, sloppy roads but some isolated power outages due to wind gusts more than 40 mph along the western slopes of the Green mountains.
October 25, 2015:	A rare autumn Nor'easter that was fed by the remnants of Hurricane Wilma struck Franklin County. There were reported snowfall amounts in the County varied from 6 to 14 inches. Trees still laden with fall foliage were downed due to the heavy, wet snow. There were many reports of snapped power lines from downed trees and branches. Many homes serviced by Vermont Electric Cooperative were without power for several days.
January 30, 2015	The remnants of a powerful winter storm that brought blizzard conditions to New Mexico and Texas, tornadoes in Texas and record flooding rains to portions of the Mississippi River Valley moved into the Great Lakes on December 29th bringing the first winter storm of the 2015-16 season to northern New York. Snow overspread Vermont around midnight and changed to sleet and freezing rain before ending in the afternoon. Snowfall across the area was 3 to 7 inches with limited icing. Routine impacts of vehicle accidents across the County occurred
January 27, 2015	A powerful nor'easter brought blizzard conditions to much of southern and eastern New England on January 26-27th. However in Vermont, snowfall was moderate across the region with snowfall totals ranging from a few inches in much of western and northern Vermont to 6 to 10 inches in southeast Vermont.
January 3 – 4, 2015	A winter storm on January 3–4 brought a mix of snow, sleet, freezing rain, and rain to Vermont, with most areas receiving 2–4 inches of snow and up to 0.1 inch of ice, while northeastern Vermont saw 3–7 inches of snow and up to 0.25 inch of ice. The combination of snow and ice created hazardous travel conditions and increased the risk of vehicle accidents and scattered power outages.
December 20-26, 2013	(DR-4163) A wide-spread low-pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm that brought widespread power outages. Many Towns throughout Franklin County, Vermont were affected

	by the ice storm. Vermont Electric Cooperative responded to over 60,000 customer outages during the week and estimated costs of restoring power at $7,400,000. In Montgomery the Public Works Department was active keeping roads removing ice damaged trees and limbs from local roads. Hundreds of residents were without power for several days. Storm cleanup continued through the spring. The Town estimated $725,000 in damages from the event.
December 14 – 15, 2013	On December 15, 2013, a coastal storm brought the first widespread snowfall of the 2013–2014 winter season, producing 10–15 inches of snow across southeastern Vermont and 3–6 inches in northwestern Vermont. The storm primarily caused hazardous travel conditions and numerous vehicle accidents, particularly because it was the season's first significant snowfall
March 1, 2012	A powerful winter storm that brought blizzard conditions to portions of Wisconsin and Minnesota and severe weather to portions of the Tennessee River Valley on February 29th weakened as it moved across the Northeast on March 1st. There were two rounds of snowfall that moved across the North Country, the first during the evening and overnight of February 29th and the second during the daylight hours of March 1st. The first round delivered widespread 1-3 inches across much of Vermont with 6 to 10 inches along the east slopes of the central and southern Green Mountains. The second round delivered another 1-3 inches with some areas that witnessed 3 to 5 inches additional accumulation.
December 22, 2010	(DR 1951): Vermont received a Presidential disaster declaration to supplement state and local recovery efforts in the areas struck by severe storms during the period of December 1-5, 2010. FEMA's public assistance funds were made available to affected counties including Franklin County.
February 25, 2010	Heavy wet snow fell across the State that resulted in snowfall accumulations of 6 to 30 inches. The weight of the heavy snow accounted for widespread power outages across the region that resulted in upwards of 50,000 customers state-wide without power.
January 2-3, 2010	Near record snow fell across the county from a powerful Atlantic storm system. Northwest winds of 15 to 25 mph with higher gusts caused considerable blowing and drifting snow with 4-to-5-foot snow drifts reported. A record 33.1 inches of snow fell at Burlington International Airport in South Burlington.
February 19-21, 2009	A prolonged flow of cool, moist and unstable air created persistent snow showers across the northern Counties during the afternoon of February 20th and continued until the early morning hours of February 21st. There were significant snowfall amounts (more than 12 inches) observed at various ski resorts. From 3 to 8 inches of snowfall accumulated within Grand Isle County and across the Champlain Valley.
January 29, 2009	Snow overspread the State early in the morning and continued into the evening hours. Snowfall accumulations with this storm were generally 8 to 14 inches in the County. There were no reported damages.
February 14, 2007	Known regionally as the "Valentine's Day Storm". A winter storm blanketed most of New England. In Vermont, snow fell heavy at times from late morning through early evening before dissipating during the night. Snowfall rates of 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused near whiteout conditions at times, along with considerable blowing and drifting snow, making roads nearly impassable. Temperatures in the single numbers combined with brisk winds created wind chill values of 10 degrees below zero or colder.

October 20, 2006	A low-pressure system brought cold air to the northern portion of the state. Heavy, wet snow accumulation of 3-6 inches occurred damaging many trees and causing power disruptions.
March 5-6, 2001:	A major snowstorm occurred resulting in 16" of snow in nearby Enosburgh. The storm began early Monday morning with a brief burst of snow then transitioned during the midday hours to intermittent light snow, sleet, freezing rain and rain. The storm developed into a nor'easter during the afternoon and continued through the evening. Damage estimates for cleanup are unknown.
February 13, 2000	A storm system over the Ohio Valley tracked across central New England during Monday, February 14th. Heavy snow fell across the area with accumulations generally between 7 and 14 inches.
January 6, 1998	(DR 1201): This storm is referred to as the Ice Strom of 1998. Snow turned to freezing rain. Ice accumulations were generally between 1 and 2 inches with locally greater accumulations over portions of Grand Isle County. The impact on the region was dramatic. Trees and power lines snapped due to the weight of the ice. Power outages lasted for several days. Damage to the utility companies ran in the millions. With no electricity, the agricultural community was unable to milk cows with loss of income and damage to cows. Travel was dramatically impacted and many roads and bridges closed due to ice and fallen trees. The National Guard assisted with cleanup operations after the storm. Falling tree limbs and other debris were a significant hazard during and following the storm. It is not known what the financial losses were to the Town because of the storm. There was $1,500,000 in damages in Grand Isle County. Public Assistance funding was $5,899,183.
April 10, 1996	A classic Nor'easter, this system spread snow across the region for nearly two days. The snow tapered off to flurries by late evening on the second day. The heaviest snow fell over and east of the Green Mountains with 7 to 14 inches. In the Champlain Valley 2 to 5 inches fell with heaviest amounts above the 700-foot level. The wet snow resulted in some power outages and minor automobile accidents across the state.
January 19, 1996	(FEMA 1101-DR-VT): A FEMA declared disaster for the county was made following a winter storm. A warming trend produced heavy rains causing rapid snow melt that led to flooding.
February 28, 1995	A low-pressure system which developed in the Ohio Valley resulted in a mixture of snow, sleet, and freezing rain across Vermont. Snow accumulations ranged from four to eight inches across much of Grand Isle County.
March 13-14, 1993	One of the worst storms of the century. Known as the "Blizzard of 93", it was one of the most powerful storms (Nor'easters) on record. The system moved up the Eastern Seaboard on the 13th and 14th coming close to breaking pressure and snowfall records in many locations. Snowfall amounts ranged from 10 to 28 inches across the state. Due to the weight of the snow that accumulated over March, there were numerous damage reports of barns and building roofs being damaged or at risk of collapsing
January 3, 1993	A combination of a cold surface and warm moist air aloft created freezing rain and freezing drizzle across the state. Road surfaces in Grand Isle County were covered in "black ice". "Black ice" is a thin transparent form of ice allowing the black asphalt surface of a road to be seen through the ice. "Black ice"

	conditions typically result in numerous traffic accidents as motorists are unaware that the road surface is covered in ice.

Strong Winds (Windstorm, Thunderstorm, Tornado, Tropical Storm, Hurricane)

Dates	Description and Extent
March 4-5, 2024:	A late winter storm brought windy conditions across VT during the afternoon hours of April 3rd and continued into the early morning hours of April 4th. In some places in southern Vermont, wind speeds were between 50-60 mph. Impacts were significant across the state with hundreds of motor vehicle accidents, numerous school closing and more than 35,000 power outages at its peak due to snow weighted trees on powerlines.
January 9-13, 2024	(DR-4770): A powerful winter storm tracked from the Pacific Northwest to the Great Lakes, intensifying as it moved. A sharp pressure difference between the Great Lakes and eastern Canada created extremely strong winds across New York and Vermont. These winds caused widespread damage, including downed trees, power outages affecting 80,000 people, and over $1 million in losses. In Franklin County, there were several reports of 50-55 mph winds and NWS estimated wind gusts in excess of 60 mph. Numerous power outages occurred as well. Several inches of wet snow accompanied the storm, with higher elevations seeing more accumulation. There was an estimated $50,000 in property damages in Eastern Franklin County.
December 22-24, 2022	(DR 4695): A powerful winter storm centered in the eastern Great Lakes and Ontario slammed Vermont with strong winds. Southeast winds reached speeds of 25-35 mph, with frequent gusts exceeding 50 mph and even reaching 60 mph or higher in some areas. These high winds caused widespread damage, knocking down trees and power lines, and leaving over 100,000 people without power at the peak. Later in the day, a powerful arctic front associated with the storm swept across the state. Temperatures plummeted from the 40s and 50s down to the 20s, accompanied by strong west winds of 20-35 mph. As temperatures dropped rapidly, a widespread snowfall of 2-5 inches occurred. Combined with the sub-freezing air, this snowfall created a flash freeze, making travel extremely dangerous. While wind gusts of 45-55 mph were recorded including one station at Burton Island on Lake Champlain where gusts reached 60-65 mph. Total FEMA Public Assistance grants dollars obligated for this declaration for the affected Counties was $1,495,613.14.
February 1, 2022:	Strong winds battered the Champlain Valley due to a pressure difference between New England and the Great Lakes. Measured wind gusts of 45 to 55 mph were common across Franklin County. Several branches and small, weak trees downed by winds were the main impacts as well as isolated power outages. A few weak, old barn or shed structures suffered damage as well.

December 11-12, 2021	The NWS reported a very powerful cold front with winds in excess of 100 knots at 5,000 feet moved across the eastern Great Lakes, northern NY and eventually VT. The associated cold front produced strong surface winds in excess of 40-50 mph around mid-evening and gradually decreased into the 30-40 mph range during the early morning hours of the 12th. The strongest winds were in northern sections and along the eastern slopes of the Green Mountains. Approximately 15,000 customer power outages statewide. In Berskhire, Scattered tree limbs and small trees downed by strong winds, measured in the mid-upper 40s but some local estimates were in excess of 50 mph.
August 22, 2021	(3567 EM): Tropical Storm Henri brought some rain and gusty winds to the region but there were no local impacts in Montgomery.
November 12, 2021	A powerful fall storm tracked from Great Lakes to New York and Vermont. Numerous surface wind gusts in excess of 40 mph were observed with several wind gusts approaching or exceeding 50 mph in the higher terrain of the Green Mountains that led to more than 10,000 power outages. In Franklin County, several wind gusts were recorded by spot forecaster at 40-45 mph, including 52 mph in East Berkshire. This led to scattered power outages due to downed trees on powerlines.
June 30, 2018	(DR4380): An atmospheric heat ridge with accompanying thunderstorm clusters moved into northern Vermont and southern Quebec during the late evening. The high winds generated by the thunderstorms downed many trees and caused some power disruptions. The total FEMA Public Assistance grants dollars obligated for this declaration for the affected Counties was $3,246,787.21.
May 4, 2018	Winds up to 60-80 mph occurred across the five affected counties. Strong winds and microbursts created power outages throughout the state. Several trees were knocked down in eastern Franklin County. Hail showers were also reported among several counties. $44,096.31 was distributed to communities after the storm for damage.
October 29-31, 2017	(DR 4356): A strong thunderstorm fueled by an ex-tropical storm brought damaging winds to Vermont, causing power outages and knocking trees down throughout the state. Winds reached over 70 mph at times and rain caused flooding. Electric companies had multiple broken poles and many primary and service lines down. All power was restored to customers in two days. The total FEMA Public Assistance grants dollars obligated for this declaration for the affected Counties was $5,296,752.57
October 29-30, 2012	A strong windstorm affected northern Vermont during the afternoon and evening causing several outages that were brief.
May 29, 2016	Widespread gust downed tree limbs and damaged power lines across communities in northern Vermont. While most outages were brief, they disrupted electrical and telecommunication services for many residents and businesses. Emergency crews and utility workers responded quickly to clear debris and restore power.

August 28, 2011	Tropical Storm Irene (DR-4022) devastated parts of Southern and Central Vermont, however the northern part of the state was largely spared. Heavy rain fell in Montgomery throughout the day and evening. Some local roads experienced minor flooding from culverts being overtopped but damage was minor compared to other areas of the state.
December 1, 2010	A high wind event occurred from 5 am to 5 pm that brought significant damages to the Town. Local accounts reported damaging straight-line winds with estimated sustained wind speeds of 70 mph. Residents were without power for several days due to trees and branches toppling power lines.
February 26, 2010	High winds from a winter storm caused minor damage throughout Franklin Co. In Berkshire, a few trees and branches were cleared along roads.
January 25, 2010	A relatively strong southeast gradient accounted for downslope winds approaching 50 mph to occur along some of the western slope communities of Vermont's Green Mountains. There was some isolated to scattered minor tree damage and power outages.
December 9, 2007	Very strong east to southeast winds swept across the peaks of the White Mountains in New Hampshire and the Green Mountains of Vermont, carrying heavy wet snow from earlier hours. These winds caused scattered tree and limb damage, particularly along the western foothills, leading to widespread but intermittent power outages in Franklin County including Berkshire
October 28, 2006	A moderately unstable airmass across northern New York and northern Vermont on the afternoon of the 7th. The result was scattered thunderstorms and strong winds up to 60 mph across northern New York and Vermont.
August 30-31, 2005	Tropical moisture and high winds from Katrina reached Montgomery on August 30th. The rain was initially steady then became heavy on the 31st. Winds were steady but non-threatening. Rainfall totals across Franklin County were between 2.5 and 4 inches. A few local roads had minor flooding. The Town was largely spared.
July 8, 2005:	Tropical Storm Cindy produced heavy rain and high winds across much of the state including Berkshire. Rain amounts were estimated between 1 and 3 inches with no reported damage.
August 12th, 2004	(FEMA-1715-DR): Tropical Storm Francis generated high winds and heavy rain throughout most of the state. Several culverts and ditches in the Town were damaged due to flooding.
September 19, 2003	The remnants of Hurricane Isabel moved across western New York the afternoon of Friday, September 19th and into Canada by evening. Strong winds accompanied this system. Trees and power lines were blown down across the Montgomery region, but the overall impact was minor.

September 14-15, 2002	Remnants of Tropical Storms Hannah produced high winds and heavy rain throughout Franklin County. There was minor damage reported from falling trees and limbs
September 27, 2002	The remnants of Tropical Storm Isidore produced high winds and heavy rain throughout Franklin County. There was minor damage reported from falling trees and limbs
September 14, 2002	Heavy rain and high winds from Tropical Storm Hannah affected all of Vermont. Some light hail fell. Montgomery was spared from any wind damages.
September 21, 2000	A strong cold front moved across the north country during the early morning. A thunderstorm with high winds accompanied the front. Winds were measured at 65 mph.
November 2, 1999	In northern Vermont, a significant windstorm caused widespread damage and power outages. The storm's strong east to southeast winds, combined with heavy wet snow from earlier in the day, downed numerous trees and power lines, particularly along the western foothills of the Green Mountains.
September 17, 199:	Impacts of Hurricane Floyd, which had weakened to a tropical storm by the time it reached the state. Despite its diminished strength, Floyd produced high winds and heavy rain across Vermont, including Montgomery, leading to widespread downed trees and power lines. Wind gusts reached up to 60 mph, and rainfall totals of 3 to 6 inches were common, with some areas reporting higher amounts. The heavy rainfall contributed to localized flooding, and the downed trees caused structural damage, blocked roadways, and affected hiking trails.
November 10, 1998	Northern Vermont experienced a significant windstorm that caused widespread damage and power outages. The storm's strong east to southeast winds, combined with heavy wet snow from earlier in the day, downed numerous trees and power lines, particularly along the western foothills of the Green Mountains.
August 31, 1993	A straight-line storm system destroyed one mobile home and tore the roofs off several homes. There was an estimated $500,000 in property damages state-wide from the storm.

[illegible]

Make this part of the appendix.

The **Vermont Environmental Justice Law** (Act 154), passed in 2022, defines environmental justice and requires state agencies to implement environmental justice policies. 24 V.S.A § 4348 and 24 V.S.A. §4345a requires the regional planning commissions to assess the distribution of environmental benefits and burdens as defined under the Environmental Justice Law (V.S.A. Title 3 Chapter 72). The law directs particular focus on mitigating disproportionate impacts on environmental justice focus populations.

Defining Environmental Benefits and Burdens (3 V.S.A. § 6002)
Environmental Benefits: The assets and services that enhance the capability of communities and individuals to function and flourish in society.

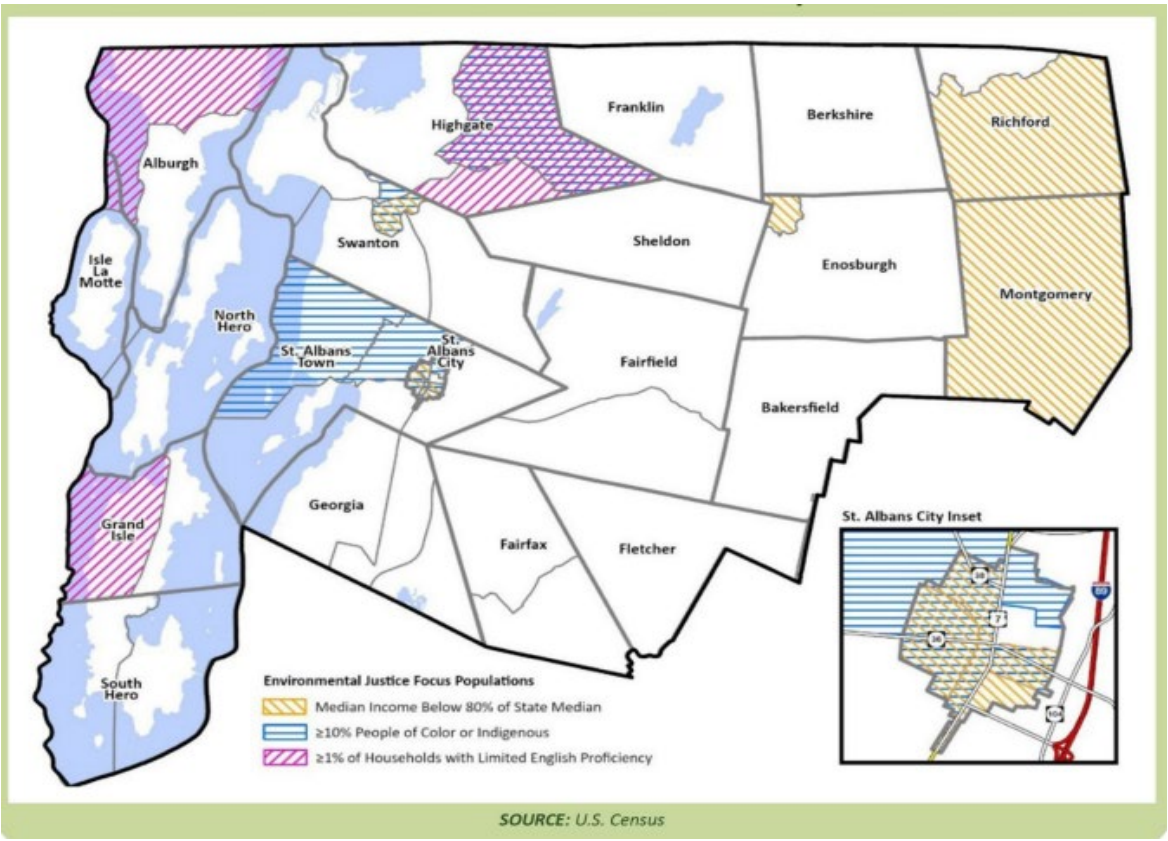
Environmental Burdens: Any significant impact to clean air, water, and land, including any destruction, damage of natural resources resulting from intentional or reasonably foreseeable causes.

Environmental Justice Focus for Population: Any Census Block Group in which

A. The annual median income household income is not more than 80 percent of the state median household income.
B. Persons of Color and Indigenous Peoples comprise at least six percent or more of the population; or *
C. At least one percent or more of households have limited English proficiency

NRPC mapped the environmental focus group populations as defined in 3 V.S.A. § 6002. Using the definition of environmental justice focus populations found in 3 V.S.A §6002 resulted in all but 3 Census Block groups in the region being considered focus populations due to more than 6% of residents being

Map 1: Environmental Justice Focus Populations



Persons of Color or Indigenous People. To better identify disproportionate impacts, NRPC adjusted this definition to identify areas where more than 10% of residents are Persons of Color or Indigenous People.

In 2025, NRPC conducted an evaluation of the environmental justice benefits and burdens and considered their equitable distribution. Based on the state definition, 19 types of environmental benefits or burdens that could be impacted by the Regional Plan were identified. Where data was available, these benefits and burdens were compared with areas identified as environmental justice focus population (based on US census block groups as defined under 3 V.S.A § 6002(3)). NRPC identified 6 disproportionate impacts (Table 3). The goals and policies of the Regional Plan aim to mitigate these disproportionate burdens and repair existing inequities where possible.

Table 1: Environmental Benefits and Burdens Analysis - Part 1 of 4

	Data Source	Threshold for Environmental Benefit/Burden	Burden Direction	Regional Level	EJ Focus Population Level	Disproportionate Benefit/Burden	Policies	How the Regional Plan Mitigates Disproportionate Benefit/Burden
Access to Healthy Air/ Air Pollution	**EPA EJ Screen**	% of population with >80th percentile PM2.5 concentration in their census tract	Higher	12%	29%	Yes	Economic Region-Energy, Goal 7, Policy F; Social Region-Community Health, Goal 1, Policy H; Physical Region-Natural and Cultural Resources, Goal 1 & Policies A-B	Regional plan policies address protecting clean air from negative impacts from development. Community health goals and policies specifically address limiting impacts of emissions to historically disadvantaged communities.
Access to Green Spaces/ Limited Access to Green Spaces	**VT Outdoor Recreation Sites Inventory**	Number of public recreational sites per 1,000 population	Lower	2.93	2.51	No	Social Region-Infrastructure: Education, Libraries & Recreation Facilities, Goal 3 & Policies A-E; Social Region-Infrastructure: Education, Libraries & Recreation Facilities, Goal 3, Policy A; Social Region-Community Health, Goal 1 Policies B-C; Social Region-Community Health, Goal 1, Policy I	No disproportionate benefit or burden in the region.
	NRPC Trails Data	Miles of trails per 1,000 population	Lower	2.37	2.79	No		No disproportionate benefit or burden in the region.
	VT Conserved Lands Database	% of land area publicly conserved	Lower	3.7%	1.7%	Yes		Regional Plan policies specifically address access to recreational lands for all residents, including specifically addressing financial barriers and equity.

Table 2: Environmental Benefits & Burdens Analysis - Part 2 of 4

	Data Source	Threshold for Environmental Benefit/Burden	Burden Direction	Regional Level	EJ Focus Population Level	Disproportionate Benefit/Burden	Policies	How the Regional Plan Mitigates Disproportionate Benefit/Burden
Transportation Access	**GMTA Transit Data**	% of population with transit stop in municipality	Lower	69%	88%	No	Economic Region- Energy, Goal 4 Policies A-C, E; H, Economic Region-Energy, Goal 5, Policy A, Social Region-Housing, Goal 2, Physical Region-Transportation, Goal 1 & Policy F, Physical Region-Transportation, Goal 1, Policies A-F, Physical Region-Transportation, Goal 2, Policy C, Physical Region-Transportation, Goal 3 & Policy B	No disproportionate benefit or burden in the region.
	NRPC Sidewalk Data	Feet of sidewalk per person	Lower	0.0	0.0	No		No disproportionate benefit or burden in the region.
Healthy Ecosystems/ Damage to Forests	**VT Land Cover Database**	% change in forest land cover 2016-2021	Lower	-0.11%	-0.05%	No	Economic Region-Energy, Goal 7, Policy F, Social Region-Housing, Goal 2, Policy B, Social Region-Housing, Goal 3 & Policy C, Physical Region-Transportation, Goal 3, Policy A, Physical Region-Natural and Cultural Resources, Goal 1, Policy E & G, Physical Region-Land Use, Goal 1, Policy C-D, Physical Region-Land Use, Goal 2 & Policies A-B, E, G	No disproportionate benefit or burden in the region.
Access to Health Care	**NRPC Healthcare Data**	% of population with federally qualified healthcare center in municipality	Lower	49%	76%	No	Social Region- Community Health, Goal 3 & Policy A	No disproportionate benefit or burden in the region.
Climate Change Impacts	**Expected Building Loss Rate - Climate and Economic Justice Screening Tool**	% of population that's in an area >75th percentile nationwide for building loss	Higher	18%	25%	Yes	Economic Region-Economic Development, Goal 2, Policy D, Physical Region-Transportation, Goal 2, Policies E-F, H, Physical Region-Disaster Resilience, Goal 1 & Policies A, G; Physical Region-Disaster Resilience, Goal 3 & Policy C; Physical Region-Infrastructure: Water, Wastewater & Solid Waste, Goal 2, Policy C	The Regional Plan recognizes the need to focus disaster resilience efforts on those most vulnerable under Goal 1 and its associated policies, including frontline underserved communities. Goals and policies allow for development in flood hazard areas in growth areas only if that development does not make flooding worse.
Increased Flooding or Stormwater Flows	**FEMA 100-year Floodplain, UVM LIDAR 500-year Floodplain**	% increase in floodplain land acres from 100-year to 500-year	Higher	21%	31%	Yes	Physical Region-Transportation, Goal 2, Policy F; Physical Region-Natural and Cultural Resources, Goal 1, Policy D; Physical Region-Natural and Cultural Resources, Goal 3, Policy B; Physical Region-Disaster Resilience, Goal 1, Policy D-E; Physical Region-Disaster Resilience, Goal 2 & Policies A-E, Physical Region- Disaster Resilience, Goal 3, Policy A-B & D-G, Physical Region-Infrastructure: Water, Wastewater & Solid Waste, Goal 2 & Policies C-F	
Erosion Risk	**DEC River Corridors**	% of land acreage in river corridors	Higher	3.53%	3.46%	No	Physical Region-Disaster Resilience, Goal 1, Policy E; Physical Region-Disaster Resilience, Goal 2, Policy C-E, G	No disproportionate benefit or burden in the region.
	USGS Slope Data	Acres of >15% slope per total land acres	Higher	27%	35%	Yes		The Regional Plan requires that all new development on steep slopes mitigates potential erosion risks.

Table 3: Environmental Benefits & Burdens Analysis - Part 3 of 4

	Data Source	Threshold for Environmental Benefit/Burden	Burden Direction	Regional Level	EJ Focus Population Level	Disproportionate Benefit/Burden	Policies	How the Regional Plan Mitigates Disproportionate Benefit/Burden
Inadequate Remediation of Pollution	**VT Environmental Research Tool (ANR)**	Active brownfield acres per 1000 land acres	Higher	0.427	0.438	No	Physical Region-Infrastructure: Water, Wastewater & Solid Waste, Goal 1 & Policy A-B	No disproportionate benefit or burden in the region.
Water Pollution	**303(d) map in Tactical Basin Plans**	Miles of impaired streams/rivers per 1000 land acres	Higher	1.52	2.42	Yes	Physical Region-Natural and Cultural Resources, Goal 3, Policy A-B; Physical Region-Disaster Resilience, Goal 3, Policy E; Physical Region-Infrastructure: Water, Wastewater & Solid Waste, Goal 1 & Policies A-C	The Regional Plan includes a map of impaired waters and a detailed table of factors leading to water quality impairment. Goals 3 of the Natural and Cultural Resource chapter addresses maintaining and improving quality of surface waters, including ensuring mitigation of the impacts of new development.
	303(d) map in Tactical Basin Plans	% of land acreage in impaired watersheds	Higher	30%	36%	No		No disproportionate benefit or burden in the region.
	303(d) map in Tactical Basin Plans	% of water acreage in impaired lakes/ ponds	Higher	85%	88%	No		No disproportionate benefit or burden in the region.
Damage to Inland Waterways and Water-bodies and Wetlands	**VT Land Cover Database**	% change in impervious land cover 2016-2021	Higher	1.4%	1.5%	No	Physical Region-Natural and Cultural Resources, Goal 1; Physical Region-Natural and Cultural Resources, Goal 3, Policies C-E; Physical Region- Disaster Resilience, Goal 3, Policy B	No disproportionate benefit or burden in the region.
	VT Land Cover Database	% change in wetland land cover 2016-2021	Lower	-0.08%	-0.08%	No		No disproportionate benefit or burden in the region.
Healthy Homes/ Home and Building Health Hazards	**Not mapped**						Economic Region-Economic Development, Goal 4, Policy C; Social Region- Housing, Goal 1, Policies A-M; Social Region- Housing, Goal 2 & Policy C; Social Region- Housing, Goal 3, Policy A, D	The plan has comprehensive housing policies, including those that address improvements to substandard housing. The plan recognizes disproportionate rates of housing insecurity to BIPOC households, based on our 2023 Housing Needs Assessment.
Access to Clean Water	**Not mapped**						Physical Region-Natural and Cultural Resources, Goal 3 & Policy A; Physical Region-Infrastructure: Water, Wastewater & Solid Waste, Goal 1 & Policy A-C	The Regional Plan includes policies supporting protection of groundwater and improvements to public water systems to ensure clean water.
Affordable & Clean Renewable Energy Sources	**Not mapped**						Economic Region-Energy, Goal 1 & Policies A-E; Economic Region- Energy, Goal 2, Policy A & D; Economic Region- Energy Goal 6, Policy A-B	The energy chapter of the Regional Plan and the Regional Enhanced Energy Plan address renewable energy sources and affordability of the energy transition. The policies include ensuring environmental justice during the siting of energy generation projects.

Table 4: Environmental Benefits & Burdens Analysis - Part 4 of 4

	Data Source	Threshold for Environmental Benefit/Burden	Burden Direction	Regional Level	EJ Focus Population Level	Disproportionate Benefit/Burden	Policies	How the Regional Plan Mitigates Disproportionate Benefit/Burden
Access/ Limits to Nutritious Food	**Not mapped**						Economic Region-Economic Development, Goal 2; Social Region-Community Health, Goal 1 & Policies D, G; Physical Region-Land Use, Goal 2, Policy B-D; Physical Region-Land Use, Goal 2 & Policies B-H	The Regional Plan includes a substantial number of policies related to protection of agriculture, as well as health policies related to food access.
Access to Healthy Buildings	**Not mapped**						Economic Region-Energy, Goal 3, Policy E; Social Region- Housing, Goal 1, Policy B & H; Physical Region-Disaster Resilience, Goal 2 & Policies A-E	New future land use areas planned for growth will qualify for incentives to improve building quality and accessibility through the Vermont Department of Housing and Community Development (DHCD).
Excessive Noise	**Not mapped**						Social Region-Community Health, Goal 1, Policy H; Physical Region-Natural and Cultural Resources, Goal 1, Policy C	The Regional Plan includes a policy specifically addressing the need to avoid disproportionate land use noise impacts.
Fulfilling & Dignified Jobs	**Not mapped**						Economic Region-Economic Development, Goal 1,Policy b; Economic Region-Economic Development Goal, 3, Policies A-C	The regional plan includes several policies that target underserved communities and workforce training for all people in the community.
Access/Lack of Access to Cultural Resources	**Not mapped**						Physical Region-Natural and Cultural Resources, Goal 2, Policies A-E	The regional plan includes several policies aiming to limit impacts to cultural sites to ensure they can continue to be accessed.

Table 5: Disproportionate Impacts, Berkshire, VT

Environmental Benefit and Burden	**Measure for Environmental Benefit/Burden**	**Town Plan Goals and Policies to mitigate any disproportionate benefit / burden**
Access to Healthy Air / Air Pollution	% of residents living in areas where air pollution is among the worst 20% in the state. [1]	• Maintain clean air as a core component of community health and environmental stewardship. • Enhance infrastructure and activities that support the health of all residents, including air quality considerations • All planning for land use must account for local climatic and weather conditions and their impact on air quality, ensuring that no area is disproportionately exposed to air pollution from new development or industry. • The town commits to supporting regional, state, national, and international initiatives to improve and protect environmental quality, which includes air quality improvements that benefit all residents. • Any industry with potential airborne emissions must be carefully sited, considering prevailing winds and proximity to residential areas, to avoid disproportionate exposure to air pollution.

		• New development is encouraged to use Low Impact Development (LID) strategies, which help reduce cumulative air quality impacts from construction and increased vehicle use.
Access to Green Spaces/Limited Access to Green Spaces	% of land publicly conserved.[2]	• Maintain and enhance recreational opportunities for Vermont residents and visitors • Ensure that all residents, regardless of location or income, have access to recreational facilities and natural areas. • Support infrastructure that enables access to green spaces for all community members. • Preserve open space, forests, and agricultural land for public benefit and enjoyment. • Support the creation and maintenance of public recreational facilities, such as playgrounds, playing fields, and walking trails at the Berkshire Elementary School and the Town Forest. • Encourage the development of alternative recreation paths and pedestrian facilities in all parts of town, including the hamlets of West and East Berkshire. • Conduct a scenic resource inventory to identify and protect important viewsheds and potential green spaces.
Climate Change Impacts	% of people in areas with a significantly higher than average risk of property damage from disasters.[3]	• Use sound planning practices in flood hazard areas and river corridors to reduce risk from flooding and erosion, which are expected to worsen with climate change. • Ensure that infrastructure and activities support the health of all residents, including those most vulnerable to climate impacts. • Plan for increased electric demand, reduce fossil fuel dependence, and maximize weatherization to ensure all residents can adapt to changing climate conditions. • Limit development in high-risk flood and erosion areas, protecting vulnerable populations from disproportionate exposure to climate-related hazards. • Maintain vegetated buffers and enforce stricter-than-federal flood hazard regulations to reduce risk for all, especially those in lower-lying or less-resourced areas. • Discourage intensive development on steep slopes and sensitive areas, reducing risk of landslides and erosion that could disproportionately affect certain neighborhoods. • Coordinate with Efficiency Vermont and state low-income weatherization programs to help all residents, especially low-income households, reduce energy costs and improve resilience to extreme temperatures. • Maintain updated Local Hazard Mitigation and Emergency Operations Plans, ensuring that disaster

		response and recovery resources are accessible to all segments of the community. • Meet state and federal requirements for disaster relief funding, which helps the entire community recover equitably from climate-related events. • Focus disaster resilient efforts on underserved communities.
Increased Flooding or Stormwater Flows	% increase in land that is at risk for flooding if extreme floods become more common[4]	• Use sound planning practices within designated Flood Hazard Areas and river corridors to reduce risk from flooding and erosion for all residents. • Maintain rivers, streams, wetlands, and floodplains in their natural state to buffer flood impacts and improve water quality community-wide. • Limit development in mapped flood hazard and river corridor areas, especially in high-risk zones like East Berkshire, to prevent disproportionate exposure to flood risk. • Maintain vegetated buffers along waterways to reduce erosion, filter runoff, and provide natural flood storage. • Enforce stricter-than-federal flood hazard regulations and restrict uses in Special Flood Hazard Areas to agriculture, recreation, and open space. • Utilize updated river corridor maps to discourage future development in areas at high risk for flooding or erosion hazards. • Prohibit land development that would reduce wetland storage capacity, which is vital for absorbing floodwaters and protecting downstream communities. • Support conservation easements and public acquisition of flood-prone lands to ensure long-term protection and equitable access to flood mitigation benefits. • Maintain an updated Local Hazard Mitigation Plan (LHMP) and Emergency Operations Plan (EOP) to ensure equitable disaster response and recovery resources. • Meet state and federal requirements for disaster relief funding (ERAF), increasing the community's ability to recover from flood events. • Regularly update zoning and subdivision regulations to reflect best practices in flood and stormwater mitigation, with attention to preventing disproportionate impacts.
Erosion Risk	% of land with very steep slopes[5]	• Discourage intensive land development, including structures, on slopes greater than 25% and require maintenance of vegetative cover to prevent slope destabilization and erosion. • Encourage land use decisions that consider soil erodibility and stability, and require appropriate engineering techniques (e.g., terracing, retention ponds) where necessary.

		• Maintain vegetated buffers along waterways to reduce erosion, filter runoff, and provide natural stabilization of streambanks. • Utilize updated river corridor maps to discourage future development in areas at high risk for fluvial erosion. • Support conservation easements and public acquisition of erosion-prone lands to ensure long-term protection and equitable access to mitigation benefits. • Incorporate erosion mitigation measures in municipal infrastructure improvements, prioritizing upgrades to roads, bridges, and culverts in areas with higher vulnerability. • Develop and maintain a capital improvement plan that addresses infrastructure vulnerabilities to erosion, ensuring all neighborhoods benefit from resilient infrastructure. • Educate landowners and residents about best management practices for erosion control, ensuring all have access to information and resources.
Water Pollution	Miles of impaired streams/rivers per 1000 acres[6]	• Promote the use of Acceptable Management Practices (AMPs) and Required Agricultural Practices (RAPs) for maintaining water quality and minimizing erosion from agriculture and forestry. • Maintain rivers, streams, wetlands, and floodplains in their natural state to buffer pollution impacts and improve water quality for the entire community. • Discourage any development activity that degrades surface and/or groundwater quality. • Maintain and protect streams, rivers, ponds, and wetlands from pollution through health and land use regulations, including buffer areas to preserve environmental and recreational value. • Use sound planning practices to reduce risks from water pollution, especially in vulnerable or lower-resourced areas. • Support conservation easements and public acquisition of critical lands to ensure long-term protection and equitable access to clean water resources. • Refer failing septic systems to the Vermont Department of Environmental Conservation for remediation, especially in densely settled or lower-income areas. • Protect all public water supply source protection areas through zoning and overlay districts, ensuring equal protection for all neighborhoods.

1 % of population with >80th percentile PM2.5 concentration tin their census tract (EJ Screen, 2024)
2 % of land area publicly conserved (VT Conserved Lands Database, 2025)
3 % of population that's in an area >75th percentile nationwide for building loss (Climate and Economic Justice Screening Tool, 2024)
4 % increase in floodplain land acres from 100 year to 500 year (FEMA 100-year Floodplain, UVM LIDAR 500-year Floodplain)

5 Acres of >15% slope per total land (USGS Slope Data)
6 Miles of Impaired streams/rivers per 1000 acres (303(d)) map in Tactical Basin Plans)

Climate and Economic Justice Screening Tool: Two census tracts in the Northwest region have been highlighted as disadvantaged in this analysis, by meeting the associated socioeconomic thresholds.

- Richford and Montgomery have been identified as disadvantaged in areas of energy, health, and transportation. Specifically, energy costs, asthma rates, and transportation costs are all in the top 10% nationwide.
- The western half of St. Albans City has also been identified as disadvantaged in three areas: health, housing, and water and wastewater. This part of the city ranks in the lowest 10% nationwide for low life expectancy, and leaking underground storage tanks within 1,500 feet of homes

Social Vulnerability Index: In this tool, indicators that are over the 90th percentile statewide are flagged, indicating higher vulnerability when considering community health. *It should be noted that some of the data from the Northwest Region have high relative standard errors, meaning the results may not be as accurate as desired.* The following communities were above the 90th percentile for the areas noted:

- Berkshire and Enosburgh – population under 18 and minority population

Heat Illness Vulnerability Index: The Heat Illness Vulnerability Index is a composite of six indicators. In the Northwest region, the index identifies St. Albans Town and St. Albans City as more vulnerable overall to heat illness than the rest of the state.

Environmental Justice (EJ) Screen: The EJ Screen includes six environmental indicators that focus on air and air pollutants; four are areas of concern in the region. The particulate matter 2.5 and ozone indicators had the farthest ranging areas of concern for the region, with 11 census groups falling within the 90th to 100th percentile within the state. In Northwest Vermont, traffic proximity is only an issue in St. Albans, and similarly, the diesel particulate matter index indicated higher percentiles in St. Albans City and Swanton. Although there are no superfund sites in Northwest Vermont, the block groups surrounding St. Albans City, including ones in St. Albans Town and Swanton, are located near facilities that have highly toxic substances. St. Albans City is noted as an area with a high percentile for the environmental indicator of underground storage tanks (USTs) and leaking USTs.

Appendix H: Stakeholder and Public Outreach Plan

LOCAL HAZARD MITIGATION PLAN – STAKEHOLDER AND PUBLIC OUTREACH PLAN

To meet FEMA requirements and to ensure public, neighboring community, local and regional agency input opportunities, the following communication methods are recommended.

Goals:

1. Inclusive Participation and collaboration – Ensure all relevant stakeholders and the public have the opportunity to contribute including people with disabilities and functional access needs. Foster collaboration among all stakeholders.
2. Informed Decision-Making – Provide necessary education and information regarding hazards and risks.
3. Community Buy-In – Foster community support and ownership by involving stakeholders and public from the start.
4. Transparency - Build trust through clear, transparent and consistent communication throughout the planning process
5. Effective Implementation = Gather input that is practical, sustainable and responsive to the needs of the community.
6. Compliance –Ensure federal, state and local requirements for public involvement in hazard mitigation planning are met.

Identifying Planning Team and Stakeholders

- Local Government Officials – Selectboard Chair, Emergency Management Director, First response agencies, highway department, town clerk, finance, zoning administrator, communications, planning, and regional planning commission, Health Department
- School representatives
- Local and regional entities that support persons with disabilities, access, and functional needs (PDAFN) or vulnerable populations (vulnerability specific to hazard mitigation)
  - Hospital / medical care (Northwest Medical Center, NOTCH Enosburg)
  - Visiting Nurses Association
  - Champlain Valley Office of Economic Opportunity
  - Persons living in flood zones
- Neighboring communities (Franklin, Enosburgh, Richford)
- Local and regional agencies that support hazard mitigation / emergency response
  - East Berkshire Fire District#1
  - Northwest Regional Planning Commission
  - Franklin Co. Regional Emergency Management Committee
  - Franklin County Mutual Aid
  - Franklin County Sheriff's Department
  - Berkshire Fire Department
  - Berkshire Highway Department
- Businesses that support hazard mitigation / emergency response
  - Franklin County Industrial Development Corporation
  - Franklin County Chamber of Commerce

- Vermont Electric Co-operative
- Village of Enosburg Falls Light & Electric

- Non-Profit organizations – Including community-based organizations that work directly with or provide support to people with disabilities or functional accesses needs or front-line communities – housing, health care, etc.
  - Food Shelf, Healthy Roots Collaborative, Champlain Valley Office of Economic Opportunity, American Red Cross, Northern Tier Center for Health - Enosburg, Meals on Wheels)

Communication Methods and Implementation:

- Post meeting information (agenda, slides, zoom link, etc.) on town website
- Post meeting information (agenda, slides, zoom link, etc.) on town social media sites
- Post Online surveys / questionnaires on village website
- Send email notifications (e.g., meeting dates, agenda, slides, etc.) to planning team and stakeholders
- Post hard copies of meeting information (agenda, slides, etc.) in municipal building (e.g., town office, library, other)
- Post hard copy of meeting information (agenda, slides, etc.) in non-municipal building (e.g., post office,)

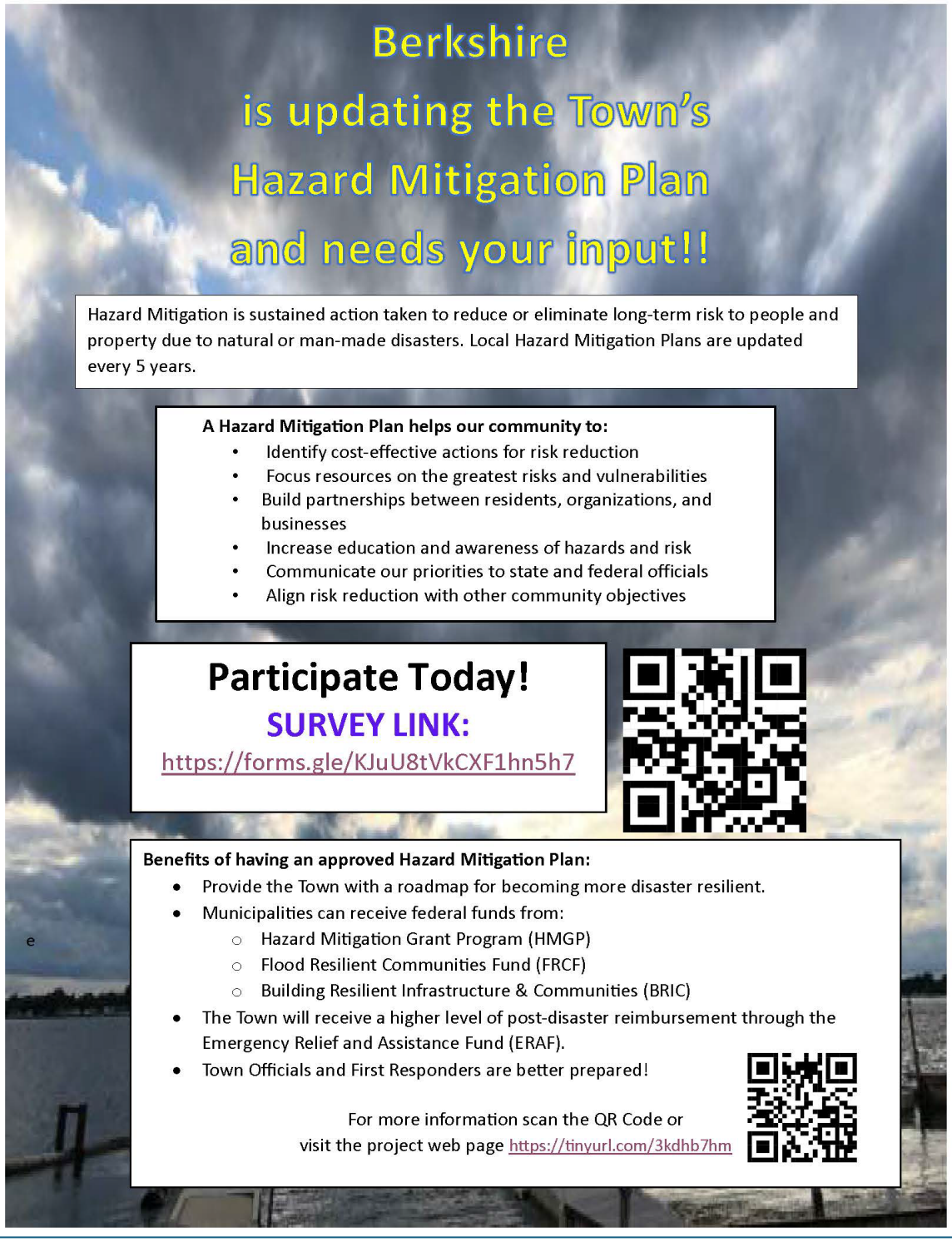
Processing Feedback

Feedback opportunities included public meetings, public comment period, requests. online feedback via email link, phone, regular updates and follow-ups. Comments and feedback received were incorporated during the plan update.

Planning Team and Stakeholders		
Name	Organization	Role
Emily Fecteau	Town Clerk	Planning Team Lead
Jason Kittel	Berkshire Selectboard Chair / EMD	Planning Team Member
Danny Kennison	Road Foreman	Planning Team Member
Tony Archambault	Fire Chief / Road Commissioner	Planning Team Member
Margo Sherwood	Planning Commission Chair	Planning Team Member
Ann Lavery	Zoning Administrator	Planning Team Member
Shaun Coleman	Northwest Regional Planning Commission	Planning Team Member
William Johnson	Vermont Electric Co-op	Stakeholder (Electric Utility)
Pierre Letourneau	Enosburgh Selectboard Chair / EMD	Stakeholder (neighboring community)
Lisa Larivee	Franklin Town Clerk	Stakeholder (neighboring community)
Andy Pond	Richford Selectboard Chair / EMD	Stakeholder (neighboring community)

Jacqueline Kelley	EP, Vermont Department of Health, St. Albans District	Stakeholder (Public Health)
Reginald Beliveau, Jr.	Franklin County Regional Emergency Management Committee	Stakeholder (First Response/Mutual Aid)
Jess Graff	Director, Champlain Valley Office of Economic Opportunity (CVOEO)	Stakeholder (People with Disabilities and Functional Access Needs)
Lindsey Wight	Missisquoi River Basin Association	Stakeholder (Natural Resources)
Lauren Weston	Franklin County Natural Resources Conservation District	Stakeholder (Natural Resources)
Cathy Sandvil	Enosburg Food Shelf	Stakeholder (Food, Water, Shelter)
Ashley Bartley	Visiting Nurses Association	Stakeholder (Senior Healthcare, Hospice and Community Support Services)
Keith Ellery	Northwest Medical Center	Stakeholder (Hospital)
Miranda Henry	Northern Tier Center for Health	Stakeholder (non-profit healthcare center)
Gavin Roddy, Principal	Berkshire Elementary School	Stakeholder (Education)
John Weld, President	Historical Society	Stakeholder (Historical)
Tim Smith, Director	Franklin County Industrial Development	Stakeholder (Business)
Carl Watkins, Manager	Franklin County Regional Chamber of Commerce	Stakeholder (Business)

APPENDIX I: Community Survey Flyer, Survey and Results



Appendix I: Community Survey

Community Stakeholder Survey *
Town of Berkshire, Vermont
Local Hazard Mitigation Plan

***Results in Red:** The Town of Berkshire utilized a survey to solicit public input on 1) potential natural hazard impacts and 2) mitigation strategies to reduce these impacts in the future. The survey was made available online as well as hard copy over the course of the planning process. The Town received 26 responses and a summary of the input received is provided below in red.

Hazard mitigation is an action that reduces the long-term impacts of Natural Hazards (e.g. ice, snow, wind, heat, cold, drought, flood inundation, fluvial erosion, earthquake, wildfire, invasive species, infectious disease outbreaks, and hail) on that community including people, buildings, environmental systems, and other infrastructure.

Your Name (optional):
Email address (if you would like to be contacted for follow-up information):

Town, Village or City of residence?:
Berkshire Town: 98%
Berkshire Village: 1%
St. Albans Town: 1%

Have you ever experienced a natural disaster? If so, what type and where?
Yes: 53% (Various locations and dates)
No: 15%
No answer: 32%

Please select the three hazards you think pose the greatest.concern to your community:
Flooding: 80.3%
Severe Winter Storm (Ice Storm): 69.2%
Severe Wind: 50%
Fluvial Erosion: 26.9%
Severe Thunderstorm: 19.2%
Infectious Species: 11.5%
Invasive Species: 11.5%
Cold: 7.7%
Drought: 7.7%
Heat: 7.7%
Wildfire: 3.8%
(Pesticide in Farm Soil): 3.8%
Dam Failure, Landslide, Earthquake, Hail: <1%

Hazard	Most Concerned	Very Concerned	Somewhat Concerned	A Little Concerned	Least Concerned
Drought	0	0	4	9	9
Cold	0	5	0	10	7
Earthquake	0	0	1	3	18
Flood Inundation	3	5	12	2	0
Fluvial Erosion	2	4	10	3	3
Hail	0	0	1	0	21
Heat	0	0	2	15	5
Ice	0	1	8	11	2
Infectious Disease Outbreak	0	2	11	7	2
Invasive Species	0	2	6	14	0
Landslide	0	0	1	0	21
Snow	1	3	9	6	3
Wildfire	0	0	1	8	13
Wind	3	0	10	8	1

Is there another hazard not listed above that you think is a wide-scale threat to the community? If yes, please explain.

- Ticks and mosquito borne illness
- Heat and humidity will become more of issue. Need safe centers for seniors
- Climate Change

Please explain why you think these hazards pose the greatest risk to the community or you in particular.

Based on the survey results, residents highlighted several reasons why these specific hazards pose the greatest risk to themselves and the community:

High Financial and Recovery Costs

- Personal financial toll: Home flooding requires extensive time and money to fix, with very few resources available to help individual families recover.
- Utility expenses: Severe temperatures significantly drive up the costs associated with heating and cooling local residences.

Road and Travel Dangers

- Hazardous driving: Heavy snowstorms make road conditions extremely dangerous, compounded by a perception that the state does not clear highways as effectively as the town crew.
- Severe drifting snow: Specific locations like Fletcher Road, Route 104 heading south, and Brick Church Road suffer from heavy snow drifts that block passage.

Severe Infrastructure and Access Disruptions

- Isolation from flooding: Rising waters along the Lamoille River frequently isolate neighborhoods and block access near Goose Pond Road and the local school road.
- Emergency access failure: Natural disasters damage businesses and roads, which completely disrupts emergency response services and threatens public health.
- Widespread property damage: High winds routinely cause power outages and knock down trees, while fluvial erosion destabilizes streambanks, bridges, and nearby river infrastructure

What do you think the community's disaster resiliency priorities are?
69% responded. Summary of responses:

- Life Safety: Ensuring public safety and zero casualties during disasters.
- Flood Mitigation: Protecting homes and fixing roads prone to frequent flooding.
- Infrastructure Protection: Maintaining open, safe roads and bridges during storms.
- Utility Reliability: Keeping the electrical power and heat running reliably.
- Emergency Preparedness: Setting up safe warming centers during prolonged power outages.

Based on the hazards you listed, what actions can the town implement to reduce the risk for each hazard either to you and/or the community?
26% responded. Summary of residents recommended actions for the town:

Infrastructure & Physical Improvements

- Drainage & Flooding Fixes: Upgrade local ditches and culverts, raise Goose Pond Road and the road past the school, and build a storm wall at the bottom of Hunt Street.
- Winter Safety Controls: Install guardrails along Stones Brook Road and Goose Pond Road, and place snow fences along field edges to manage severe snow drifting.

Road Crew Retention & Equipment Upkeep

- Competitive Compensation: Keep the town road crew well-paid, happy, and trained so they are not lost to neighboring Chittenden County.
- Maintenance: Keep roads open and continuously maintain response equipment so it stays functional and ready for deployment.

Planning & Emergency Support

- Response Frameworks: Maintain active response plans for major flooding and power outages while supporting local fire, ambulance, and police services.
- Inter-Agency Coordination: Maintain sufficient administrative and road crew staffing to collaborate with external agencies and organizations on preparedness efforts.

Policy & Fiscal Requests

- Tax relief: Lower local taxes.

What do you think your community's disaster resiliency priorities are?

- Multiple residents explicitly prioritized keeping the public safe, ensuring no one gets hurt or killed during a disaster including keeping the roads open and safe.
- Ensuring roads are structurally sound enough to handle heavy rains and are cleared quickly after winter storms
- Include pet protection in evacuation or shelter plans.
- Drainage upkeep like keeping ditches clear.
- Protecting homes and businesses, driven by severe flood impacts over the last two years.

- Fix recurring flooding on Goose Pond Road that physically traps people on their land
- Providing safe, designated backup centers for residents during extended winter power outages.
- A small portion of respondents noted they simply "don't know" or are "not really sure" what the town's current resiliency priorities look like

How concerned are you about the following hazard events? (scroll to the right the columns)?
Highly Concerned Hazards

- Flood Inundation: 69.2% highly concerned
- Severe Winter Storm: 65.4% highly concerned
- Severe Thunderstorm: 53.8% highly concerned
- Severe Wind: 53.8% highly concerned

Moderate-Concern Hazards

- Infectious Disease: 23.1% highly concerned
- Invasive Species: 23.1% highly concerned
- Fluvial Erosion: 19.2% highly concerned
- Heat: 15.4% highly concerned
- Wildfire: 15.4% highly concerned
- Cold: 11.5% highly concerned
- Drought: 11.5% highly concerned

Low-Concern Hazards

- Earthquake: 0.0% highly concerned
- Hail: 0.0% highly concerned
- Dam Failure: 0.0%

Which types of mitigation projects do you believe local, state and federal government agencies should focus on to reduce disruptions of services and to strengthen the community? (Circle all that apply)

- Retrofit and strengthen essential facilities such as the fire station, emergency medical services, schools, etc. (44%)
- Replace inadequate or vulnerable bridges and culverts (76%)
- Retrofit infrastructure by, for example, elevating roadways and improving drainage systems (60%)
- Work on improving the damage resistance of utilities (electricity, communications, water/wastewater facilities, etc.) (44%)
- Install or improve protective structures, such as floodwalls, levees or overflow facilities (8%)
- Buyout flood prone properties and maintain as open space (20%)
- Strengthen codes, ordinances and plans to require higher hazard risk management standards (20%)
- Inform property owners of ways they can mitigate damage to their property(s) (20%)
- Improve local emergency shelter facilities (8%)

Where do you turn for information during an emergency? (circle all that apply)

- Cell phone: (69%)
- Front Porch Forum: (27%)

- Land Line Phone: (8%)
- Newspaper: (12%)
- Radio Station: (39%)
- Social Media (Instagram, Facebook/Meta, X (Twitter), other) (65)
- Television (50%)
- VT Alert (65%)
- Town email list (3.8%)
- Weather.gov (3.8%)

How would you rate the importance of the following actions to protect yourself and your community:
(1= Most important 5= Least important)

Priorities	Actions	Most Important	Very Important
High	Protecting transportation infrastructure (roads/bridges)	92%	30%
	Protecting and reducing damage to utility infrastructure (power/water/wastewater)	62%	19%
	Strengthening emergency services (police, fire, ambulance)	26%	27%
	Preventing development in hazard areas	26%	27%
Medium	Promoting cooperation among public agencies, citizens, non-profits, and businesses	42%	27%
	Protecting private property	38%	23%
	Protecting the natural environment	36%	15%
Low	Protecting historical/cultural landmarks	<5%	<5%

What actions have you taken to reduce the risk to your residence of potential disasters?

(Circle all that apply)

- Developed a family plan: 20%
- Have a 3-day supply kit: 48%
- Have a car emergency kit: 32%
- Certified in First Aid and/or CPR: 28%
- Installed smoke detectors: 80%
- Installed carbon monoxide detectors: 64%
- Installed a generator and know the utility: 32% shutoff procedure
- Purchased fire extinguishers 80%
- Installed Floodproofing 0%
- Purchased flood insurance 16%
- Purchase homeowners/renter's insurance 84%

- Other: Home solar with battery storage. Multiple heating options and diverse fuel/energy Sources
- Other: Added stone to our driveway to raise it.

Thank You for your Input!

If you have questions or would like additional information, please contact Shaun Coleman, Northwest Regional Planning Commission at scoleman@nrpcvt.com or (802) 524-5958.