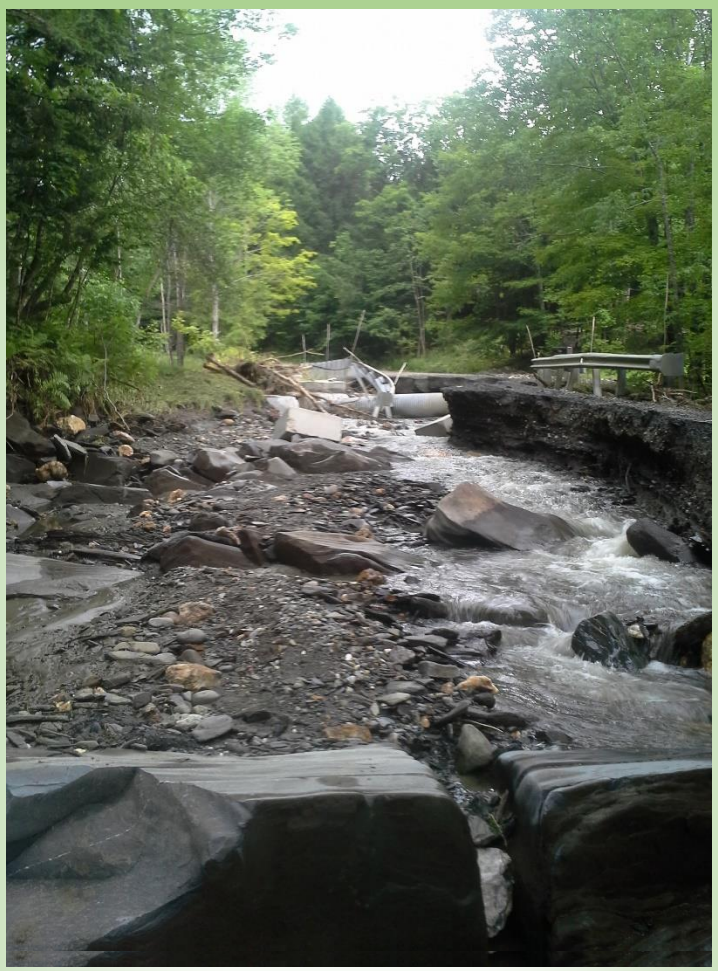


Town of Williamstown, VT

Local Hazard Mitigation Plan Update

Prepared by the:

Town of Williamstown

with assistance from the

Central Vermont Regional Planning Commission

Date of Town Adoption: ____/_____/2019

Date of FEMA Final Approval: _____/_____/2019

Table of Contents

1. Introduction

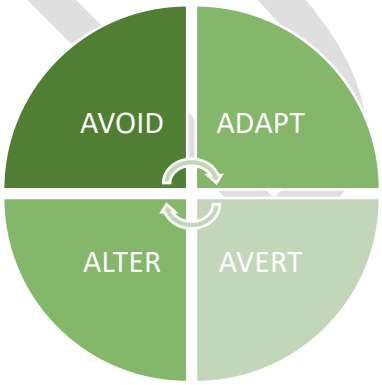
In accordance with the Stafford Act, municipalities may perform mitigation planning and be eligible to receive increased federal funding for hazard mitigation measures. (42 U.S.C. 5165).

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 community of Williamstown more disaster resistant.

Hazard mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Based on the results of previous Project Impact[1] efforts, the Federal Emergency Management Agency (FEMA) and State agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck.

This Plan recognizes that communities have opportunities to identify mitigation strategies and measures during all of the other phases of emergency management – preparedness, response, and recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

Hazard mitigation 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 preventing or limiting development.

[1] Project Impact was a national initiative started by the Federal Emergency and Management Agency (FEMA) in 1997 to help build disaster resistant communities. This federal initiative shifted the focus of emergency management from responding to disasters to helping to prevent potential damage by taking actions beforehand.

2. Purpose

The purpose of this Local Hazard Mitigation Plan is to assist Williamstown in recognizing hazards facing the region and its community and to identify strategies that reduce risks from acknowledged hazards.

Williamstown strives to be in accordance with the strategies, goals and objectives of the State Hazard Mitigation Plan, including an emphasis on proactive pre-disaster flood mitigation for public infrastructure, good floodplain and river management practices, and fluvial erosion risk assessment initiatives.

The 2019 Williamstown Local Hazard Mitigation Plan is an update of the 2013 plan. The plan has been reorganized and new sections have been added regarding:

- Plan Update Process
- Plan Maintenance
- Threat hazards
- Updates to the Hazard Analysis Map
- Status update of 2013 mitigation strategies
- Identification of new mitigation strategies

3. Community Profile

3.1 Overview

Williamstown was established on November 6, 1780 and was chartered on August 9, 1781. The town is located in the northwest portion of Orange County, abutting Washington County on its northeastern and western borders. The town covers an area of ~28,180 acres (40 square miles).

As of the 2010 US Census, Williamstown had a total population of 3,389 people living in 1,379 housing units. The population has increased by 5% from the 2000 Census, while the number of occupied housing units has increased by 10%. According to the U.S. Census Bureau, Demographic and Housing Estimates (2010-2016 American Community Survey 5-Year Estimates), the 2016 population of Williamstown was 3,413.

The majority of Williamstown falls within the Winooski River watershed. The Stevens Branch of the Winooski River follows Route 14 from Cutter Pond in the southern portion of the town to the Barre Town border. Other principal rivers include Martin Brook and Cold Springs Brook, both of which serve as tributaries of the Stevens Branch and are located in the northern portion of the Town. A portion of the southern section of town drains into the White River basin. It is surrounded by the towns of Berlin and Barre (to the north), by Northfield (to the west), by Washington (to the east) by Brookfield and Chelsea (to the south). The Green Mountains shape much of the town's land into hills and valleys. Near the middle of the southern boundary is a deep gorge, known as Williamstown Gulf that has cut its way through two steep mountains.

The town is anchored by the village of Williamstown. The village (alt. 872) is situated 6 miles south of Barre City and 15 miles southeast of Montpelier, which have plenty of shopping and services such as the Central Vermont Medical Center. The village sits along a valley floor at the base of a long, winding hill and is accessed from Interstate 89 via Route 64 (Williamstown Access Road) or by Route 14 which stretches from Barre through the village into Brookfield. Chartered in 1781, the village retained some of its historical features. The following old Main Street homes and buildings remain: the churches, Beckett Block, the town hall, Historical Society, and feed store buildings. Williamstown village offers a mix of stores, library, homes, businesses, churches, and town offices. It has no traffic signals, and people can still park along Main Street.

Foxville, locally known as Graniteville (alt. 1,137), is located about 4 miles from Williamstown village and borders Barre Town. A dense cluster of residential uses define the hamlet. Forests in this area are shaped by discarded granite deposits from neighboring quarries.

Williamstown's terrain is hilly, broken, and uneven keeping the two villages somewhat isolated from one another. New development is primarily scattered, low-density, and residential outside of the village center. Williamstown is a rural bedroom community whose residents primarily commute to employment centers in the Montpelier/Barre area.

3.2 Utilities

The Washington Electric Cooperative provides electricity to residences in the southern portion of the town. The remaining sections of Williamstown are served by Green Mountain Power. According to the Town Plan, much of the drinking water in the town comes from private wells and a municipal system which serves most of the commercial businesses and residential dwelling units in the main part of Williamstown village and the schools. The system's source is a new well located at an upland well site just north of Mountain View Development off the Rood Pond Road. In 2005-2006 the Town installed a new concrete 675,000-gallon capacity reservoir on Rood Pond Road adjacent to the Town well.

Williamstown village and some outlying areas are served by municipal sewer systems. Williamstown's own plant, constructed in 1969, currently serves about 360 customers. About 26 residences in Foxville are served by the Barre Town system. Residents in both service districts are charged user fees for system maintenance. Hook-up fees are required for new development. The Williamstown sewer collection system is a gravity collection system with three pump stations located at Industrial Road, Business Park and Mountain View. Williamstown completed a $1.7 million upgrade of the Waste Water Treatment Facility (WWTF) in 2018. The refurbishment project allowed space allocated for the chemical storage required to provide phosphorous removal in the future as part of the Lake Champlain Daily Maximum Load (TDML) for phosphorous. The majority of homes and buildings in Williamstown have on-site, underground seepage disposal. About three quarters of Williamstown's population lives in rural areas outside of the service territories of Williamstown WWTF.

3.3 Public Safety

Fire coverage in Williamstown is provided by the Williamstown Volunteer Fire Department. The Department is a member of the Capital Fire Mutual Aid System, a public municipal corporation representing the collective interests of a network of volunteer fire departments, ambulance services and FAST squads in 17 area towns. Water supplies for fighting fires are located at hydrants throughout the village and beyond, along with a variety of dry (unpressurized) hydrants. Ambulance service is provided by the Williamstown Ambulance.

Figure 1: Public Safety Building, Meadow Street, Williamstown
Photo Credit: Central Vermont Regional Planning Commission

A Public Safety Building, constructed on Meadow Street in 2012-2013 and occupied in February 2013, houses the Fire Department, Ambulance Services, and also houses offices for the Sheriff and State Police to use when they are in Williamstown.

Williamstown Ambulance provides regular backup service for neighboring communities, including Barre City, Barre Town, Brookfield, and Northfield. Gordon Murray is the EMS Director, and William Graham is the Fire Chief.

Police protection is provided by the Orange County Sheriff's Department. In addition, the Vermont State Police provide law enforcement services as a part of its normal delivery of service. The Town of Williamstown has a Local Emergency Operations Plan that was completed in 2018. The Town's primary emergency shelters consist of the Williamstown Elementary School, the Williamstown Middle/High School, and the Lutheran Church.

3.4 Town Plan

The Williamstown Municipal Town Plan was adopted in April 2016. It includes goals, policies and tasks regarding safe municipal facilities, protection of natural resources, managing water quality and run-off, managing solid waste, protecting citizens safety and transportation access management. The Town does not have local zoning regulations. It updated its Flood Bylaws in 2014. The Bylaws limit the construction of structures within the National Flood Insurance Program's 100-year floodplain. At this time, no major new developments are proposed for Williamstown.

The Central Vermont Regional Planning Commission completed a stream geomorphic assessments on the Stevens Branch in Williamstown in 2004. The assessment information was incorporated into a River Corridor Plan in 2009. The Town has included information related to fluvial erosion and related mitigation strategies in the Town Plan.

3.5 Emergency Relief & Assistance Funding (ERAF)

Vermont's Emergency Relief & Assistance Fund (ERAF) provides State funding to match FEMA Public Assistance grants following a federally declared disaster. In 2014, the ERAF criteria were revised to incentivize communities to be more proactive prior to disasters. The default rate for State contribution towards non-federal Public Assistance match following a declared disaster dropped to 7.5%, requiring municipalities to cover the other 17.5% for Public Assistance projects. Municipalities that take four proactive measures are awarded 12.5% State match. The measures are:

1. Participate in the National Flood Insurance Program (NFIP).
2. Adopt Town Road and Bridge Standards that meet or exceed the VTrans 2013 template.
3. Adopt a Local Emergency Management Plan which is renewed and adopted annually.
4. Adopt a Local Hazard Mitigation Plan approved by FEMA every five years.

Municipalities that wish to further decrease their cost share to 7.5%, with a 17.5% State match, must also meet one of the following criteria:

1. Adopt ANR's River Corridor bylaws, or
2. Enroll in the NFIP's Community Rating System (CRS), whereby the community must earn credit under Activity 430.

The NFIP Community Rating System (CRS) was implemented in 1990 as a voluntary program for recognizing and encouraging community floodplain management activities exceeding the minimum NFIP standards. Any community in full compliance with the minimum NFIP floodplain management requirements may apply to join the CRS. Activity 430 (Higher Regulatory Standards) is the primary CRS activity for crediting floodplain development regulations that are more restrictive than the NFIP requirements.

In 2016, the Town of Williamstown completed a CRS "Quick Check" to assess its current position for participating in the CRS. It decided not to pursue the CRS participation.

Williamstown's ERAF status as of May 16, 2019 is 7.5% State/17.5% Municipal contribution towards Public Assistance cost share. Adoption of this Local Hazard Mitigation Plan and adopting a new Local Emergency Management Plan annually would increase the Town's ERAF position to 12.5% State/12.5% Municipal contribution.

Planning Process Meeting Attendees

February 13, 2019 Planning Team
- Matt Rouleau, PC Chair & SB Chair
- Rich Turner, PC
- Jasmin Couillard, PC & SB
- Susan Lyons, PC
- Horace Duke, PC
- Jonathan DeLaBruere, CVRPC
- Clare Rock, CVRPC

March 5, 2019 Town Meeting
- 393 Residents
- ### Selectboard Members
- ### Other Town Officials

March 13, 2019 Meeting Planning Team
- Matt Rouleau, PC Chair & SB Chair
- Rich Turner, PC
- Jasmin Couillard, PC & SB
- Susan Lyons, PC
- Jonathan DeLaBruere, CVRPC

April 20, 2019 Meeting Planning Team
- Matt Rouleau, PC Chair & SB Chair
- Rich Turner, PC
- Jasmin Couillard, PC & SB
- Horace Duke, PC
- Jonathan DeLaBruere, CVRPC
- Bonnie Waninger, CVRPC

May 8, 2019 Meeting Planning Team
- Matt Rouleau, PC Chair & SB Chair
- Rich Turner, PC
- Jasmin Couillard, PC & SB
- Susan Lyons, PC
- Horace Duke, PC
- Bonnie Waninger, CVRPC

PC = Planning Commission
SB = Selectboard

4. Planning Process and Maintenance

4.1 Planning Process

Prior to hiring CVRPC, the Williamstown Planning Commission met to review the previous Williamstown Local Hazard Mitigation Plan, and began making updates to include the most recent information.

The Town of Williamstown received a Pre-Disaster Mitigation (PDM) grant to update its hazard mitigation plan. Central Vermont Regional Planning Commission (CVRPC) responded to the Town's request for proposals and was awarded the contract. CVRPC then coordinated the Williamstown Local Hazard Mitigation Plan process.

CVRPC contacted the Planning Commission Chair, Matt Rouleau, to initiate the planning process. Mr. Rouleau sent CVRPC town-specific hazard mitigation materials for review.

After assessing the material, CVRPC staff held a meeting with the Williamstown Planning Commission on February 13, 2019 at the Williamstown Town Office. The Williamstown Hazard Mitigation meeting focused on identifying stakeholders to engage in the planning process, reviewing the draft project schedule, identifying methods to engage the community. Participants in the meeting developed a preliminary list of the community's top hazards and rated the hazards based on severity for the town.

The planning team hosted a public engagement event at the Williamstown Town Meeting on March 5, 2019. Horace Duke, a member of the Planning Commission, spoke at the Town Meeting regarding Williamstown's Hazard Mitigation Survey. He asked the townspeople to verbally identify the top 5-7 top hazards that impact the town.

Planning Process
Meeting Attendees

June 12, 2019 Planning Commission
Matt Rouleau, SB Chair & PC Chair
Rich Turner, PC
Jasmin Couillard, SB & PC
Horace Duke, PC
Susan Lyons, PC

July 8, 2019 Selectboard
Matt Rouleau, SB Chair & PC Chair
Jasmin Couillard, SB & PC
Jackie Higgins, Town Manager

PC = Planning Commission
SB = Selectboard

The second planning team meeting occurred on March 13, 2019. It consisted of a discussion about the Town Meeting public engagement event and its results. The top hazards identified as the worst threats were: Dam Failures, Flash Flood, Fluvial Erosion, High Wind, Winter Storm/Ice Storm, and Invasive Species. The draft project schedule was reviewed and finalized. Jonathan DeLaBruere, CVRPC, distributed three reports for the planning team's review, which included the Stevens Branch Watershed River Corridor Management Plan (2009), Winooski River Tactical Basin Plan (2018), and the White River Tactical Basin Plan (2018). He also presented a draft of a "2019 Williamstown Hazard Analysis Map" for discussion. The planning team reviewed the Town Plan community profile and modified it for use in the Hazard Mitigation Plan. The planning team also assessed past mitigation projects and compiled information on its current and future hazard mitigation programs, projects and activities.

The third planning team meeting took place on April 10, 2019. It consisted of reviewing the plan distribution list and the mitigation action tables. Dam failure is one of the top hazards for the community, and the Rouleau Pond Dam on Route 64 was discussed due to its proximity to the town center. The dam owner and the Orange County Sherriff were included in the plan distribution list. Emerald Ash Borer and Wild Chervil were identified as invasive species of concern. Jonathan DeLaBruere, CVRPC, distributed a first draft of the Hazard Mitigation Plan text for review by the planning team. The planning team reviewed photographs and selected several for inclusion in the plan. The planning team reviewed a second draft of the 2019 Williamstown Hazard Analysis Map and requested additions. Bonnie Waninger, CVRPC, discussed Williamstown's participation in a project to enter the Stevens Branch into the Vermont Agency of Transportation's Transportation Resiliency Tool. That effort will not be complete before the Hazard Mitigation Plan is sent to FEMA. The tool is a web-based

application that identifies bridges, culverts, and road embankments that are vulnerable to damage from flood inundation, erosion, and deposition for 10-year, 50-year, and 100-year storm events. It then estimates risk based on the vulnerability and criticality of roadway segments, and identifies potential mitigation measures based on the factors driving the vulnerability. This online tool can be used by municipalities in identifying and developing their mitigation strategies for their Local Hazard Mitigation Plan.

The fourth planning team meeting occurred on May 8, 2019. The planning team shared its comments on the draft Hazard Mitigation Plan and discussed the National Flood Insurance Community Rating System. The planning team reviewed a third draft of the 2019 Hazard Analysis Map and discussed additional modifications.

On May 29, 2019, a draft plan with associated maps and appendices was sent to the Planning Commission for final review. On June 12, 2019 the Planning Commission approved to send the draft plan to the Selectboard for final approval. The Selectboard approved distribution of the draft plan for submission to Vermont Emergency Management and for public comment on July 8, 2019.

A notice for public comment on the draft plan update was placed on the CVRPC blog and website and in CVRPC's newsletter, posted at the Williamstown School, Pump and Pantry, and Bar Harbor Savings Bank. It was also advertised in the Times Argus newspaper and on the Town website. The draft plan update was available for public review and comment from July 10, 2019 to August 9, 2019 at the Williamstown Town Offices, on CVRPC's website, and by request from CVRPC. The announcement of the draft plan update in the CVRPC newsletter reached over 150 individuals and businesses in the Region's 23 towns, including individuals in the adjacent towns of Northfield, Berlin, Barre Town, Washington, Orange, and Roxbury.

On July 10, 2019, a copy of the draft plan was sent electronically to individuals, municipalities, and organizations listed in Tables 1 and 2 for review and comment. The electronic correspondence included instructions to return comments to Jonathan DeLaBruere and Matt Rouleau by email at delabruere@cvregion.com and matt@sislerbuilders.com by August 9, 2019.

Table 1: Individuals, municipalities, and organizations invited to comment on the plan.		
Organization	**Name, Position**	**Email/Mailing Address**
Vermont Emergency Management (VEM)	Stephanie Smith, State Hazard Mitigation Planner	stephanie.a.smith@vermont.gov
Vermont Emergency Management (VEM)	Lauren Oates, State Hazard Mitigation Officer	Lauren.Oates@vermont.gov
Vermont Emergency Management (VEM)	Josh Cox, Critical Infrastructure Planner	josh.cox@vermont.gov
Central Vermont Regional Planning Commission	Jonathan DeLaBruere, Assistant Planner	delabruere@cvregion.org
Vermont Department of Environmental Conservation	Ned Swanberg, Regional Floodplain Manager	ned.swanberg@vermont.gov
Vermont Department of Environmental Conservation	Gretchen Alexander, Regional Rivers Scientist	gretchen.alexander@vermont.gov
Vermont Department of Environmental Conservation	Eric Blatt, Division Director	Eric.Blatt@vermont.gov
Vermont Department of Environmental Conservation	Rob Evans, River Corridor and Floodplain Manager	rob.evans@vermont.gov
Vermont Department of Forests, Parks & Recreation	Dan Singleton, Washington County Forester	dan.singleton@vermont.gov
Vermont Department of Environmental Conservation	Benjamin Green, Dam Safety Engineer	Benjamin.Green@vermont.gov
Town of Williamstown	Jacqueline Higgins, Town Manager & Emergency Management Director	twnmgr@williamstownvt.org
Williamstown Fire Department	William Graham, Fire Chief	wgrahamk5@gmail.com
Town of Williamstown	Matt Rouleau, Selectboard Chair	matt@sislerbuilders.com

Table 1: Individuals, municipalities, and organizations invited to comment on the plan.		
Organization	**Name, Position**	**Email/Mailing Address**
Williamstown Schools	Jamie Kinnarney, Principal	jkinnarney@cvsu.org
Central Vermont Supervisory Union	Susette Bollard, Superintendent of Schools	sbollard@cvsu.org
Green Mountain Power	Brenda Spafford	Brenda.Spafford@greenmountainpower.com
Washington Electric Coop, Inc.	Dan Weston, Director Engineering & Operations	dan.weston@wec.coop
Northfield Electric Department	Doug Reed, Utility Office Manager	utilities@northfield.vt.us
Washington County Sheriff's Department	Sheriff Samuel Hill	samuel.hill@vermont.gov
Orange County Sheriff's Department	Sheriff Bill Bohnyak	sheriff@orangecountysheriff.com
Vermont State Police, Middlesex Barracks	Lieutenant David White	david.white@vermont.gov
Local Emergency Planning Committee 5	Katina Johnson, Chair	chair.lepc5@gmail.com
Private Citizen	Dave Traczyk, Owner, Rouleau Pond Dam	270 VT Route 64 Williamstown, VT 05679
Williamstown Historical Society	Becky Watson	P.O. Box 338 Williamstown, VT 05679

Table 2: Adjacent municipalities invited to comment on the plan.			
Town	**Person**	**Role**	**Email**
Northfield	Kim Pedley	Town Clerk	kpedley@northfield.vt.us
Berlin	Rosemary Morse	Town Clerk	berlintownclerk@berlinvt.org
Barre	Donna Kelty	Town Clerk	dkelty@barretown.org
Washington	Carol Davis	Town Clerk	washingtontownclerk@gmail.com
Orange	Angela Eastman	Town Clerk	Aeastman@orangevt.org
Roxbury	Tammy Legacy	Town Clerk	townrox@tds.net
Brookfield	Teresa Godfrey	Town Clerk	townclerk@brookfieldvt.org
Chelsea	Karen Lathrop	Town Clerk	town.clerk@chelseavt.us

No comments were received by CVRPC or Williamstown Planning Commission. After approval pending adoption by FEMA, the plan will go before the Selectboard for adoption.

4.2 Plan Update Process

The first Williamstown Local Hazard Mitigation Plan was adopted by the Town as an Annex to the Central Vermont Regional Local Hazard Mitigation Plan in October 2009 and received FEMA final approval in November 2009. On January 9, 2013 Williamstown completed its own single jurisdiction Local Hazard Mitigation Plan, which was approved by FEMA on June 7, 2013. The 2019 plan is an update of the 2013 plan. Below is a list of the revisions that have been made from the past plan and the appropriate sections for reference. New hazards identified include invasive species.

General Updates

- Reorganization/restructuring of the plan according to FEMA/VEM checklists
- Update of all data and statistics using 2018 Town Report and US Census Data
- Revaluation, identification and analysis of all significant hazards
- Acknowledgment of implemented mitigation strategies since 2013
- Identification of on-going mitigation projects and strategies

Hazard Analysis Updates

- Addition of new hazards
- Update to location/vulnerability/extent/impact/likelihood table for each hazard to summarize hazard description
- Review of 2018 Vermont Hazard Mitigation Plan and incorporation of town-level hazard analysis

Maps

- Review of 2013 Areas of Concern map and adaptation into a new Hazards Analysis map

Preparation for the meeting included a review of Williamstown's planning documents, including the Municipal Plan (2016), Local Emergency Operations Plan (2018), and Stevens Branch/Jail Branch River Corridor Plan (2009). Information from these documents was incorporated into various sections of the mitigation plan.

The following chart provides an overview of Williamstown's proposed 2013 hazard mitigation actions and the current status of those actions. Planning mitigations strategies completed since the 2013 Plan include adoption of new flood hazard bylaws by the Town.

Table 3: Progress on the 2013 LHMP Mitigation Actions as of 2019	
2013 Mitigation Action	**2019 Status**
Adopt and enforce Vermont Agency of Transportation's 2013 Road and Bridge Standards	Adopted in April 2013; readopted in 2018
Upgrade culverts to mitigate effects of flash flooding, especially those on South Hill, Graham Road, Winchester Hill, Baptist Street and Chelsea Road	Completed upgrades on Flint Road (2014), South Hill (2016/2017), Chelsea Road (2018) and Hebert Road Gilbert Road (2013)
Participate in NFIP training offers by the State and/or FEMA that addresses flood hazard planning and management	Ongoing as the town health officer is participating in all flood/NFIP related trainings
Identify and become knowledgeable of non-compliant structures in the floodplain	The existing structures in the floodplain are identified on the Williamstown Hazard Analysis Map (2019)
Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the Flood Insurance Rate Maps (FIRM)	Literature and updates are available at the Williamstown Town Offices located at 2470 VT Route 14
Prepare, distribute or make available NFIP, insurance and building codes explanatory pamphlets or booklets	Pamphlets are available at the Williamstown Town Offices located at 2470 VT Route 14
Improve communications between Town Departments	Communication is an ongoing process due to the changes in staff and committees. Lists are updated with names, addresses, and phone numbers for Fire, Ambulance, and Highway Department. Emergency Services are dispatched through Barre City.

Table 3: Progress on the 2013 LHMP Mitigation Actions as of 2019	
2013 Mitigation Action	**2019 Status**
Create a directory of radio frequencies and establish protocol	Fire Department and Ambulance Service have established a list a frequencies and chain of command call list
Install a flash flood/ hazardous materials release/all hazards warning system	Using Fire Department alarms, radios and automated call system
Train town departments in hazardous materials response and clean-up protocols	Ongoing – Fire and Highway Departments are involved in this training which takes place annually and is conducted by VTrans, VT Local Roads, or the VT Fire Academy.
Train staff for active response in the event of a disaster	Ongoing – Fire Department conducts routine training exercises in partnership with the VT Fire Academy and Vermont Emergency Management.
Develop an all-hazards public outreach campaign which includes: evacuation maps, explanation of warning systems	The Local Emergency Management Plan is part of the Fire Chief's role and responsibility. The Emergency Evacuation Plan is shared with the Fire Department, Ambulance, and the Town Manager.

Existing Programs, Projects and Activities

The ongoing or recently completed programs, projects, policies and activities are listed by strategy.

Community Preparedness Activities

- Local Emergency Management Plan, 2019
- Capital Equipment Plan, Created in 1999 and reviewed annually

Hazard Control & Protective Works

- Culvert & Bridge Inventory, 2014
- Road Erosion Inventory, 2019

Insurance Programs

- Participation in National Flood Insurance Program (NFIP)

Land Use Planning/Management

- Town Plan, 2016

- Flood Hazard Bylaw, 2014
- Stevens/Jail Branch River Corridor Plan, 2014

Protection/Retrofit of Infrastructure and Critical Facilities

- Fire Hydrants (pressurized) - 51
- Dry Hydrants (unpressurized) - 5
- Shelters – High School, Elementary School, Lutheran Church
- Backup generators at shelters – High School and Elementary School

Public Awareness, Training & Education

- CPR Trainings
- School Fire Safety Program

4.3 Plan Maintenance

The Williamstown Local Hazard Mitigation Plan will be updated and evaluated annually at a January Selectboard meeting along with the review of the Local Emergency Management Plan. Updates and evaluation by the Selectboard will also occur within three months after every federal disaster declaration and as updates to Town Plan and river corridor plans occur. The plan will be reviewed by the Selectboard, Town Manager and public at the above-mentioned January Selectboard meeting. CVRPC or a contractor will help with updates or, if no funding is available, the Planning Commission and Selectboard will update the plan.

The process of evaluating and updating the plan will include continued public participation through public notices inviting the public to the scheduled Selectboard (or specially scheduled) meetings. The notices will be posted:

- on the municipal website, and
- in the municipal building, Times Argus, Bar Harbor Bank, Pump and Pantry, Williamstown Schools, and CVRPC's newsletter and blog.

Additional stakeholders invited to the meeting will be the Williamstown Schools, Historical Society, and emergency response personal. The VT Agency of Natural Resources (VT ANR) will also be invited to participate as it is able to provide assistance with NFIP outreach activities, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard areas, and other applicable initiatives. These efforts will be coordinated by the Town Manager.

Monitoring of plan progress, implementation, and the five-year update process will be undertaken by the Town Manager and Selectboard. Monitoring updates may include changes in community mitigation strategies; new town bylaws and planning strategies; progress of implementation of initiatives and projects; effectiveness of implemented projects or initiatives; and evaluation of challenges and opportunities. The plan is to be a "living document" to allow for new actions to be identified in the five-year interim period and amended without formal re-adoption during regularly scheduled Selectboard meetings. Prior to the end of the five-year period, the plan will undergo a formal update and be submitted to FEMA for re-adoption following the process outlined in the schematic found in the Attachments section.

Williamstown also shall incorporate mitigation planning into its long-term land use and development planning documents. The town intends to review and incorporate elements of the Local Hazard Mitigation Plan when updating the municipal plan and flood hazard bylaws. The incorporation of the Local Hazard Mitigation Plan into the municipal plan, regulations and flood hazard bylaws will also be considered after declared or local disasters. The Town also shall consider reviewing future Stevens/Jail Branch planning documents for ideas on future mitigation projects and hazard areas.

5. Community Vulnerability by Hazard

5.1 Hazard Identification

The Town of Williamstown used the 2018 State Hazard Mitigation Plan state-level hazards to identify hazards that may impact the community and considered whether there were additional local hazards that might impact the community. Table 2 describes the numerical ratings used in Table 3. Natural disasters noted in Table 3 were discussed. The worst threat hazards were identified based upon the likelihood (probability) of the event and the community's vulnerability to the event (potential impact). Hazards not identified as a "worst threat" may still occur. Greater explanations and mitigation strategies of moderate threat hazards can be found in the State of Vermont's Hazard Mitigation Plan (https://vem.vermont.gov/plans/SHMP).

Table 4: Hazard Assessment Ranking Criteria

	Frequency of Occurrence: Probability of a plausibly significant event	**Potential Impact:** Severity and extent of damage and disruption to population, property, environment, and the economy.
1	Unlikely: <1% probability of occurrence per year	Negligible: Isolated occurrences of minor property and environmental damage, potential for minor injuries, no to minimal economic disruption
2	Occasionally: 1-10% probability of occurrence per year, or at least one change in the next 100 years	Minor: Isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption
3	Likely: >10% but <75% probability per year, at least 1 chance in next 10 years	Moderate: severe property and environmental damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: >75% probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Table 5: 2019 Williamstown Hazard Table							
Hazard Impact	**Probability**	**Potential Impact**					**Score***
		Infrastructure	Life	Economy	Environment	Average	
Fluvial Erosion	4	4	1	4	4	3.25	**13**
Inundation Flooding	4	4	1	4	4	3.25	**13**
Ice	4	3	1	3	2	2.25	**9**
Snow	4	3	1	3	2	2.25	**9**
Wind	4	4	2	3	2	2.75	**11**
Heat	2	1	2	1	1	1.25	2.5
Cold	4	1	3	2	2	2.0	**8**
Drought	2	1	1	1	2	1.25	2.5
Landslides	1	2	2	1	1	1.5	1.5
Wildfire	1	2	2	1	1	1.5	1.5
Earthquake	1	2	2	1	1	1.5	1.5
Invasive Species	4	1	2	3	3	2.25	**9**
Infectious Disease Outbreak	1	1	4	1	1	1.75	1.75
Hail	1	1	1	1	1	1	1

*Score = Probability x Average Potential Impact

The Town of Williamstown identified the following disasters as presenting the worst threat to the community:

- Dam Failure
- Flash Flood/Flood/Fluvial Erosion
- Extreme Cold/Winter Storm/Ice Storm
- High Wind
- Invasive Species

The Town is interested in focusing a majority of mitigation efforts into reducing impacts from flooding, as flood events occur most frequently, are most severe, and cause the most damage to public and private infrastructure. A discussion of each significant hazard is included in the proceeding subsections. Each subsection includes a list of past occurrences based upon County-wide FEMA Disaster Declarations (DR-#) if available, plus information from local

records, a narrative description of the hazard, and a hazard matrix containing overview information described in Table 4.

5.2 Threat Hazards Identification & Analysis

Some of the following hazards have a history of occurrence list that is compiled from the National Oceanic and Atmospheric Administration (NOAA) Storm Events Database, and the FEMA Disaster Declaration site. Local river gauges were also used in the creation of these lists. The closest river gauge is located in Montpelier, approximately 8 miles downstream.

5.2.1 Dam Failure

The dams of concern within Williamstown are the Rouleau Pond dam, and the Rood Pond dam. The Town is concerned that if the dams were to breach, downstream impacts would occur. There are no past occurrences of the dams breeching. The impoundment area and extent of flooding is unknown due to lack of historical breeches.

The Rouleau dam is privately owned and located outside the village. It is about 15 feet high and made of 3-foot thick concrete. There is a considerable amount of silt behind the dam. The dam is classified as a Class 3 dam by the Vermont Agency of Natural Resources (see Table 5). The State completed an inspection report on the Rouleau Pond Dam in 2007. It was due for its next inspection in 2017. Water did overtopped the dam during the May 2011 storm, however, no downstream impact was recorded. In the future, Williamstown would like to work with the State and property owner to determine impoundment areas and depths. Williamstown experiences damage from flooding at depths of 3 feet.

The Rood Pond dam is owned by the State of Vermont and located outside of the village. It is about 13 feet high and made of earth material. The dam is classified as a Class 3 dam by the Vermont Agency of Natural Resources (see Table 5). The sole purpose of this dam is for the recreation of the pond.

Table 6: Vermont Agency of Natural Resources Dam Hazard Classifications				
Class	**Hazard Category**	**Potential Loss of Life**	**Potential Economic Loss**	**Inspection Frequency**
3	Low	None expected (No permanent structure for human habitation)	Minimal (Undeveloped to occasional structure or agriculture)	5-10 Years
2	Significant	Few (No urban developments and no more than a small number of inhabitable structures)	Appreciable (Notable agriculture, industry or structures)	3-5 Years
1	High	More than few	Excessive (Extensive community, industry or agriculture)	1 Year (annually)

Table 7: Dam Failure Hazard Matrix					
Hazard	**Location**	**Vulnerability**	**Extent**	**Impact**	**Probability**
Dam Failure	Downstream of dam to village area	Private property and public infrastructure – roads, culverts	Data gap for inundation areas/depths; effects felt at 3 feet of flooding	$500,000	Low

5.2.2 Flash Flood/Flood/Fluvial Erosion

Flooding/flash flooding/fluvial erosion is Williamstown's most commonly recurring hazard. Flooding is the overflowing of rivers, streams, drains and lakes due to excessive rain, rapid snow melt or ice. Flash flooding is a rapidly occurring flood event usually from excessive rain. Fluvial erosion is the process of natural stream channel adjustments. Fluvial erosion causes erosion of sediment in some areas, while causing aggradation of sediment in others. Fluvial erosion processes occur more quickly and severely during flood events.

Table 8: Flash Flood/Flood/Fluvial Erosion Hazards Occurrences			
Date	**Event**	**Location**	**Extent**
7/1/2017	Flash Flood	County Wide	A series of heavy rain showers and thunderstorms moved across central VT delivering very heavy localized rainfall that caused some scattered flash flooding.
6/30/2017	Flood	County Wide	Rainfall amounts of two to three inches in just a few hours on saturated soils from previous June rainfall caused flash flooding.
8/17/2016	Flash Flood	County Wide	Rainfall totals of 3 to 5 inches in a few hours caused flash flooding in central Washington County
2/25/2016	Flood	County Wide	2 to 2.5 inches of rain across the region. The warm temperatures and rain also melted 1 to 3 inches of water out of the snowpack. The result was sharp rises on rivers, producing ice jams and open water flooding.
7/19/2015-7/20/2015	Flash Flood	County Wide	Thunderstorms with heavy rainfall moved over northeast Washington County Vermont repeatedly for several hours. A few of these storms did contain isolated damaging winds and hail up to one inch in diameter.
4/15/2014	Flood	County Wide	*DR 4178*. Snowmelt from a late season snowpack combined with heavy rain produced widespread flooding across northern and central Vermont
7/3/2013-7/4/2013	Flash Flood	County Wide	*DR 4140.* Thunderstorms developed along a nearly stationary cold front across central and northeast Vermont. Heavy rainfall from the storms produced localized flash flooding
8/28/2011	Flood/Tropical Storm	Statewide, Williamstown	*DR 4022.* Montpelier Flood gauge at 19.05 feet (flood stage is at 15 feet)
5/30/2011	Flash Flood	County Wide	Thunderstorms developed along a nearly stationary cold front across central and northeast Vermont. Heavy rainfall from the storms produced localized flash flooding

Table 8: Flash Flood/Flood/Fluvial Erosion Hazards Occurrences			
Date	**Event**	**Location**	**Extent**
5/26/2011-5/27/2011	Flash Flood	County Wide	*DR-4001.* Trailing thunderstorms with torrential rains traveled across southwest Washington County and caused flash flooding of several roads and washouts. Montpelier flood gauge at 17.59 feet, 3-5" of rain
5/20/2011	Flash Flood	County Wide	Slow moving thunderstorms produced excessive runoff across portions of Vermont, resulting in localized flash flooding
4/26/2011	Flash Flood	County Wide	Thunderstorms repeatedly moved over central and northern Vermont, dumping over 2 inches of rain into already saturated soils and swollen rivers and streams causing flash flooding to occur
3/11/2011	Flood	County Wide	Rainfall amounts of 0.75 to 1.25 inches and snowmelt from temperatures in the 40s combined to generate enough runoff to produce rises on rivers and isolated ice jams
3/6/2011	Flood	County Wide	Rapid snow melt and heavy rainfall caused ice-covered rivers to swell and cause ice flows. There were several reports of ice jams and flooding related problems in the Passumpsic, Missisquoi and Winooski River valleys
10/1/2010	Flood	County Wide	Heavy rain spread into Vermont, eventually produced 4-5 inches of rain
3/23/2010	Flood	County Wide	The storm system produced 1.5 to 2 inches of rain across central and southern Vermont. This heavy rainfall combined with runoff from melting snow in the higher elevations produced scattered flooding
1/25/2010	Flood	County Wide	Rain moved into Vermont causing the rivers and streams to sharply rise. The river rises broke up the ice cover across the area and ice jams resulted, including in Montpelier, where flooding resulted in several evacuations

Table 8: Flash Flood/Flood/Fluvial Erosion Hazards Occurrences			
Date	**Event**	**Location**	**Extent**
8/7/2008	Flash Flood	Williamstown	Thunderstorms with heavy rainfall in a moist atmosphere resulted in a scattered flash flooding across southern and central Vermont
8/1/2008-8/2/2008	Flash Flood	County Wide	Localized rainfall of upwards to 3 inches. Excessive runoff from the heavy rainfall led to flash flooding in the form of washed out roads
7/24/2008	Flood	County Wide	Widespread rainfall of 1 to 2 inches occurred with localized amounts that exceeded 3 inches. This heavy rainfall caused flood problems across central and north central Vermont, especially portions of Washington, Lamoille, Orleans and Caledonia Counties
7/11/2007	Flash Flood	County Wide	*DR-1715.* 3-6" of rain in 2 hours. A Presidential Federal Flood Disaster was declared in Washington, Windsor, Orange, Orleans and Caledonia Counties with an estimated storm damage total in excess of 3 million dollars.
3/15/2007	Flood	County Wide	Substantial snow melt increased surface water runoff into area streams and rivers. These increases caused water levels to rise, which subsequently lifted and moved river ice and created localized ice jams and flooding
12/1/2006-12/2/2006	Flood	County Wide	This produced a general rainfall across central Vermont of 1 to 2 inches with localized rainfall amounts near 3 inches in Washington County
6/26/2006	Flood	County Wide	Widespread rainfall totals ranged from 3 to 5 inches in Washington County
5/18/2006-5/20/2006	Flash Flood	County Wide	Rainfall amounts of nearly 2 inches in just a few hours were common with localized amounts exceeding 3 inches in southern Washington County.

Table 8: Flash Flood/Flood/Fluvial Erosion Hazards Occurrences			
Date	**Event**	**Location**	**Extent**
1/18/2006	Flood	County Wide	Widespread rainfall of 1.5 to 2.5 inches. The Winooski river and some of its tributaries experienced flooding due to high water caused by run-off and frequent ice jams
8/12/2004	Flood	County Wide	Across Washington County a few roads were flooded due to the heavy rainfall
11/20/2003	Flood	County Wide	Heavy rain fell across Vermont with minor flooding of low-lying areas in Washington County. In particular, minor flooding was reported along the Winooski River in the Moretown area. Rainfall across the county was generally between 1.5 and 2 inches
10/29/2003	Flood	County Wide	Streams and rivers rose rapidly with a few resulting in some flooding. The Mad River flooded in Moretown. The Winooski River resulted in some minor field flooding in Waterbury
3/22/2003	Flood	County Wide	This system resulted in rainfall amounts of 0.5 to 1 inch, coupled with unusually mild weather. In Washington County, minor field flooding was reported along the Mad River from Waitsfield to Moretown
4/14/2002	Flood	County Wide	Flooding occurred due to the combination of snowmelt and 1 to 3 inches of rainfall across the area. The heaviest rainfall was in the south half of Vermont. In Washington County, minor flooding was reported in the Mad River Valley
4/22/2001-4/23/2001	Flash Flood	County Wide	Mild weather accompanied by snow melt and periods of light rain resulted in flooding of low lying areas with water across a few local roads

Table 8: Flash Flood/Flood/Fluvial Erosion Hazards Occurrences			
Date	**Event**	**Location**	**Extent**
12/17/2000-12/18/2000	Flash Flood	County Wide	Heavy rain (around 3 inches) and mild weather resulted in flooding across the county. Across the county many roads and low land areas were flooded as smaller rivers left their banks. $1 million in damages
5/10/2000	Flash Flood	County Wide	Heavy convective rainfall resulted in rises on area rivers. On the Mad River at Moretown, the river gage exceeded flood stage during the evening hours. A mudslide was reported on Route 14 in Barre while water was reported flowing across Routes 2 and 14 in East Montpelier
4/4/2000	Flash Flood	County Wide	Mild temperatures resulted in melting mountain snow. As a result, many streams and rivers rose to bankful or above with some flooding. In Washington County, the North Branch of the Winooski River flooded fields between Worcester and Montpelier
9/16/1999	Tropical Storm Floyd	County Wide	*DR 1307*. Montpelier flood gauge at 9.30 feet, 5-7" rain county wide
1/24/1999	Flash Flood	County Wide	Mild weather with melting snow coupled with rain resulted in many rivers reaching or exceeding their banks
8/24/1998	Flash Flood	County Wide	Thunderstorms developed along and ahead of the front. In Washington County, torrential downpours accompanied these storms, which along with the heavy rainfall, also produced half inch hail
6/29/1998-7/1/1998	Flash Flood	County Wide	Thunderstorms developed along and ahead of this front with locally heavy rainfall. Flash flooding resulted in road washouts in Marshfield (Washington County)

Table 8: Flash Flood/Flood/Fluvial Erosion Hazards Occurrences			
Date	**Event**	**Location**	**Extent**
6/27/1998	Flash Flood	County Wide	*DR 1228.* Heavy convective rains fell with 3 to 6 inches across the county. Extensive flooding occurred, especially along the Mad River. $5 million in damages
1/8/1998	Flash Flood	County Wide	Liquid precipitation amounts were 3 to 6 inches. The Winooski River flooded especially in the Middlesex area
7/15/1997	Flash Flood	County Wide	Focused heavy convective rain caused a number of road washouts with rapid rises on area rivers
12/2/1996	Flood	County Wide	Several rivers flooded some roads including the Mad River (Washington County)
4/16/1996	Flood	County Wide	Many rivers reached bankful with some minor field flooding. Most notably the North Branch of the Winooski (Washington County)
1/19/1996	Flood; Ice Jam	County Wide	Montpelier flood gauge at 14.64 feet
8/4/1995	Flood	County Wide	Montpelier flood gauge at 6.94 feet; $1.5M damages county wide
8/5/1976	Flood, Hurricane Belle	County Wide, State Wide	*DR 518.* Montpelier flood gauge at 12.31 feet
6/30/1973	Flash Flood	Williamstown	*DR 397.* Montpelier flood gauge at 17.55 feet
9/22/1938	Flood, Hurricane	County Wide	Montpelier flood gauge at 14.11 feet
11/03/1927	Flood	County Wide	Montpelier flood gauge at 27.10 feet

Specific extent data for flood levels in Williamstown is lacking; the closest flood gauge is located in Montpelier. The worst flooding event in Williamstown's history was the 1927 event; however, exact data from that event is not available. In the 1927 event, the Montpelier flood gauge was at 27.10 feet. Since the 1927 flood, a number of flood control dams were installed in the region to prevent the same flooding extent.

During Tropical Storm Irene, the Montpelier flood gauge was 4 feet above flood stage. Williamstown can expect to experience damages at flood depths of 3 feet. Most flooding is flash flooding. For the next LHMP update, Williamstown can better monitor flood waters by

having individuals and emergency response personnel record flood water levels locally and submit to the Town Manager for the Town's records.

The principal bodies of water within Williamstown are: the Stevens Branch of the Winooski River, Martin Brook, Cold Springs Brook, Cutler Pond, Limehurst Pond, Staples Pond, and Rood Pond. The Stevens Branch dominates the drainage pattern, flowing north to the Winooski River. The southern section of the town drains into the White River watershed.

The majority of the Town's National Flood Insurance Program (NFIP)-designated 100-year floodplain is located along the Stevens Branch. Overlaying the FIRM flood maps with the location of the E911 points shows there are 82 properties in the Town which are vulnerable to potential flooding. The estimated loss for a severe flooding event for all properties located within the Town's 100-year floodplain is approximately $10,004,000. This flood loss potential represents 6% of the total properties within Williamstown.

Williamstown participates in the National Flood Insurance Program. According to FEMA's NFIP, Williamstown does not have any repetitive loss properties. Williamstown has 12 active flood insurance policies for a total coverage of $1,456,000. The Town updated its flood hazard regulations in 2014. The Town Manager is responsible for enforcement of the regulations.

Flooding events caused by steady rains and saturated water tables on July 11, 2007 and July 12, 2007 and July 21, 2008 through August 12, 2008 caused extensive damage to the southern part of town. Sections of South Hill, Graham Road, Winchester Hill, Baptist Street, and Chelsea Road were severely damaged, and the roads were not passable. The damage to these areas was in excess of $480,000.

Damaging floods occurred in May and August (TS Irene) of 2011. Williamstown suffered the most damage in the May flood event when 3-5 inches of rain fell over the area and caused severe flash flooding. Table 8 describes the roads damaged and the repair costs of each road fr the May 2011 event.

Table 9: May 2011 Flood Damaged Roads

Road	Damage Amount	Road	Damage Amount
Flint Road	$35,954.56	Robar Road	$7,997.82
Brockway Hill Road	$24,988.19	Gilbert Road	$6,287.78
Falls Bridge Road	$23,064.20	Rood Pond Road	$6,082.08
Stone Road	$21,321.25	Winchester Hill Road	$4,122.20
South Hill Road	$11,304.78	Baptist Street	$2,265.29

Table 9: May 2011 Flood Damaged Roads				
Road	**Damage Amount**		**Road**	**Damage Amount**
McGlynn Road	$8,199.91		Brush Hill Road	$2,214.32

The total damages from the May 2011 flood event was about $153,000. During Tropical Storm Irene, Williamstown did not suffer as much damage as during the May floods. Flooding and damage occurred on Flint Road ($6,733.09) and Stone Road ($1,890.69) for Tropical Storm Irene.

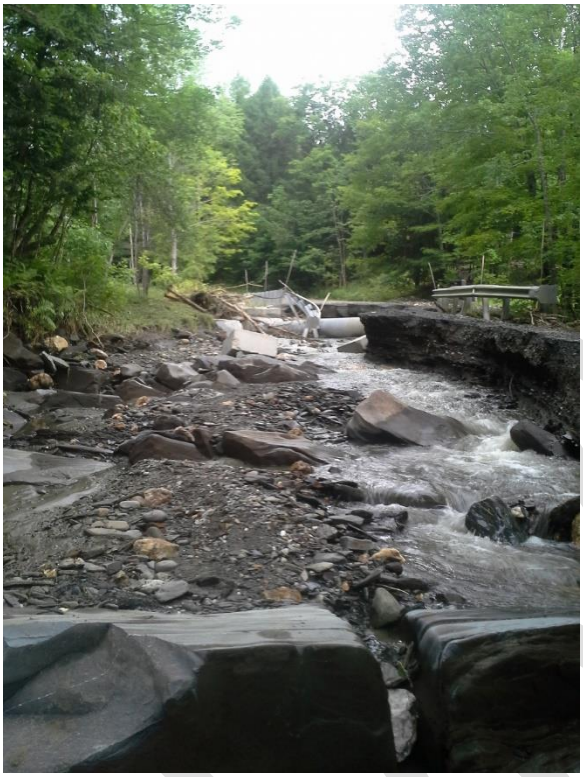


Figure 2: Flint Road flood damage, Williamstown (July 2019)

Photo Credit: Town of Williamstown

The total damages from the July 2013 flood event was $6,208,979.96. This event included extensive town wide flooding and major wash outs of roads, culverts and bridges.

The total damages from the April 2014 flood event was $1,824,522.67. This event included snowmelt from a late season snowpack combined with heavy rains that produced widespread flooding across northern and central Vermont.

The impacts associated with hurricanes and severe storms are mainly associated with flooding impacts. Damage locations from TS Irene and the May 28, 2011 storm events are outlined in the Flood/Flash Flood/Fluvial Erosion hazard section.

Table 10: Flood/Flash Flood/Fluvial Erosion Hazard Matrix					
Hazard	**Location**	**Vulnerability**	**Extent**	**Impact**	**Probability**
Flood/ Flash Flood/ Fluvial Erosion	See lists above	Infrastructure, roads, private property	5-7" of rain during Irene, 3-5" during May 2011 event	$640,000+ public infrastructure damage and $9,930,300 floodplain properties damage	High

5.2.3 High Wind

High wind is defined as an event with sustained wind speeds of 40 miles per hour (mph). or greater lasting for 1 hour or longer or an event with winds of 58 mph. or greater for any duration.

Thunderstorms can generate high winds and down hundreds of large trees within a few minutes. Vermont also experiences tornadoes, which are capable of damaging or destroying structures, downing trees and power lines and creating injuries and death from collapsing buildings and flying objects. A tornado is a mobile, destructive vortex of violently rotating winds having the appearance of a funnel-shaped cloud and advancing beneath a large storm system. The extent of tornados can be measured using the Enhanced Fujita scale (Figure 3).

Enhanced Fujita Category	Wind Speed (mph)	Potential Damage
EF0	65-85	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	**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

Enhanced Fujita Category	Wind Speed (mph)	Potential Damage
EF3	136-165	**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 blown away some distance.
EF4	166-200	**Devastating damage.** Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.
Source: http://en.wikipedia.org/wiki/Enhanced_Fujita_Scale		

Figure 3: Enhanced Fujita (EF) Scale

An estimate of the worst tornado extent anticipated by Williamstown is an EF0. Williamstown may start to experience damage from wind at wind rated an 8 on the Beaufort scale (see Figure 4). The Beaufort scale depicts the force of a wind.

Figure 4: Beaufort Wind Scale

Beaufort number	Wind Speed (mph)	Seaman's term		Effects on Land
0	Under 1	Calm		Calm; smoke rises vertically.
1	1-3	Light Air		Smoke drift indicates wind direction; vanes do not move.
2	4-7	Light Breeze		Wind felt on face; leaves rustle; vanes begin to move.
3	8-12	Gentle Breeze		Leaves, small twigs in constant motion; light flags extended.
4	13-18	Moderate Breeze		Dust, leaves and loose paper raised up; small branches move.
5	19-24	Fresh Breeze		Small trees begin to sway.
6	25-31	Strong Breeze		Large branches of trees in motion; whistling heard in wires.
7	32-38	Moderate Gale		Whole trees in motion; resistance felt in walking against the wind.
8	39-46	Fresh Gale		Twigs and small branches broken off trees.
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.
11	64-72	Storm		Very rarely experienced on land; usually with widespread damage.
12	73 or higher	Hurricane Force		Violence and destruction.

Table 11: High Wind Occurrences

Date	Event	Location	Extent
5/27/2011	Hail/Winds	Williamstown/County Wide	50 knot winds and hail
2/26/2010	High Wind	County Wide	50 knot winds - Strong easterly winds of 80 to 100 mph. Numerous communities witnessed downed tree limbs and branches and some trees that resulted in downed power lines and power outages.
7/17/2009	Tornado	Williamstown	EF0 tornado
8/25/2007	Thunderstorm Winds	Williamstown	61 knot winds
6/02/2007	Thunderstorm Winds	Williamstown/East Barre	55 knot winds
8/02/2006	Thunderstorm Winds	Williamstown	60 knot winds

Table 11: High Wind Occurrences			
Date	**Event**	**Location**	**Extent**
2/17/2006	High Wind	County Wide	35 knot winds - Sustained winds of 30 to 40 mph with strong and damaging wind gusts in excess of 55 mph moved across eastern Vermont during the afternoon. There were widespread reports of trees and power lines down blocking roads and causing structural damage in communities.
10/16/2005	High Wind	County Wide	40 knot winds - A tight pressure gradient on the backside of this intensifying storm resulted in strong winds across the area.
9/29/2005	High Wind	County Wide	35 knot winds - The front was accompanied by showers and thunderstorms. Large scale damaging winds preceded and followed the front. Trees and power lines were blown down countywide across Orange and Windsor Counties, with numerous power outages.
8/03/2004	Thunderstorm Winds	Williamstown	52 knot winds
11/13/2003	High Wind	County Wide	35 knot winds - Strong winds preceded and followed the passage of the storm system. In Lamoille, Washington and Orange Counties, numerous trees and power lines were blown down.
7/21/2003	High Wind	Williamstown	60 knot winds
3/03/2002	High Wind	County Wide	Strong winds accompanied the associated cold front. Trees were reported down across portions of Orange County.

Table 11: High Wind Occurrences			
Date	**Event**	**Location**	**Extent**
9/16/1990	High Wind	County Wide	51 knot winds - Strong winds combined with saturated soils from heavy rain resulted in many trees and power lines being blown down.

In 1999, Tropical Storm Floyd passed through Vermont. The primary impact from Floyd was downed trees and power lines due to high winds. Approximately 3,000 people were without power in the Central Vermont Region.

Hurricanes and tropical storms are violent rain storms with strong winds that have large amounts of rainfall and can reach speeds up to 200 mph. Hurricane season is from June through November. These types of storms originate in the warm waters of the Caribbean and move up the Eastern seaboard where they lose speed in the cooler waters of the North Atlantic. A severe thunderstorm is a thunderstorm that contains any one or more of the following three weather conditions:

- hail that is ¾ of an inch or greater in diameter,
- winds of 58 miles per hour or greater, and/or
- tornadoes.

Severe storm events can occur late spring and early summer as temperatures increase in the summer season. The frequency and intensity of hurricanes, tropical storms, and severe storms is expected to increase with climate change.

Similar to flooding, the extent of severe storms is not well documented in Williamstown. The impact of storms is usually flood related (See extent for flooding in the above flood section). Wind impacts are town-wide. Wind extent from storms is not well documented as there is no monitoring station in Williamstown. Estimates for wind are gathered from county wide data off the NCDC website. An estimate of the worst anticipated wind extent in Williamstown based on past occurrences would be Category 1 force hurricane winds according to the Saffir-Simpson Hurricane Wind Scale (Figure 5) and H8 hail according to the TORRO Hailstorm intensity Scale (Figure 6). At a Beaufort Scale number of 8-9 and hail sized H4/5, Williamstown may start to experience high wind and hail impacts and damages.

Hurricane Classification				
Strength	**Wind Speed (Kts)**	**Wind Speed (mph)**	**Pressure (Millibars)**	**Pressure (Inches of Mercury)**
Category 1	64-82	74-95	>980	28.94
Category 2	83-95	96-110	965-979	28.50-28.91
Category 3	96-113	111-130	945-964	27.91-28.41
Category 4	114-135	131-155	920-944	27.17-27.88
Category 5	>135	>155	919	27.16
Tropical Cyclone Classification				
Tropical Depression		20-34 Kts		
Tropical Storm		35-63 Kts		
Hurricane		>64 Kts		

Figure 5: Saffir-Simpson Hurricane Wind Scale

Hailstorm Intensity Scale		
T#	**Wind Speed (mph)**	**Damage**
0	39-54	Loose litter raised, twigs snapped, crop trails
1	55-72	Minor shed damage, lawn chairs raised
2	73-92	Mobile homes displaced, big branches busted
3	93-114	Mobile homes overturned, big trees uprooted
4	115-136	Mobile homes destroyed, house rafters exposed
5	137-160	Cars levitated, house walls standing
6	161-186	Heavy vehicles lifted, house roofs/walls off
7	187-212	Frame house demolished, trains overturned
8	213-240	Steel-frame buildings buckled, cars hurled far
9	241-269	Trains hurled long way, complete de-barking
10	270-299	Steel-reinforced concrete buildings severely damaged

Figure 6: Tornado and Storm Research Organization (TORRO) Hailstorm Intensity Scale

In the future, Williamstown could consider installing a monitoring station to better gather data for wind events. Wind events can be recorded using the Beaufort scale, hurricanes using the Saffir Simpson Scale (Figure 5). Hail events can be recorded using the TORRO Hailstorm Intensity Scale (Figure 6).

Tornadoes are less common than hail storms and high winds, but they have occurred throughout Vermont. Across the State, 45 tornadoes have been recorded between 1950 and 2009, injuring 10 people and causing over $8.4 million dollars in estimated property damage. Nearly all of these incidents occurred from May through August with most of occurring in the afternoon. On July 17, 2009 an EF0 tornado touched down in Williamstown. The tornado took the roof off a barn and tore down trees and power lines.

Table 12: High Winds Hazard Matrix					
Hazard	**Location**	**Vulnerability**	**Extent**	**Impact**	**Probability**
High Wind	Town Wide for Wind impacts	Large trees, power lines	6" rain Tropical Storm Irene in 24 hours (8/28/2011), 5-7" rain Tropical Storm Floyd in 24 hrs (9/16/1999), Cat. 1 Hurricane 1938	$150,000 from Spring 2011 events	Medium
High Winds	Town Wide	Power lines, trees, structures	EF0 on 7/17/2009	$100,000	Medium

5.2.4 Extreme Cold/Winter Storm/Ice Storm

Snow and/or ice events occur on a regular basis during the winter months.

Table 13: Extreme Cold/Winter Storm/Ice Storm Occurrences			
Date	**Event**	**Location**	**Extent**
11/26/2018	Winter Storm	Williamstown, County Wide	12-15" of snow, 11" in Williamstown. 100,000 customers lost power statewide
3/13/2018	Winter Storm	Williamstown, County Wide	10-27" of snow, 24" in Williamstown
2/02/2015	Winter Storm	County Wide	6-12" of snow

Table 13: Extreme Cold/Winter Storm/Ice Storm Occurrences			
Date	**Event**	**Location**	**Extent**
12/09/2014	Winter Storm	County Wide	4-20" of snow, 175,000 customers lost power in the region. This was the 2nd highest number of power outages due to weather recorded in Vermont
3/6/2011	Winter Storm	Williamstown, County Wide	12-18" of snow, 10,000 customers lost power statewide
2/23/2010	Winter Storm	Williamstown, County Wide	20" of snow and 50,000 customers lost power statewide
2/22/2009	Winter Storm	Williamstown, County Wide	16" of snow, 30 mph wind gusts
12/11/2008	Winter Storm	County Wide	5-9" of snow with ¼ to ½ inch of ice
2/1/2008	Winter Storm	Williamstown, County Wide	3-7" of snow and ice ¼-1/2"thick, 50 mph wind gusts
2/14/2007	Winter Storm	Williamstown, County Wide	22" of snow
2/14/2006	Winter Storm	Williamstown, County Wide	30" of snow
1/4/2003	Winter Storm	Williamstown, County Wide	19" of snow
3/30/2001	Winter Storm	County Wide	10-20" of snow
3/22/2001	Winter Storm	County Wide	10-30" of snow
3/05/2001	Winter Storm	Williamstown, County Wide	15-30" of snow
12/31/2000	Winter Storm	County Wide	10" of snow
1/15/1998	Winter Storm	Williamstown, County Wide	10-12" snow
12/29/1997	Winter Storm	Williamstown, County Wide	21" of snow
1/09/1997	Winter Storm	County Wide	6-12" of snow
12/7/1996	Winter Storm	Williamstown, County Wide	12" of snow
3/07/1996	Winter Storm	County Wide	6-12" of snow

Table 13: Extreme Cold/Winter Storm/Ice Storm Occurrences			
Date	**Event**	**Location**	**Extent**
3/21/1994	Winter Storm	Williamstown, County Wide	5-11” of snow
11/01/1993	Winter Storm	Williamstown, County Wide	15” of snow
1/03/1993	Freezing Rain	Williamstown, Statewide	¼-1/2” freezing rain

A winter storm is defined as a storm that generates sufficient quantities of snow, ice or sleet to result in hazardous conditions and/or property damage. Ice storms are sometimes incorrectly referred to as sleet storms. Sleet is similar to hail, only smaller. It can be easily identified as frozen rain drops (ice pellets) that bounce when hitting the ground or other objects. Sleet does not stick to wires or trees, but in sufficient depth, it can cause hazardous driving conditions. Ice storms are the result of cold rain that freezes on contact with the surfaces coating the ground, trees, buildings, overhead wires, and other exposed objects with ice, sometimes causing extensive damage. Periods of extreme cold tend to occur with these events.

The physical impacts of winter storms are town wide due to the expansive nature of winter storms. Based on past occurrences, the worst anticipated winter weather Williamstown could experience would be 2-3 feet of snow within 24 hours, with more at higher elevations, and several days of power outages. Using the wind chill scale (Figure 7) and historical information, the estimate for extreme cold and wind-chill is 60 degrees Fahrenheit. The worst recent storm was in December 2012 and, before that, the Blizzard of 1888.

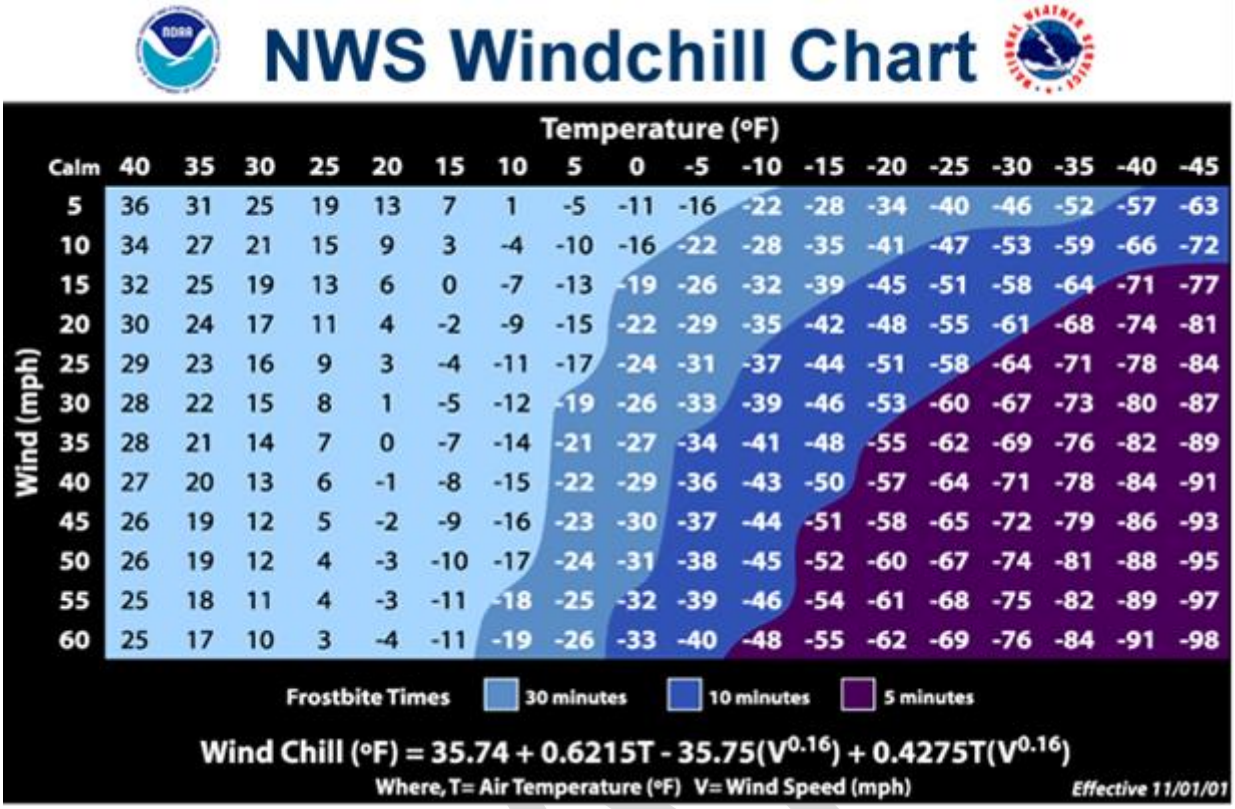


Figure 7: National Weather Service Wind-chill Chart

One of the major problems associated with ice storms is the loss of electrical power. Major electric utility companies have active, ongoing programs to improve system reliability and protect facilities from damage by ice, severe winds and other hazards. Typically, these programs focus on trimming trees to prevent encroachment of overhead lines, strengthening vulnerable system components, protecting equipment from lightning strikes and placing new distribution lines underground. Other major problems include closed roads and restricted transportation.

By observing winter storm watches and warnings, adequate preparations can usually be made to lessen the impact of snow, ice and sleet, and below freezing temperature conditions on Williamstown. The primary challenges facing community officials are:

- providing for the mass care and sheltering of residents left without heat or electricity for an extended time and
- mobilizing sufficient resources to clear broken tree limbs from roads. Williamstown should plan and prepare for these emergencies.

Planning and preparedness efforts should include the identification of mass care facilities and necessary resources such as cots, blankets, food supplies and generators, as well as debris

removal equipment and services. Williamstown High School, Elementary School and Lutheran Church are the Town's designated shelters. An American Red Cross regional shelter is located in Barre City, 6 miles away.

For the next plan update, Williamstown will more closely monitor winter storms to determine the worst impacts possible on the town.

Table 14: Extreme Cold/Winter Storm/Ice Storm Hazard Matrix					
Hazard	**Location**	**Vulnerability**	**Extent**	**Impact**	**Likelihood**
Winter Storm/Ice Storm	Town Wide	Utilities, trees, roads, old/under insulated structures	12+" of snow on March 2011 event; 22+" on Feb. 2006 event in 24 hours	Additional sheltering/ plowing/ emergency services costs for town - $15,000	High

5.2.5 Invasive Species

Invasive species are plants, animals, and other organisms that are introduced to a non-native ecosystem and also cause harm to the environment, economy, or human health. They are primarily spread by human activities that are introduced intentionally for reasons like agriculture, medicine, sport, decoration, land stability, and biological control.

Emerald Ash Borer

As of October 2018, emerald ash borer (EAB), a destructive forest insect from Asia, had been confirmed in seven Vermont towns: Orange, Plainfield, Barre, Groton, Montpelier, Stamford, and South Hero.

Figure 8: Emerald Ash Borer *Agrilus planipennis*
Photo Credit: VT Urban & Community Forestry

EAB overwinters as larvae under the bark of ash trees where it feeds on the inner bark tissue. Once infested, ash trees rapidly decline and die in 1-5 years, if not treated, and may become a hazard to public safety. EAB is known to be established in 34 states and four Canadian provinces. It is responsible for widespread decline and mortality of hundreds of millions of ash

trees in North America. Three species of ash trees - Green Ash (Fraxinus pennsylvanica), Black Ash (Fraxinus nigra), and White Ash (Fraxinus americana) – are found in Vermont.

Ash trees comprise approximately 5% of Vermont forests. They also are a very common and important urban tree. EAB threatens all three species of Vermont's ash trees. It could have significant ecological and economic impacts. There are no proven means to control EAB in forested areas, though individual trees can sometimes be effectively treated. An inventory will facilitate realistic management of EAB by prioritizing removals, identifying trees suitable for treatment, and budgeting for tree treatment or removal. Upon completion of an inventory, municipalities are urged to transition this collected data into an EAB Management Plan where they will identify the most appropriate approach to take including removing the tree, having it treated, or letting it succumb to EAB and fall on its own.

Figure 9: EAB movement under the bark of an ash tree

Photo Credit: VT Urban & Community Forestry

Vermont towns should understand their public ash tree population, including ash trees:

- In the right-of-way in town centers (street trees) and in high-use areas
- In parks, town greens, or other town-owned recreational areas
- In the right-of-way on rural roads
- In natural areas, i.e. town forests, that could impact public safety if diseased or dying, such as those along trails
- On private land that impact town properties or the town right-of-way, or are a priority for preservation

Figure 10: EAB Infestation Map of Vermont

Chervil

Wild Chervil is a weed belonging to the parsley family (Apiaceae). It is becoming a serious problem in hay fields and pastures in Central Vermont. Its 3-4-foot height, fern-like leaves, and white flowers arranged in a compound umbel pattern are quite pronounced during late May to early July. It is commonly found along roadsides and in meadows in Central Vermont.

Figure 11: Wild Chervil, *Anthriscus sylvestris*
Photo Credit: VT Urban & Community Forestry

Over the past five years, this weed has spread rapidly. It propagates by both seed and by lateral budding at the top of the root. It competes aggressively with forage crops for light, water and nutrients and often kills off the surrounding vegetation by shading it. It is particularly damaging to forage crops, but it has not been a problem in cultivated or tilled fields.

Wild chervil is not poisonous to livestock and, although it is unpalatable when large, animals will graze it effectively when small. The stems are very slow to dry and, if harvested in forage, will reduce crop quality due to molding. This weed also serves as a host for the parsnip yellow fleck virus that infects carrots, celery, and parsnips.

Wild chervil's out-competes natural vegetation. The weed is also a known host for a virus disease that infects carrots, celery, and parsnips. Wild chervil is very difficult to control because of its extremely deep taproot and tolerance to selective herbicides. Rosettes and immature plants can be controlled by digging out the roots. Mature plants must be removed below the root crown to prevent resprouting. It is not known as a problem in cultivated fields.

6. Mitigation

6.1 Town Plan Policies that Support Local Hazard Mitigation

- Ensure that the Town and villages are safe and highly accessible to all our citizens and visitors. (Community Facilities and Service Goal)
- To protect environmental quality by minimizing impact from human activity and planning and maintaining natural areas that contribute to health, scenic area, and quality of life of the community and people in Williamstown. (Natural Resources and Features Goal)
- To manage storm-water runoff in order to avoid property damage and negative impacts on surface and groundwater. (Natural Resources and Features Goal)
- To protect the safety and privacy of residents (Portrait of the Williamstown People Goal)
- To protect the quality, quantity and source of water for the safety of its residents and environment (Community Utilities and Infrastructure Plan Goal)
- To increase the safety and choices in transportation including non-motorized users, walkers, horses, that share the use of our streets. (Transportation Goals)

The goal of this hazard mitigation plan is:

- To take actions to reduce or eliminate the long-term risk to human life and property from dam failure, flash flood/flood/fluvial erosion, hurricane/severe storm/tropical storms and winter storms.

Specific hazard mitigation strategies related to goals of the Plan include:

- Ensure existing and future drainage systems are adequate and functioning properly
- Preserve and prevent development in areas where natural hazard potential is high
- Ensure that all residents and business owners are aware of the hazards that exist within Williamstown and ways they can protect themselves and insure their property
- Ensure that emergency response services and critical facilities functions are not interrupted by natural hazards

6.2 Identified Hazard Mitigation Programs, Projects & Activities

Hazard mitigation programs, projects and activities that were identified for implementation at the Williamstown Local Hazard Mitigation meeting:

Table 15: 2019-2024 Mitigation Strategies					
Hazards	**Actions**	**Local Leadership**	**Prioritization (High, Med)**	**Possible Resources**	**Completed By**
Dam Failure	Improve communications with State regarding Rouleau Pond Dam	Selectboard	Med	Town Funds	2021-2022
Dam Failure	Develop inundation models for Rood Pond in coordination with the State	Selectboard	Med	Town Funds	2022-2023
Flooding, Severe Storms	Upgrade and expand damaged culvert on Route 14 (Chelsea Road)	Selectboard, Road Foreman	High	HMGP, Town Funds, VTrans	2021
Flooding, Severe Storms	Upgrade and expand box culvert on McGlynn Road	Selectboard, Road Foreman	Med	HMGP, Town Funds, VTrans	2021-2022
Flooding, Severe Storms	Upgrade and expand bridge on Brush Hill Road	Selectboard, Road Foreman	Med	HMGP, Town Funds, VTrans	2021-2022
Flooding, Severe Storms	Protect River Corridors	Selectboard, Planning Commission	Med	Town Funds, USDA, EPA	2023
Flooding, Severe Storms	Replace Existing Bridge Structures on Route 14	Selectboard, Planning Commission, Road Foreman	Med	HMGP, Town Funds, VTrans	2023

Table 15: 2019-2024 Mitigation Strategies					
Hazards	**Actions**	**Local Leadership**	**Prioritization (High, Med)**	**Possible Resources**	**Completed By**
Winter Storms/ Extreme Cold/ Ice Storms	Provide training to residents and sensitive populations on how to insulate homes (pipes, attics) for extreme cold spells	Selectboard, Planning Commission, Fire Department	Med	Efficiency Vermont, CapStone	2021
Winter storms/ extreme cold/ice storms, hurricane/ tropical storms/ severe storms, high wind/ tornadoes	Provide looped distribution service or other redundancies in the electrical service to critical facilities	Fire Department, Selectboard	Med	Town Funds	2022-2023
Flooding	Work with elected officials, the State and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education	Planning Commission, Road Foreman	Med	Town Funds, USDA	2021-2022

Table 15: 2019-2024 Mitigation Strategies					
Hazards	**Actions**	**Local Leadership**	**Prioritization (High, Med)**	**Possible Resources**	**Completed By**
Flooding	Identify and become knowledgeable of non-compliant structures in the community	Selectboard, Planning Commission	Med	Town Funds	2021-2022
Emergency Preparedness	Update Local Emergency Management Plan	Fire Department, Selectboard	High	Town Funds	Annually between Town Meeting Day and May 1
Emergency Preparedness	Monitor flood waters by having individuals and emergency response personnel record flood water levels locally and submit to the Town Manager for the Town's records				

Vermont Emergency Management (VEM) emphasizes a collaborative approach to achieving mitigation on the local level, by partnering with the Agencies of Natural Resources (ANR), Transportation (VTrans), and Commerce and Community Development (ACCD), Regional Planning Commissions, FEMA Region 1, and other agencies, all working together to provide assistance and resources to towns interested in pursuing mitigation projects and planning initiatives.

The mitigation activities are listed in regard to local leadership, possible resources, implementation tools, and prioritization. Prioritization was based upon the economic impact of the action, the Community's need to address the issue, the action's cost, and the availability of potential funding.

Williamstown understands that a project must meet FEMA benefit cost criteria for the project to be eligible for FEMA mitigation project funding. The Town must also have a FEMA-approved Hazard Mitigation Plan.

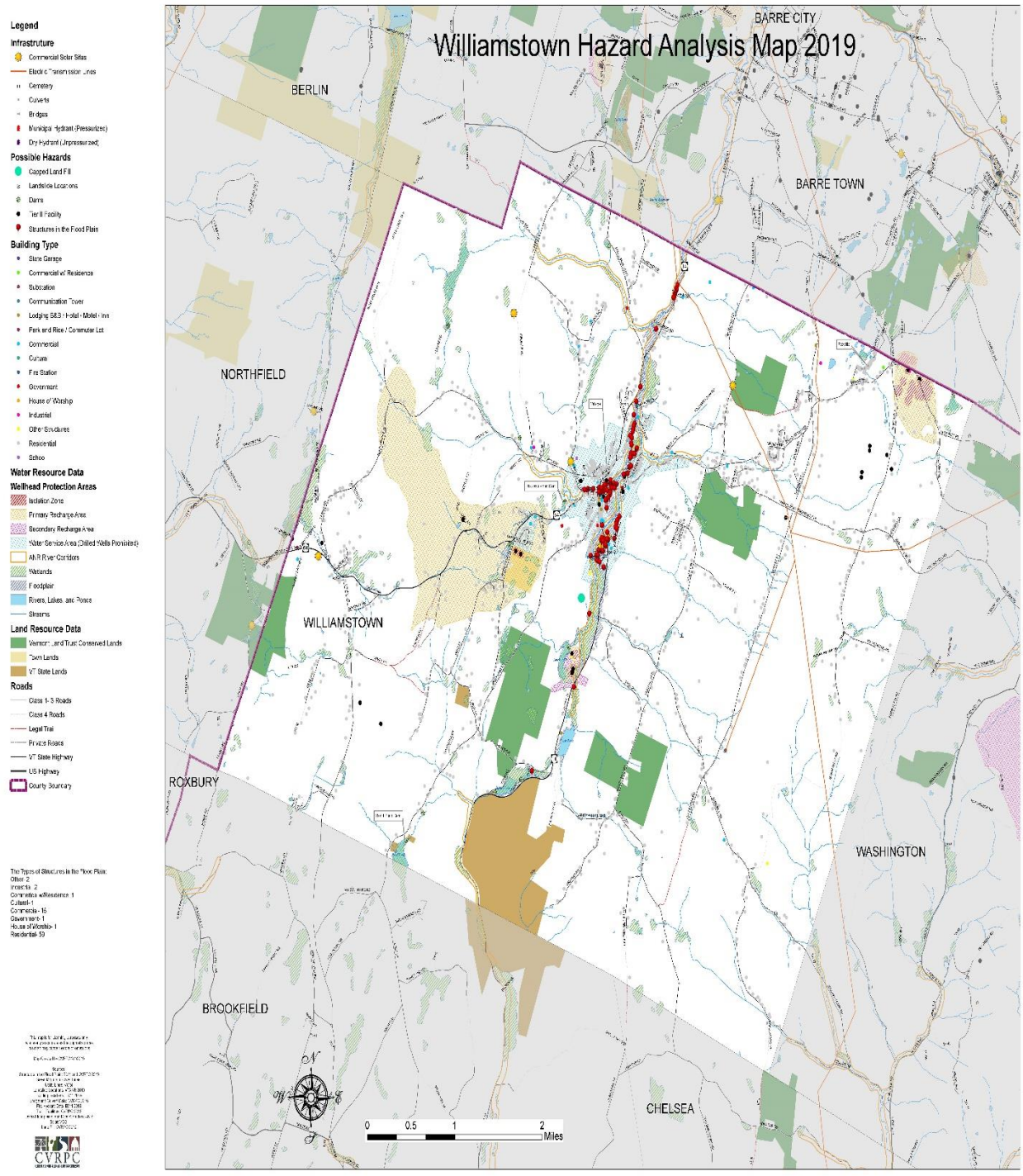
High/Medium/Low prioritization is based on the following:

- *High:* the action is either critical or potential funding is readily available and should have a timeframe of implementation of less than two years.
- *Medium:* the action is less critical or the potential funding is not readily available and has a timeframe for implementation of more than two years but less than four.
- *Low:* the timeframe for implementation of the action, given the action's cost, availability of funding, and the community's need to address the issue, is more than four years.

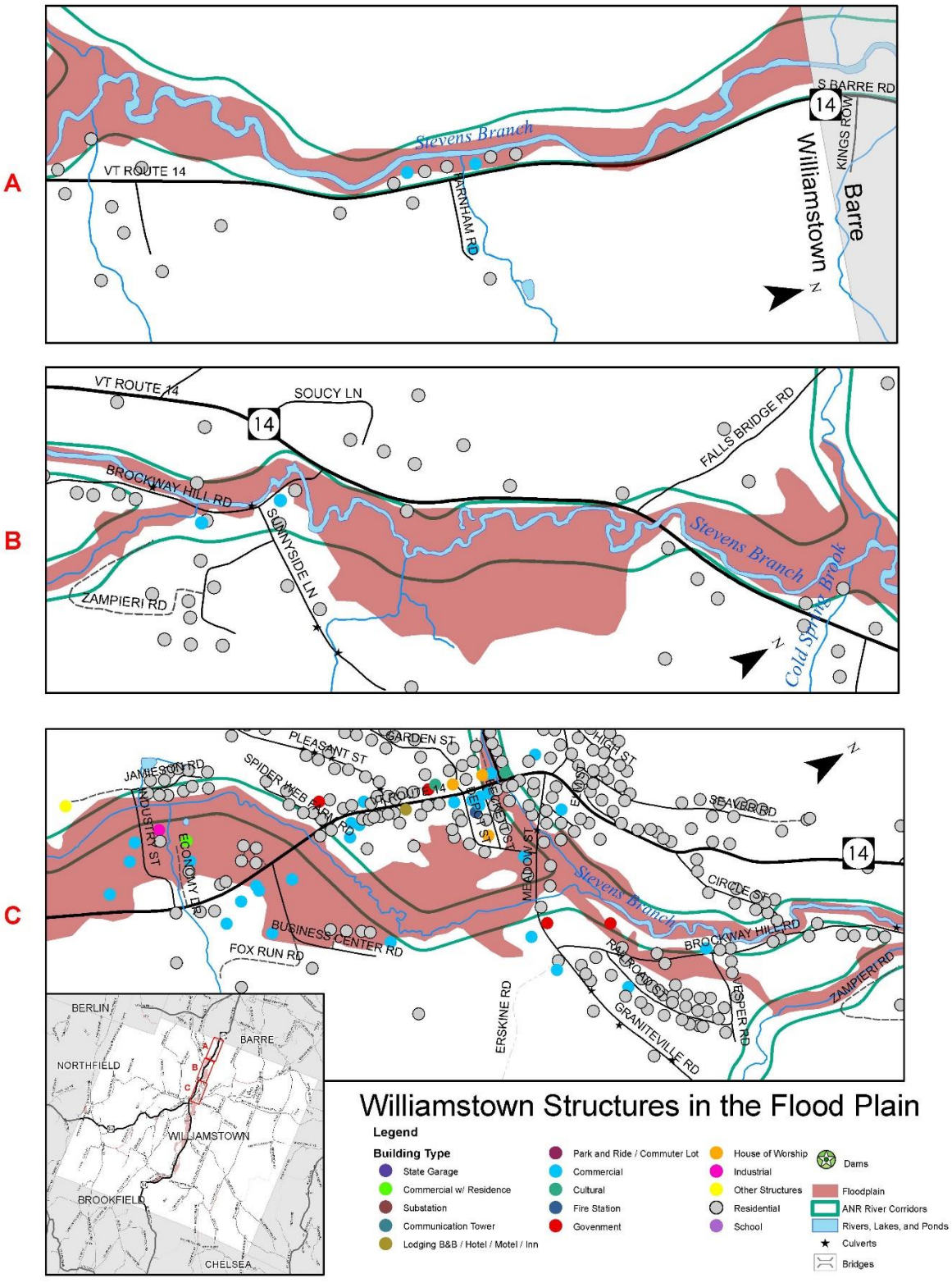
7. Attachments

- 2019 Hazard Analysis Map, Town of Williamstown
- 2019 Hazard Analysis Map, Williamstown village area
- Structures in the Floodplain Maps
- Map and Strategies from Stevens/Jail Branch River Corridor Plan
- Hazardous Materials
- 5-Year Plan Review/Maintenance Process
- Town Resolution Adopting the Plan

2019 HAZARD ANALYSIS MAPS



STRUCTURES IN THE FLOODPLAIN MAPS



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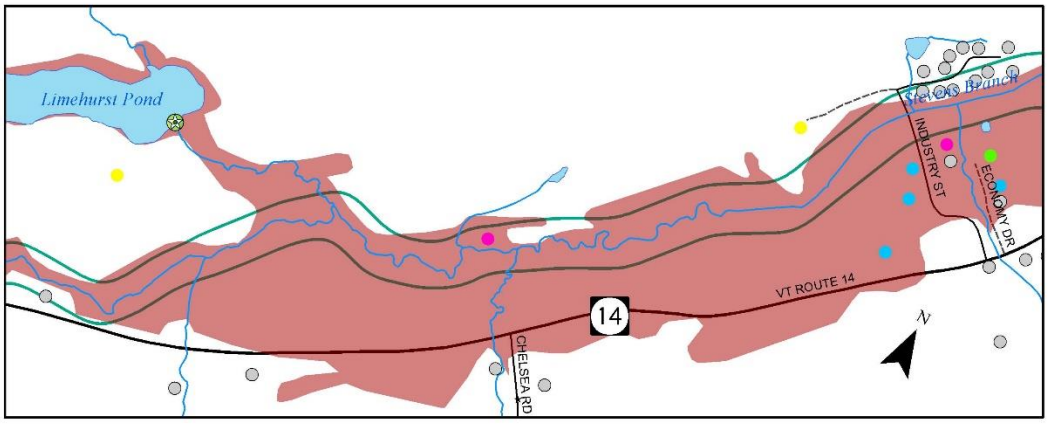

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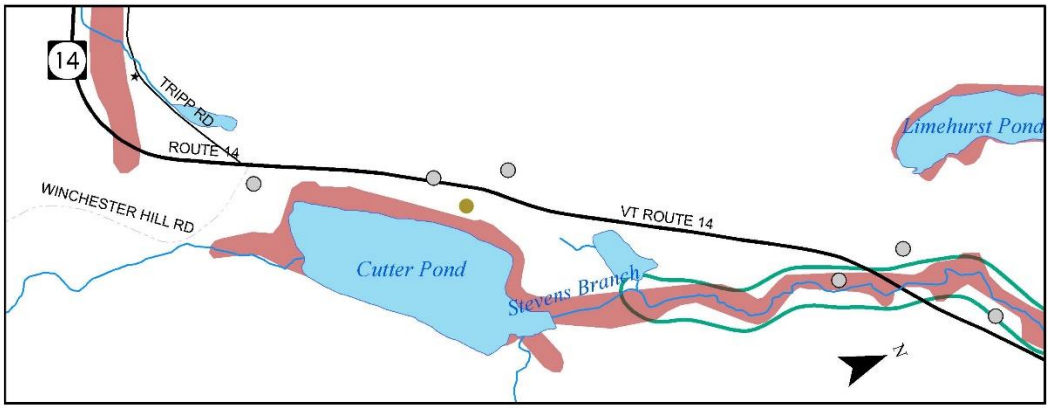

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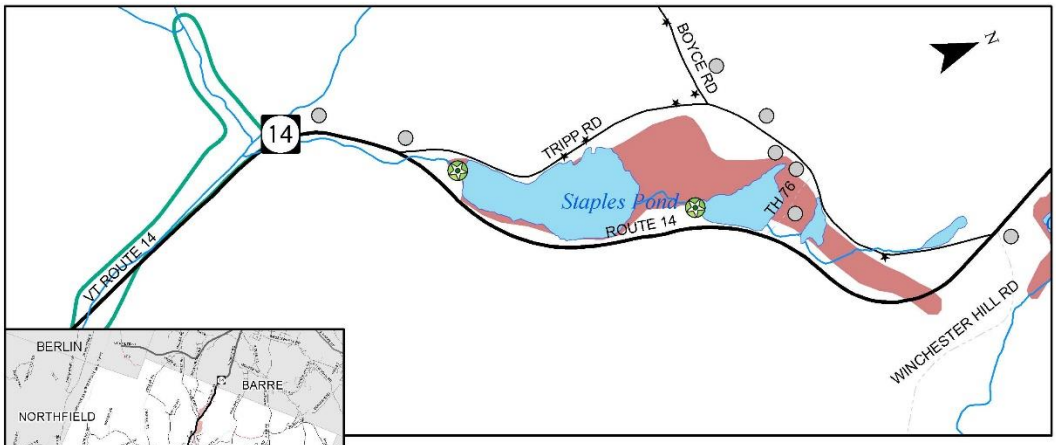
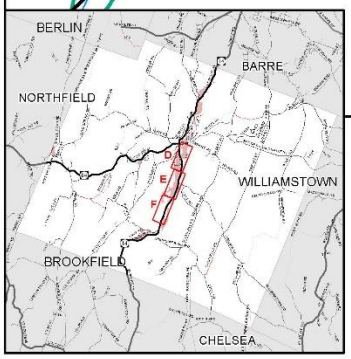




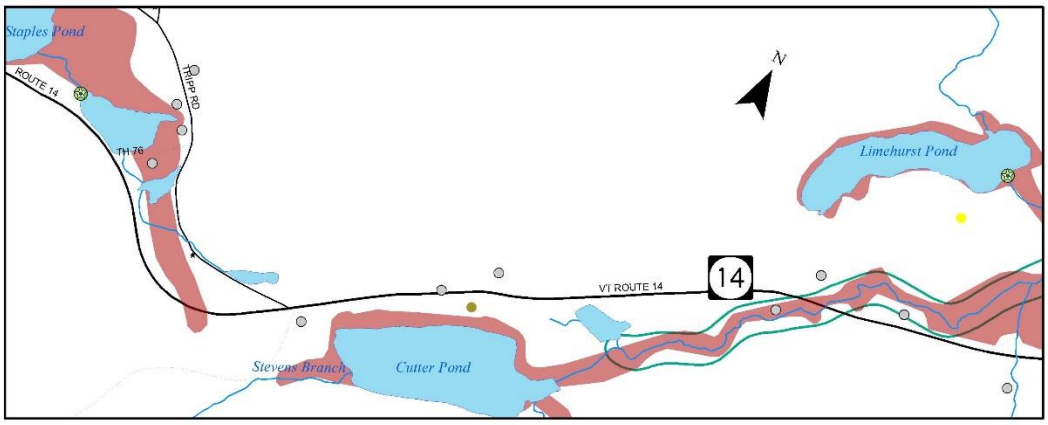
Williamstown Structures in the Flood Plain

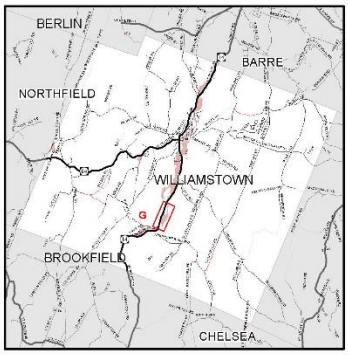
Legend

Building Type

- State Garage
- Commercial w/ Residence
- Substation
- Communication Tower
- Lodging B&B / Hotel / Motel / Inn
- Park and Ride / Commuter Lot
- Commercial
- Cultural
- Fire Station
- Government
- House of Worship
- Industrial
- Other Structures
- Residential
- School
- Dams
- Floodplain
- ANR River Corridors
- Rivers, Lakes, and Ponds
- Culverts
- Bridges

G





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- Bridges

MAP AND STRATEGIES FROM THE STEVENS/JAIL BRANCH RIVER CORRIDOR PLAN

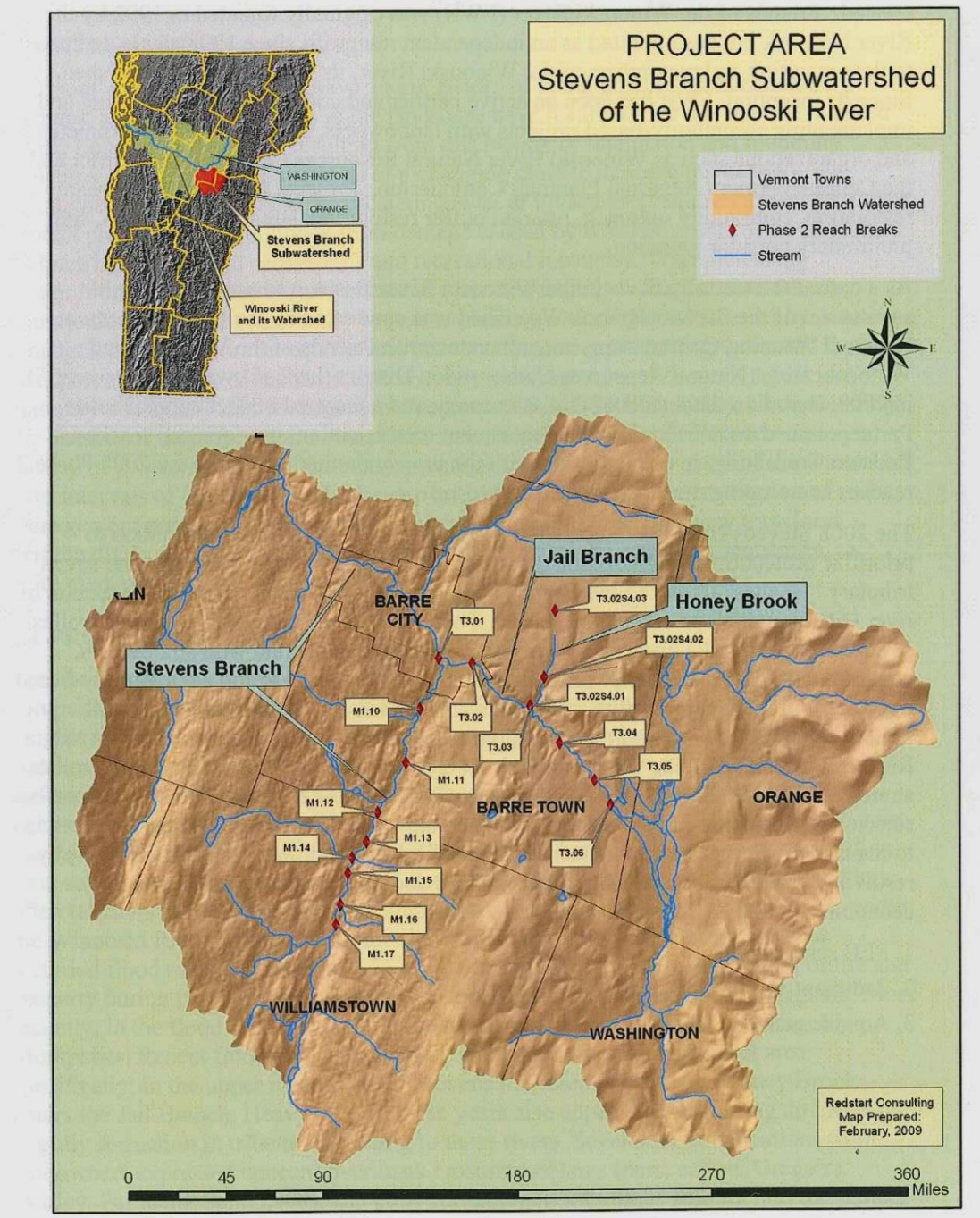


Figure 1. Six mainstem and seven tributary reaches included in the Stevens Branch Corridor Planning process. Inset shows the location of this area in terms of the entire State.

Source: 2009 Stevens Branch River Corridor Management Plan

Strategies & Priority from the Stevens/Jail Branch River Corridor Plan

M1.12 – Reach M1.12 is 3,126 feet long in total, beginning in the Town of Barre and continuing into the Town of Williamstown. (Page 109)

- **Protect River Corridor (High)**
- **Plant Stream Buffer (Low)**
- **Replace Existing Bridge Structures (Low)**

M1.13 – Reach M1.13 is 2,714 feet long and was not segmented, although the lower half is somewhat more confined and shows some evidence of straightening. The valley has been considerably narrowed by Route 14 encroachment and development. The upper half of the reach has a wider valley and more natural planform. (Page 110)

- **Protect River Corridor (High)**
- **Plant Stream Buffer (Low)**

M1.14 – Reach M1.14 is 1,812 feet long and was not segmented. The valley has been somewhat narrowed by Route 14 encroachment and development. Agriculture dominates the land use on the west side and encroachment and development dominate the east side. (Page 113)

- **Protect River Corridor (High)**
- **Plant Stream Buffer (Moderate)**
- **Replace Existing Bridge Structures (Moderate)**

M1.15 – Reach M1.15 is 4,464 feet long and has two segments, 3,611 and 853 feet in length. This reach has the widest valley of any reaches assessed in the 2008 study, and soil maps show almost all of the valley to be hydric soils; land use/land cover maps show much of the east side valley to be forested wetland. (Page 115)

- **Protect River Corridor (High)**
- **Plant Stream Buffer (Moderate)**
- **Remove Berm (High)**
- **Replace Existing Bridge Structures (Moderate)**

M1.16 – Reach M1.16 is 2108 feet long and has three segments of 794ft, 622ft and 692ft (Fig 41). This reach is distinctly different from the other reaches assessed in 2008 on the Stevens Branch mainstem. (Page 120)

- **Protect River Corridor (Moderate)**
- **Replace Existing Bridge Structures (Moderate)**

HAZARDOUS MATERIALS

The Vermont Department of Environmental Conservation's (DEC) Waste Management and Prevention Division regulates solid and hazardous waste management facilities to prevent waste generation, to minimize impacts to the environment and human health, and to remediate, restore and redevelop contaminated sites to sustain community vitality. The Waste Management and Prevention Division oversees the use, treatment and handling of hazardous and solid wastes. The Division performs emergency response for hazardous materials spills, issues permits for federal and state programs regulating hazardous wastes, solid wastes, and underground storage tanks, and manages cleanup at hazardous sites under state and federal authorities, including the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA, also known as Superfund).

Tier II Sites

Submission of Tier II forms are required under Section 312 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). The purpose of this form is to provide State, local officials, and the public with specific information on potential hazards. This includes the locations, as well as the amount, of hazardous chemicals present at your facility during the previous calendar year.

Due to the quantity of stored hazardous materials, Tier II sites are required to report to Vermont Emergency Management. According to the EPA website, Tier II sites are locations which have a release of a hazardous substance, pollutant, or contaminant that has caused, or is likely to cause, human exposure or contamination of a sensitive environment. These sites typically involve contamination of drinking water, surface water, air, or soils which has either caused, or is likely to cause, exposure to nearby populations, or has contaminated, or is likely to contaminate, sensitive environments (such as wetlands, national parks, and habitats of endangered species, etc.).

<u>Risk Assessment</u>

There are four Tier II sites within Williamstown (See Hazard Analysis Map. They are:

- New Cingular Wireless, 1025 Stone Road
- Pike Industries, 93 VT Route 14
- Student Transportation of America, 185 Ferno Road, Suite 1
- Verizon Wireless Brookfield, Stone Road

Active Hazardous Sites

According to the *Toxics In Vermont: A Town-by-Town Profile* report by the Toxics Action Center, hazardous waste sites are areas where a release of hazardous materials has occurred and where it has been determined that further investigation is necessary. DEC's Sites Management Section (SMS) provides State oversight for the investigation and cleanup of properties where a release of a hazardous material has contaminated the environment, including soils, groundwater, surface water, and indoor air. A list of properties being managed under this program can be found in two online databases - the Environmental Research Tool (ERT) and the Agency of Natural Resources Atlas.

Risk Assessment

According to the VT Department of Environmental Conservation's (DEC) Solid Waste Management Division, there are 16 active hazardous sites in Williamstown. The following is a list that indicates the release of hazardous materials in Williamstown that are still active. In the event of a hazardous materials spill, local responders are required to report incidents to Vermont Emergency Management. The closest hazmat apparatus is located 60 miles away in Milton. The closest hazmat de-contamination trailer is located 10 miles away at the Berlin Fire Department.

The following list indicates the release of active hazardous materials spills in Williamstown.

History of Occurrences:

Date	Material	Amount	Unit	Location
4/13/2018	Kerosene	100	Gallons	Caroline DeForge Residence

5-Year Plan Review/Maintenance Process

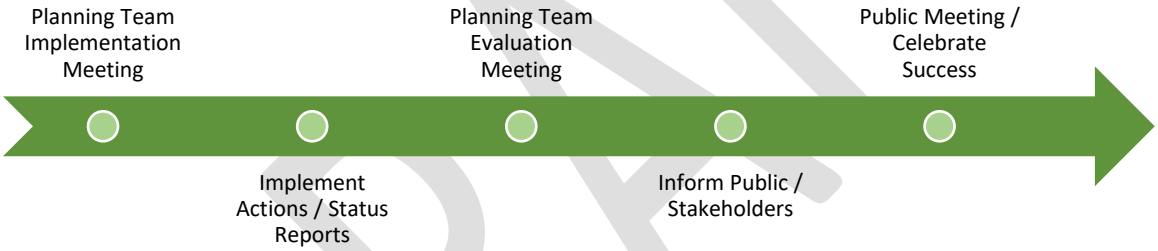
- Brief local leadership on plan approval
- Formally adopt plan
- Publicize plan approval and adoption
- Celebrate success

- Confirm/clarify responsibilities
- Integrate mitigation actions
- Monitor and document implementation of projects and actions
- Establish indicator of effectiveness or success

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

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

After Plan Adoption – Annually Implement and Evaluate



Fifth Year, and After Major Disaster Evaluate and Revise

Town Resolution Adopting the Plan

CERTIFICATE OF ADOPTION

<<DATE>>

Town of Williamstown, Vermont Selectboard

A resolution adopting the Town of Williamstown, Vermont 2019 Local Hazard Mitigation Plan

WHEREAS, the Town of Williamstown has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the 2019 Williamstown, Vermont Local Hazard Mitigation Plan, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Williamstown has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its 2019 Williamstown, Vermont Local Hazard Mitigation Plan (Plan) under the requirements of 44 CFR 201.6; and

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

WHEREAS, the Plan recommends several hazard mitigation actions (projects) that will provide mitigation for specific natural hazards that impact the Town of Williamstown with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Town of Williamstown eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by Town of Williamstown Selectboard:

1. The 2019 Williamstown, Vermont Local Hazard Mitigation Plan is hereby adopted as an official plan of the Town of Williamstown;

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

3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and

4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITHNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Williamstown on this ____ day of _____ 2019.

_____ _____

Selectboard Chair Selectboard Member

_____ _____

Selectboard Member Selectboard Member

_____

Selectboard Member

ATTEST

_____

Town Clerk