Town and Village of Marshfield, VT

Local Hazard Mitigation Plan

Date of Selectboard Adoption: August 31, 2021 Date of Village Trustees Adoption: September 22, 2021
Date of FEMA Final Approval: October 5, 2021

Prepared by the Town/Village of Marshfield
with assistance from the Central Vermont Regional Planning Commission

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1. Introduction

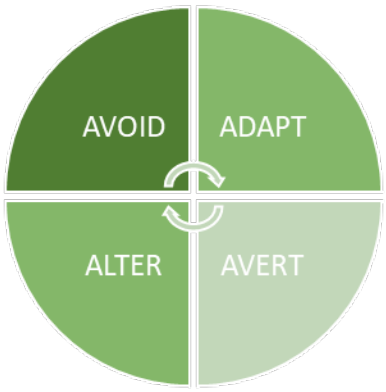
In accordance with the Stafford Act, municipalities may perform mitigation planning and be eligible to receive increased federal funding for hazard mitigation measures. (42 U.S.C. 5165).

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 Marshfield 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 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 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.

2. Purpose

The purpose of this Local Hazard Mitigation Plan is to assist the Town and Village of Marshfield in recognizing hazards facing the region and their community and identify strategies to begin reducing risks from acknowledged hazards. Throughout this document, references to "Marshfield" include both the town and village; references to the "village" refer only to the incorporated area of Marshfield Village.

The 2021 Marshfield Local Hazard Mitigation Plan is an update of the 2015 Local Hazard Mitigation plan approved by FEMA on 01/15/16. This Local Hazard Mitigation Plan assists Marshfield to catalogue hazards facing the region and community, and to identify strategies that reduce risks from acknowledged hazards based on current information. The Town reviewed, evaluated, and revised the 2015 plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities. New information has been incorporated into the plan, making it up to date, stronger, and more useful to Town officials and residents who will implement the actions and measures going forward. Implementation of this plan will make Marshfield more resistant to harm and damages in the future, and will help to reduce public costs.

Marshfield strives address the strategies, goals and objectives of the State Hazard Mitigation Plan (SHMP), 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 2021 plan has been reorganized and new sections have been added regarding:

- Information from the 2015 plan was updated.
- The Plan Update Process was updated
- Plan Maintenance activities were updated
- Hazards reflecting the community's priorities were updated.
- The Local Areas of Concern Map was updated to reflect new information.
- Status update of 2015 mitigation strategies was reviewed and documented
- The new mitigation strategies section was updated and enhanced to reflect current priorities and intended actions of the community over the next five years.

The long term and overall goal of this plan is to protect life and property from harm/damages caused by natural and man-made disasters.

3. Community Profile

3.1 Geography

The Town and Village of Marshfield is located in Washington County in Northeastern Vermont. Although the two are separate municipalities, the two are socially, economically, and politically intertwined. Village residents are also town residents, but not all town residents are village residents. Marshfield Village is located wholly within the boundaries of the Town of Marshfield and the Village's sole responsibility is operating the Village water and wastewater systems. Throughout this document, references to "Marshfield" include both the town and village; references to the "village" refer only to the incorporated area of Marshfield Village.

Figure 1: Martin Covered Bridge. Source: Town of Marshfield, Photo by Bill Bowden

Marshfield is bounded by the Towns of Plainfield, Groton, Peacham, East Montpelier, Calais, and Cabot, and contains approximately 27,904 acres, or 43.6 square miles, of land. It is about 74 percent forested, with only about 2.6 percent of its land area developed. Approximately 12% percent of Marshfield's land area is cropland, pasture, or open land and another 6% is formerly open land in the process of reverting to forest. Wetlands (including only those mapped by the state) and surface waters comprise about 5.4 percent of the Town's total area.

Marshfield's landscape today was created by a decline in agriculture, the return of the forests, a growth in population and the introduction of conservation zoning and land protection programs. Also significant has been the increasing conversion of the town into a bedroom community of residents who commute to employment opportunities in larger towns. This has led to the building of houses in forests and fields, fragmenting the landscape for agriculture, forestry and wildlife.

Marshfield's water resources are a large, interconnected hydrologic system of aquifers, lakes, ponds, streams, rivers (collectively known as surface waters) and wetlands. In addition, riparian areas and floodways provide protection for Marshfield's surface waters. There are approximately 12.5 miles of river on the main stem of the Winooski River as it runs thru Marshfield. The majority of stream miles are small 1-3rd order streams. There are seven named streams in Marshfield, and numerous small unnamed streams including the stream along Creamery Road. There are a number of surface waters that serve as important recreation areas in Marshfield. Swimming, boating and/or fishing are important uses of the Marshfield Reservoir, Turtlehead Pond, Bailey Pond, Kettle Pond and Peacham Pond.

3.2 Development Patterns

According to the 2019 Census Bureau estimates, the Town of Marshfield has a population of 1,422 people living in 685 housing units. Marshfield saw a peak in its population and number of housing units around 2010, and between 2010 to 2019 there has been a 10% decrease in total population. Approximately 90% of the working residents of Marshfield Town work in Washington County. Most of that work is outside of the Village, as 22.9% of working Village residents are employed within the Village of Marshfield. (US Census Bureau ACS, 2019).

Historically in Marshfield, as in many Vermont towns, the villages have been the focal point of commerce, industry, social and civic life. Accordingly, infrastructure and population have been concentrated in these areas. The surrounding countryside and forests supplied the raw materials (e.g., lumber, wool, grains, milk, vegetables, etc.) needed by the people and industries of the villages. The village and countryside were physically distinct and served distinctly different functions. The 2019 Census population estimate of Marshfield Village is 284 people, with a total of 127 housing units. Now, with few Marshfield residents working in Town, only a small number of retail establishments, and no large employers, Marshfield has clearly evolved into a "bedroom community." Only 4 new housing units were built since 2000 in the Village versus 121 new units town-wide (US Census estimate, 2019). While people value their independence, there is a desire to maintain and improve the rural character, vibrant villages, conservation of

natural resources, and efficient management of public resources with concentrated development patterns

3.3 Utilities and Facilities

Marshfield residents along the Route 2 corridor receive their power from Green Mountain Power Corporation (GMP), while those in the hills are supplied by the Washington Electric Cooperative (WEC). GMP is the region's largest utility. WEC is a member-owned utility managed by an elected, nine-member board. GMP operates a 5 mw hydroelectric station located on the Cabot Road.

There is a public water supply for the Village of Marshfield. The public water supply for the Village emanates from a groundwater spring off Folsom Hill Road, not from a surface water (see subsection on Groundwater for protections for springs and groundwater). The Village transferred to this spring at the urging of the federal Environmental Protection Agency (EPA). When the Village went to bring the spring on line in 2001, it was discovered that the spring water had elevated levels of naturally occurring uranium. To address this issue, the Village extracts the uranium from the spring and then discharges the rinse water into a permitted septic system. There is also a public water supply for Twinfield Union School. While the Village of Marshfield has a public water supply that serves the village residents, the majority of Marshfield residents are served by private wells that tap groundwater. While not subject to the same rules as public water sources, private wells in the eastern portion of town drilled into the granite bedrock may have elevated uranium levels and the 2018 Town Plan states "*residents may wish to have water…tested to determine if the uranium level is safe.*"

The Marshfield Wastewater Treatment Facility, located near the Schoolhouse Common, serves over 100 residences, 5 commercial establishments, and 6 "other" users in the Village of Marshfield. It has a design capacity of .45 mgd (million gallons per day), an average daily flow of .214 mgd, a committed reserve of .018 mgd, and an uncommitted reserve of .218 mgd. With an uncommitted reserve exceeding its current flow, the system appears to have the capacity to accommodate a significant amount of new development.

The Village system operates under a permit from the State of Vermont. Effluent is monitored daily to ensure that discharges are within allowed limits. According to Village ordinance, no on-site septic systems are allowed within the Village limits. Due to current state law, any new connection or any increase in use (such as adding a bedroom or an apartment) must be approved by the Village and also requires a State permit. A schedule of user rates and connection fees is available from the Village Clerk.

In 2010 and 2011, sludge was removed from the two lagoons and, because it contained uranium that had been captured from the new Village water system during the years 2001-2003, was disposed of at a lined landfill. The cost of this procedure was approximately $74,000. Sludge from the next cleanout, scheduled for 2030 but is monitored every fall, may be disposed of to a land fill in the US or Canada or resurfacing at the Asbestos mine in Asbestos, Canada. Land application is no longer an option.

The Plainfield Wastewater Treatment Facility serves some users within the south-western end of Marshfield. It has a design capacity of 0.125 mgd and an average daily flow of approximately .05 mgd. The system has the potential to accommodate some new growth, and a recent change to the ordinance resulted in new connections becoming available for the Marshfield properties serviced by the Plainfield sewer system. Almost 70 percent of Marshfield households depend on on-site treatment of septic wastes.

3.4 Public Safety

The Fire Department celebrated its 100th anniversary in 2009. In 2020, the Department responded to 68 calls, with the majority (20) being motor vehicle accidents. The Fire Department has one pumper (1992) and one tanker (1996 – currently being refurbished). The Fire Department also purchased the town pickup to use in non-fire emergencies. The fire-fighters are volunteers, with mutual aid among the towns of Cabot, Plainfield, Walden and East Montpelier. Ambulance service is provided by Cabot Emergency Ambulance Service and the Plainfield FAST squad. The service also responds to calls from Cabot, Walden and Plainfield. East Montpelier Ambulance Service provides backup.

Marshfield is part of the Statewide E-911 program. All roads have received official names and all residences a number to allow emergency service providers to find callers even if they are unable to give their location. The state police are also relied upon to provide services and Washington County sheriffs provide speed control on Route 2.

The Town of Marshfield has an approved Local Emergency Management Plan updated in 2021. The Twinfield Union School, Old Schoolhouse, Christ Covenant Church, Masonic Lodge, and Fire Station serve as the Town's emergency shelters and the Fire Station is the Emergency Operations Center.

3.5 Municipal Plan

The Town Plan was adopted in 2018 and includes a discussion and goals in regards to surface waters, wetlands, flood hazard and riparian areas, groundwater, land use, sewage treatment, water supply, health and emergency services, and community services. The 2007 Zoning Regulations, amended by Town Vote in 2009, 2010, and 2016

includes a Flood Hazard District (formerly titled Floodplain and Water Conservation District), Forestry and Conservation District, Village District, Agricultural and Rural Residential District, and a Water Conservation Overlay District and standards in regards to steep slopes. Planning, zoning and emergency management functions in the Town of Marshfield also have jurisdiction over Marshfield Village.

3.6 National Flood Insurance Program

Since 1984, Marshfield has participated in the National Flood Insurance Program (NFIP) in a limited capacity under the Emergency Program. In 2013, official Digital Flood Insurance Rate Maps became available, with the DFIRM effective March 19, 2013. Using this data, there are 35 structures in the 100 year flood plain; including 1 public structure. There are no repetitive loss properties in Marshfield. There are 6 policies in the Town and 5 policies in the Village.

Marshfield's Flood Hazard District Regulations apply to all areas in the Town and Village designated as Special Flood Hazard Area (SFHA) on the DFIRM. Per the Regulations, permit is required for any proposed construction or development in the SFHA. Marshfield's Zoning Administrator serves as the Administrative Officer, and submits permits to ANR for review. The Administrative Officer maintains records of all permits issued for development in the SFHA, Elevation Certificates, and other required records and documents.

3.7 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:

- Participate in the National Flood Insurance Program (NFIP).
- Adopt Town Road and Bridge Standards that meet or exceed the VTrans template.
- Adopt a Local Emergency Management Plan which is renewed and adopted annually.
- 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:

- Adopt ANR's River Corridor bylaws, or

- Enroll in the NFIP's Community Rating System CRS)[1], whereby the community must earn credit under Activity 430.[2]

At the time this plan was developed, Marshfield had an ERAF rating of 7.5%. Marshfield has taken the following steps to reduce flood damage by:

- Participating in the National Flood Insurance Program,
- Adopting Town Road and Bridge Standards that meet or exceed the VTrans 2019 Template,
- Adopting a Local Emergency Management Plan which is renewed and adopted annually,

The Town looks forward to the adoption and approval of this Local Hazard Mitigation Plan to reduce flood damage and increase the Town's ERAF to 12.5%.

4. Planning Process and Maintenance

4.1 Planning Process

Village residents are also town residents, but not all town residents are village residents. Throughout this document, references to "Marshfield" include both the town and village; references to the "village" refer only to the incorporated area of Marshfield Village. Unless otherwise specifically stated as Town or Village, "Marshfield" refers to the entire planning area.

The Central Vermont Regional Planning Commission (CVRPC) coordinated the Marshfield Local Hazard Mitigation Plan process. For the purposes of plan development, all meetings were held during Marshfield Selectboard meetings.

Announcement of the Marshfield Hazard Mitigation planning effort was circulated in March 2021 CVRPC staff reports which are distributed via email to Commissioners from all 23 communities and was posted on the CVRPC web site prior to the March 16 kick off meeting.

At the March 16,2021 Selectboard meeting, Grace Vinson, Planner, facilitated an online kick off meeting to formally start the update process, summarizing the hazard mitigation plan update process and project timeline.

[1] 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.
[2] Activity 430 (Higher Regulatory Standards) is the primary CRS activity for crediting floodplain development regulations that are more restrictive than the NFIP requirements.

Following the kick off meeting, Grace Vinson developed an online survey through Survey Monkey about hazards and emergency planning. This survey was opened on March 26, 2021 and closed on April 30, 2021). CVRPC distributed information on the survey through the Weekly News blast and its website, and the Town posted information on the Town website and Front Porch Forum. There were 20 respondents. A summary of results is included in **Attachments**. Grace Vinson also attended the Town Meeting Informational Meeting on March 30, 2021 to provide a summary of the LHMP update process and encourage residents to complete the online LHMP survey.

At the April 26, 2021 Selectboard meeting, survey responses were discussed and the team discussed a preliminary list of hazards affecting Marshfield. Grace Vinson led the Selectboard in a hazard identification and ranking process.

Preparation for the hazard identification meeting included a review multiple plans and documents including but not limited to the Marshfield 2015 LHMP, Town Plan (Town and Village), Marshfield 2021 Emergency Management Plan (Town and Village), 2020 Town Report (Town and Village), and the Upper Winooski River Corridor Plan for the Town of Marshfield (2008, Town and Village). Information from these documents is incorporated into various sections of this plan.

The meeting indicated that the Town and Village are most vulnerable to:

- Fluvial Erosion/Inundation Flooding/Flash Flooding
- Severe Winter Storms (Cold, Snow, Ice)
- High Wind
- Dam Failure
- Pandemic
- Highway Transport/Accident

Marshfield is now focusing on flooding hazards as high priority as these events are the most common and most destructive.

At the May 18, 2021 Selectboard meeting, Grace Vinson led the team through the vulnerability assessment process.

At the June 1st, 2021 Selectboard meeting, Grace Vinson discussed 2021 mitigation strategies.

At the June 15, 2021 Selectboard meeting, Grace Vinson and the Selectboard finalized 2021 mitigation strategies and discussed mitigation goals and the 2021 maintenance process.

See **Table 1** for a list of Planning Team members and meeting topics. All meetings were held virtually due to the COVID-19 pandemic.

Table 1: LHMP Planning Team Members

- Rich Baker, Selectboard Chair (Town)
- Chris Martin, Selectboard (Town)
- Michele Gonzales, Selectboard (Town)
- Bobbi Brimblecombe, Town Clerk
- Tim Maclay, Fire Warden (serves Town and Village)
- Will Schwarz, Fire Chief (serves Town and Village)

LHMP Selectboard Meetings

Meeting 1: 03/16/21
- Refresher on scope and process, project timeline, and role of the planning team

Meeting 2: 04/20/21
- Hazard identification, overview of survey results

Meeting 3: 05/18/21
- Vulnerability Assessment

Meeting 4: 06/01/21
- Mitigation Strategies

Meeting 5: 06/15/21
- Mitigation Strategies, Maintenance Process

Meeting 7: 07/28/21
- Meet with Village Trustees to discuss LHMP process and draft LHMP

Meeting 6: 08/17/21
- Review VEM comments

Meeting 7: 9/21/21
- Adopt Plan

Once the draft was updated, CVRPC placed a notice for public comments of the draft update on the CVRPC blog and newsletter. The draft update was available at Marshfield Town Hall and by request from CVRPC for public review and comments from June 21st to July 5th. The announcement of the draft update in the CVRPC newsletter reached over 150 people and businesses in the Region's 23 towns, including the adjacent municipalities of East Montpelier, Calais, Plainfield, Cabot, Groton, and Peacham.

No public comments were received. Public comments submitted in the future, will be reviewed by the Selectboard (and CVRPC Staff dependent on funding) and attached as an appendix. In the future, the draft plan will be made available during Town Meeting Day and local meetings with state and local officials to allow for more public comment and review. City Council Orientation and local meetings with State and local officials to allow for more public comment and review.

Grace Vinson presented information to the Marshfield Village Trustees on July 28, 2021 regarding the LHMP process and the draft LHMP hazards and mitigation actions. At the August 17 Selectboard meeting, Grace Vinson reviewed VEM comments and the Selectboard approved edits to prepare the final draft for VEM Approval Pending Adoption. On August 25, 2021, the plan was sent to VEM for final review and consideration of issuing an approval pending adoption. The plan was issued an Approval Pending Adoption from VEM on August 27, 201.The Town adopted the LHMP at their August 31, 2021 Selectboard meeting. The Village Trustees adopted the plan at their September 22, 2021 Trustees meeting.

Table 2: List of individuals who were invited to comment on the plan

Organization	*Name, Position*	*Email*
Vermont Emergency Management (VEM)	Caroline Massa, State Hazard Mitigation Planner	Caroline.Massa@vermont.gov
Vermont Emergency Management (VEM)	Stephanie Smith, State Hazard Mitigation Officer	stephanie.a.smith@vermont.gov
Vermont Emergency Management	Ben Rose, Recovery and Mitigation Section Chief	ben.rose@vermont.gov
Vermont Emergency Management	Josh Cox, Critical Infrastructure Planner	josh.cox@vermont.gov
Central Vermont Regional Planning Commission	Grace Vinson, Planner	vinson@cvregion.com
Vermont Department of Environmental Conservation (DEC)	Ned Swanberg, Regional Floodplain Manager	ned.swanberg@vermont.gov
Vermont DEC	Gretchen Alexander, Regional Rivers Scientist	gretchen.alexander@vermont.gov
Vermont DEC	Eric Blatt, Division Director	Eric.Blatt@vermont.gov
Vermont DEC	Rob Evans, River Corridor and Floodplain Manager	rob.evan@vermont.gov
Vermont Department of Forests, Parks & Recreation (FPR)	Dan Singleton, Washington County Forester	dan.singleton@vermont.gov
Vermont DEC	Benjamin Green, Dam Safety Engineer	Benjamin.Green@vermont.gov
Robin Schunk	Planning Commission Chair	MarshfieldVTPC@gmail.com
Will Schwarz	Fire Chief	wsj@fairpoint.net

Table 2: List of individuals who were invited to comment on the plan		
Organization	*Name, Position*	*Email*
Twinfield Union School	Mark Mooney, Principal	mark.mooney@ccsuvt.net
Green Mountain Power	Brenda Spafford	Brenda.Spafford@greenmountainpower.com
Washington Electric Coop, Inc.		802-223-5245
Washington County Sheriff's Department	W. Samuel Hill	samuel.hill@vermont.gov
Vermont State Police, Middlesex Barracks	Lieutenant David White	david.white@vermont.gov
Local Emergency Planning Committee 5	Joe Aldsworth, Chair	chair.lepc5@gmail.com
Winooski Conservation District	Remy Crettol, District Manager	remy@winooskinrcd.org
Friends of the Winooski Watershed	Michele Braun, Executive Director	michele@winooskiriver.org

Table 3: List of surrounding communities who were invited to comment on the plan			
Municipality	*Person*	*Role*	*Email*
Town of East Montpelier	Rosie Laquerre	Town Clerk	clerk@eastmontpeliervt.org
Town of Calais	Judy Fitch Robert	Town Clerk	calais.townclerk@gmail.com
Town of Plainfield	Linda Wells	Town Clerk	plainfieldtc@gmail.com
Town of Cabot	Betty Ritter	Town Clerk	tcocabot@gmail.com
Town of Groton	Carrie Peters	Town Clerk	townclerk@grotonvt.com
Town of Peacham	Thomas Galinat	Town Clerk	info@peacham.net

4.2 Existing Mitigation, Maintenance and Preparedness Programs, Projects & Activities

The ongoing or recently completed programs, projects and activities are listed by mitigation strategy and were reviewed for the development of the plan. The Town Plan (2018) Town Report (2020), Zoning Regulations (2016), Local Emergency Management Plan (2021), CVRPC Regional Plan (2018), and past newspaper articles were reviewed for pertinent information. Numerous documents and reports and the VT State Hazard Mitigation Plan (2018) were reviewed as well for information and future mitigation projects. Marshfield also adopted Road and Bridge Standards in 2019 with the purpose

of increasing the likelihood that town roads and bridges will hold up during flooding and heavy rain events.

Table 4: Status of Existing Mitigation Programs, Projects, and Activities			
	Type of Existing Authority / Policy / Program / Action	*Resources: Staffing and Funding*	*Ability to Expand/ Improve upon*
Community Preparedness Activities	Current Local Emergency Management Plan – 2021	Selectboard/EMD/ CVRPC	Adopted annually
	Marshfield Dam Hazard Evacuation Plan – 2011	See current EAP in 2021 LEMP	No need
Insurance Programs	Program – Marshfield will remain as a participant in the National Flood Insurance Program (NFIP).	Planning Commission	Continue to maintain flood hazard regulations and updating to comply with NFIP
Land Use Planning/District and General Use Standards	Steep Slope Standards: Section 303 – No land development is allowed on slopes greater than 25%. A conditional use permit is required from the Development Review Board for land development on slopes between 15% and 25%. The application of slope criteria is limited to the area of the parcel where the proposed development and use activities will occur.	Planning Commission	No need to expand/improve upon
	Forestry and Conservation District: Section 430 – Includes all of the land in the Town of Marshfield that is not included in other districts. Where Forestry and Conservation District boundaries are uniformly setback from the existing Town Roads, the setback shall be 600 feet from the public road. The district is a largely unsettled part of Marshfield outside those areas that have traditionally served for residential and agricultural uses.	Planning Commission	No need to expand/improve upon

Table 4: Status of Existing Mitigation Programs, Projects, and Activities			
	Type of Existing Authority / Policy / Program / Action	*Resources: Staffing and Funding*	*Ability to Expand/ Improve upon*
	Water Conservation Overlay District: Section 450 – Includes all lands along all streams (as defined in this ordinance) that are within 75 ft. horizontal distance measured from the top of slope, where the channel runs adjacent to a valley wall or high terrace, or top of bank, where the channel has access to its floodplain, or within 125 ft. of these waters if the slopes of the water or area to be developed is 15 degrees or more. The District also includes all lands along ponds over 5 acres in size that are within 75 ft. horizontal distance measured from the mean water level, or within 125 ft. of these waters if the slopes of the water or area to be developed is 15 degrees or more. No land development and no clearing of land is permitted except for certain activities listed	Planning Commission	No need to expand/improve upon
	Flood Hazard District-Section 440 - Limits construction of structures in floodplain areas designated within the Flood Insurance Rate Map for Marshfield	Planning Commission	Continue to maintain flood hazard regulations and updating to comply with NFIP
Hazard Control and Protection of Critical Infrastructure & Facilities	Maintenance Programs (Culvert Survey & Replacement)	CVRPC	Periodic culvert surveys conducted by CVRPC
	Program: Maintain Capital Mutual Aid System	Fire Dept.	Ongoing
	Program: Auto Response Arrangement with Cabot and Plainfield	Fire Dept.	Ongoing
	Dry Fire Hydrant Program	Fire Dept.	Ongoing

Table 4: Status of Existing Mitigation Programs, Projects, and Activities			
	Type of Existing Authority / Policy / Program / Action	*Resources: Staffing and Funding*	*Ability to Expand/ Improve upon*
Protection/ Retrofit of Infrastructure and Critical Facilities	Back-up generators at the Town's Emergency Operations Center and Fire Dept.	Backup generator purchased for Fire Station, Town Garage, and Town Offices	No need to expand upon
	Backup generator for Wastewater Treatment Plant	WWTP	Purchased following 2011 flooding. No need to expand upon- portable fuel tank is also available if fuel is needed in an emergency.
	Cement blocks raising wing walls at culvert/bridge near WWTP	WWTP	Installed following 2011 flooding to prevent overflow. No need to expand/improve upon.
Education/Public Outreach	Program: Fire Prevention Week	Fire Dept.	Ongoing

4.3 Plan Maintenance

The Marshfield Planning Commission (or other Town staff as capacity allows) will conduct monitoring with support of CVRPC as funding allows. CVRPC will create and send a template to track implementation of 2021 mitigation actions over time. CVRPC will send an annual reminder of monitoring and Town staff will meet annually to complete this template.

Marshfield is also interested in enhancing the LHMP evaluation process. CVRPC and the Selectboard/Planning Commission will develop a template to track these metrics, and the Planning Commission will meet annually to fill in information. CVRPC will send annual reminder to the Planning Commission. This template is intended to be revised as needed to add additional metrics. See **Attachments** for a draft template.

As stated above, the Marshfield LHMP will be updated and evaluated annually at a Planning Commission meeting. Updates and evaluation will also occur within three months after every federal disaster declaration and as updates to town plan/zoning and

river corridor plans come into effect. Prior to the end of the five-year period, the plan will be undergoing a formal update and submitted to FEMA for re-adoption following the process outlined in the schematic found in the Attachments section. CVRPC will help with updates or if no funding is available, the Town will update the plan or seek outside resources (state grant).

The process of evaluating and updating the plan will include continued public participation through public notices posted on the municipal website, notice in the municipal building, Front Porch Forum, and CVRPC newsletter and blog inviting the public to the scheduled Planning Commission meeting. Additional stakeholders invited to the meeting will be Town residents, and representatives from the Selectboard. Also invited in the future will be the VT Agency of Natural Resources (VT ANR), as it is able to provide assistance with NFIP outreach activities, models for stricter floodplain zoning regulations, delineation of river corridor areas, and other applicable initiatives. These efforts will be coordinated by the Planning Commission with assistance from CVRPC as funding is available.

Marshfield shall also incorporate mitigation planning into its long term land use and development planning documents. It is recommended the Town review and incorporate elements of the LHMP when updating the municipal plan, zoning regulations, and flood hazard bylaws. The incorporation of the LHMP into the municipal plan, zoning regulations and flood hazard bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing future Upper Winooski Corridor planning documents and Tactical Basin Plans for ideas on future mitigation projects and hazard areas and opportunities to pursue multiple community priorities, co-benefits, and funding for hazard mitigation The 2018 Winooski Tactical Basin Plan is scheduled to be updated by 2023.

In subsequent plan update processes, as the schedule allows, the draft plan will be made available during Town Meeting Day and local meetings with State and local officials to allow for more public comment and review. Public comments submitted will be reviewed by the Town Clerk (and CVRPC staff dependent on funding) and attached as an appendix. After Approval Pending Adoption, the plan will go before the Selectboard for adoption.

4.4 Status of Prior Plan's Mitigation Actions

Table 5: Mitigation Actions from the 2015 LHMP and 2021 Completed and in progress actions	
Mitigation Action	*2021 Status*

Table 5: Mitigation Actions from the 2015 LHMP and 2021 Completed and in progress actions	
Education & awareness campaign for new flash flood warning system (Town and Village)	Town has VT Alert account but would like training and more awareness. Move to 2021 list
Identify proper site for Town equipment storage with access to fuel in advance of flood event (Town and Village)	Several potential locations identified but need formal list or map. Move to 2021 list
Upgrade and replace culverts identified in attachment (Town and Village)	Several culverts have been upgraded since 2015 including culvert on Jake Martin Road
Replace US Route 2 culvert (C83) to accommodate potential emergency dam release (Town and Village)	State culvert- Marshfield has no authority over this culvert
Upgrade Marshfield Dam spillway, maintain communication systems (Town and Village)	In progress through GMP
Update vulnerable population survey (Town and Village)	Move to 2021 list
Install Transfer Switch and/or generator at Town Offices (Town and Village)	Backup generator purchased for Fire Station, Town Garage, and Town Offices in 2018
Install Transfer Switch and/or generator Twinfield Union School (Town and Village)	Status unknown
Identify Christ Covenant School as additional Emergency Shelter (Town and Village)	Complete
Acquire rescue vehicle; expand the Fire House (Town and Village)	Pick up purchased with ability to respond during storms and clear roads

5. Community Vulnerability by Hazard

5.1 Hazard Identification

The following natural disasters were discussed and the worst threat hazards were identified based upon the likelihood of the event and the community's vulnerability to the event. Hazards not identified as a "worst threat" may still occur in Marshfield. Greater explanations and mitigation strategies of moderate threat hazards can be found in the State of Vermont's Hazard Mitigation Plan.

Hazard impacts were rated on their probability and potential impact to infrastructure, life, economy, and environment. The impact was then averaged, and multiplied by the probability to develop a score to compare hazard impacts in Marshfield. For information regarding the ranking criteria, please refer to **Table 6.**

Table 6: 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 7: 2021 Marshfield Hazard Table							
Hazard Impact	**Probability**	**Potential Impact**					**Score ***
		Infrastructure	Life	Economy	Environment	Avg.	
Highway Transport/ Accident	4	2	3	2	3	2	8
Cold	4	1	3	2	2	2	8
Fluvial Erosion/ Inundation Flooding/Flash Floods	3	3	2	2	3	2.5	7.5
Pandemic	3	2	3	4	1	2.5	7.5
Dam Failure	2	4	4	2	4	3.5	7
Snow	4	1	2	2	1	1.75	7
Ice	3	3	2	2	2	2.25	6.75
Wind	3	2	2	1	2	2	6
Heat	3	1	2	2	2	2	5.25
Drought	2	1	2	2	3	2	4

Table 7: 2021 Marshfield Hazard Table							
Hazard Impact	**Probability**	**Potential Impact**					**Score ***
		Infrastructure	Life	Economy	Environment	Avg.	
Invasive Species	2	1	1	2	3	1.75	3.5
Landslides	2	2	2	1	1	1.5	3
Wildfire	1	3	3	3	3	3	3
Hail	3	1	1	1	1	1	3
Earthquake	1	3	3	3	3	3	3

*Score = Probability x Average Potential Impact

The Town and Village of Marshfield identified the following disasters as presenting the worst threat to the community:

- Flash Flooding/Fluvial Erosion/Inundation Flooding
- Severe Winter Storms (Snow, Cold, Ice)
- Dam Failure
- High Wind
- Pandemic
- Highway Transport/Accident

The Town and Village of Marshfield are interested in focusing a majority of mitigation efforts into reducing impacts from flooding, as the events occur most frequently, severely and cause the most damage to public and private infrastructure.

Other hazards not identified as worst threat may still occur in Marshfield, but the Town decided to prioritize the above hazards as they pose a consistent, historical threat with a large impact to most Marshfield residents. The Town recognizes that the hazards of wildfire, heat, earthquake, landslide, and hail may pose a threat to Marshfield residents, but due to a lack of consistent historical occurrences and lower potential impact, these hazard impacts have been excluded from this plan. A review of the Vermont State Hazard Mitigation Plan of November 2018 provides a greater explanation of these hazards and possible mitigation strategies to address them.

Like the State of Vermont Hazard Mitigation Plan, Marshfield did not include the following hazards in the risk and vulnerability assessment due to the low occurrence, low vulnerability, and or geographic proximity: civil disturbance, coastal erosion, expansive soils, karst topography, sinkholes, tsunami, and volcano.

The 2021 update to the 2015 LHMP continues to rank flooding as the worst threat hazard, and added pandemic as a new hazard. As described in the Community Profile,

development occurs at a slow pace in the Town/Village, and primary threat hazards have not changed. The exception to this is the addition of Pandemic as a new hazard. The primary change in priorities since the previous plan is the need to be better prepared to withstand and recover from infectious diseases after lessons learned from COVID-19. The Town has seen the potential impact of infectious diseases and climate change weather extremes in the years leading up to this plan update, and priorities for hazard mitigation planning reflect not only new data, but lived experiences. For example, new mitigation actions including spreading awareness of the CARES program, receiving periodic training on VT Alert, and development of a Continuity of Operations Plan reflect Town priority in increasing awareness and preparedness around natural hazards such as flooding, dam failure, and pandemic.

As stated in the State Hazard Mitigation Plan, this LHMP recognizes that "*climate change is likely to increase the frequency and severity of a number of Vermont's hazards.*" The natural hazards addressed in the plan are likely to be exacerbated by changes in climate, either indirectly or directly. The hazard profiles include discussion of how climate change could indirectly or directly impact hazards.

Additionally, the Town discussed potential vandalism or interruption of service of the Marshfield Wastewater Treatment Facility, which serves 100 residences in the Village, as a potential hazard, but did not rank it as a priority hazard. Future hazard mitigation plans may discuss this in more detail.

A discussion of each hazard is included in the proceeding subsections and a map identifying the location of each hazard is attached (See map titled *Areas of Local Concern*.) Each subsection includes a list of past occurrences based upon County-wide FEMA Disaster Declarations (DR-#) plus information from local records, a narrative description of the hazard and a hazard matrix containing the following overview information:

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Type of hazard	General areas within municipality which are vulnerable to the identified hazard.	Types of structures impacted	Minimal: Limited and scattered property damage; no damage to public infrastructure contained geographic area (1 or 2 communities); essential services (utilities, hospitals,	$ value or % of damages (if known).	Highly Likely: >75% probability in a year. Likely: >10% but <75% probability per year, at least 1 chance in the next 10 years.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
			schools, etc.) not interrupted; no injuries or fatalities. Moderate: Scattered major property damage (more than 50% destroyed); some minor infrastructure damage; wider geographic area (several communities) essential services briefly interrupted; some injuries and/or fatalities. Severe: Consistent major property damage; major damage to public infrastructure (up to several days for repairs); essential services interrupted from several hours to several days; many injuries and fatalities.		Occasionally: 1-10% probability of occurrence per year, or at least one chance in the next 100 years. Unlikely: <1% probability of occurrence per year

6. Threat Hazards

6.1 Flash Flooding

Fluvial Erosion, inundation flooding, and flash flooding are common occurrences in Marshfield. At the April 20, 2021 Selectboard meeting, Selectboard members noted that flash flooding is the most common type of flooding affecting Marshfield. Therefore, this section will primarily discuss flash flooding.

- *Fluvial erosion* is a "streambed and streambank erosion associated with physical adjustment of stream channel depth and width" (2018 SHMP). This erosion process may occur more quickly and severely during flood events. Where buildings are placed too closed to streams, and the channel becomes straightened and armored, the stream flow becomes faster and more powerful, often directing subsequent damage to nearby roads, culverts and property. Most flood-related damage in Vermont is due to fluvial erosion. The 2018 SHMP states

"*The more trapped the river is, the greater power it will gain, which eventually results in a greater degree of damage to critical public infrastructure…homes, businesses, community buildings and other man-made structures built near rivers.*"

- *Inundation Flooding* is the overflowing of rivers, streams, ponds and lakes due to excessive rain, rapid snow melt or ice. Water flows out of the river bank, and spreads across the floodplain.
- *Flash flooding* is a rapidly occurring flood event usually from excessive rain.

The 2018 SHMP projects annual precipitation and seasonal precipitation to increase due to climate change and states "*Vermont's historic settlement pattern, in association with the widespread channelization of rivers and loss of functioning floodplains due to encroachments and fill, make Vermont particularly vulnerable to climate change-related increases in flood frequency and magnitude*". The SHMP also notes heavier rainfall events are likely to become more frequent and intense, and flood events are more likely, particularly in winter.

Recent History of Occurrences (presidential declarations and NCDC query search information within Central Vermont

Table 8: Flash Flooding Historical Events

Date	*Event*	*Location*	*Extent*
10/31/2019	Flood	County-wide,	*DR 4474*- received FEMA funding for debris removal- knocked down trees and debris blocked roads (5,338.68 in damages)
4/17/2019	Flood/S.S*.*	County Wide	*DR 4445*
10/29/17-10/30/17	Severe Storm	County-wide, State Wide	*DR 4356*- damage to roads, received FEMA funding for debris removal, removed downed trees and power lines on Hollister Hill Rd and Jerusalem Hill Rd ($9,114.44 in damages)
7/1/2017	Flash Flood	County-wide	Heavy rain showers and thunderstorms moved across central VT delivering very heavy localized rainfall.
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.
7/19/2015	Flash Flood	County-wide	Thunderstorms with heavy rainfall moved over northeast Washington County repeatedly for several hours
4/15/2014-4/19/2014	Flood/ S.S.	County Wide	*DR 4178*--Snowmelt from a late season snowpack combined with heavy rain produced widespread flooding

Table 8: Flash Flooding Historical Events			
Date	*Event*	*Location*	*Extent*
6/25/2013	Flood/ S.S.	County Wide	*DR 4140*—Produced over 2" of rain in 1-2 hours, resulting in flash flooding
11/08/2011	Flood/Severe Storms	County Wide	*DR 4043*
8/28/2011	Flash Flood (TS Irene)	County Wide	Winooski River crested at 19.05 feet in Montpelier– flood stage is at 15'; 5-7" of rain -DR 4022
5/26/2011	Flash Flood	Marshfield, County Wide	*DR4001*- 4" of rain; Montpelier gauge at 17.59'. Devastating flash flooding in Berlin, Plainfield, Cabot, Marshfield, Montpelier, and Northfield. Stevens Branch flooded much of downtown Barre, and swift water rescues were conducted for people trapped by flood waters. Many homes and businesses were flooded along Route 302 in Barre. Multiple town roads were severely damaged, and Routes 302, 2, 14, 62, and 63 were closed in and around Barre. Plainfield suffered many road washouts, and roads were damaged in Northfield. The Winooski flooded sections of Route 2 in East Montpelier, damaging businesses
4/23-5/9/2011	Flash Flood	County Wide	*DR 1995*
8/2/2008	Flash Flood	County Wide	Not a historical crest; data gap
7/11/2007	Flash Flood	Northeast Washington County	*DR 1715*-3-6" of rain in 2 hrs. –, not a historical crest
6/26/2006	Flood	County Wide	3-4" of rain, not a historical crest
9/16/1999	Tropical Storm Floyd	County Wide	*DR 1307*-Montpelier flood gauge at 9.30 feet, 5-7" rain county wide
6/27/1998	Flash Flood	County Wide, Marshfield	*DR 1228*- 3-6" of rain over 2-day period, not a historical crest. Road washouts in Marshfield
6/6-6/8/1984	Flood/Severe Storms	Marshfield, County Wide	*DR-712*, Town Hall flooded
8/5/1976	Flood	County Wide	*DR 518*- Montpelier flood gauge at 12.31 feet
6/30/1973	Flood	County Wide	*DR 397*-Montpelier gauge at 17.55 ft
9/22/1938	Flood/Hurricane	County Wide	Montpelier flood gauge at 14.11 feet

Table 8: Flash Flooding Historical Events			
Date	*Event*	*Location*	*Extent*
11/03/1927	Flood	County Wide	Montpelier flood gauge at 27.10 feet

The principle body of water within Marshfield is the Winooski River, the second largest river in Vermont. Within Marshfield, the River flows from the Cabot town line along Vermont Route 215 until Marshfield Village, where it converges with Molly's Brook and Creamery Brook. At this point, the River flows southwest through the Town along Route 2 and leaves the Town at the Plainfield Town line.

In 2017, CVRPC and the Friends of the Winooski River (FWR) secured funding through the High Meadows Fund for outreach and demonstration project aimed at forested landowners in the Winooski River headwaters communities of Cabot, Marshfield, and Plainfield. The goal for the project ("Water Wise Woodlands") was to work with landowners, forestry industry representatives, municipal groups, and interested community members to demonstrate how upland forest conservation and management can be a tool for downstream flood resilience and water quality protection. CVRPC conducted a GIS analysis and prioritization based on several factors that would increase runoff from a forested parcel. Each parcel was scored and ranked based on presence of spatial features (forest blocks, river corridors, shallow depth to bedrock, hydric soils, slope, etc.). Thirteen parcels in Marshfield ranked 8 or above on a scale of 1 to 9. See **Attachments** for a map showing these parcels and clusters of land identified as priorities. Marshfield can use this map for future efforts in conservation, flood resiliency planning, and forestry practice outreach.

A large portion of Marshfield Village is located within the National Flood Insurance Program's designated 100-year floodplain, and additional structures outside of the Village are also vulnerable. Based on the results of overlaying the 2013 FIRM flood maps with the location of the E911 points, 28 structures in the Village are vulnerable to flooding including the Wastewater Treatment Plant, Town Garage and Town Offices. Along with structures outside the Village, a total of 35 buildings in Marshfield are in the Special Flood Hazard Area. A similar overlay exercise with the river corridor areas shows that 83 buildings town-wide and 50 buildings in the Village are vulnerable to fluvial erosion hazards (2014 e911 Data).

The estimated loss for a severe flooding event for all properties located within the Town's 100-year floodplain is approximately $35,815,000 (2008 Grand List data). This flood loss potential represents 34.8% of the total value of properties within Marshfield. Approximately $8 million of this value is within the limits of Marshfield Village. There are currently 11 flood insurance policies in Marshfield covering $1,161,603 in property value. Only 4 of these are identified as being in a flood hazard area (Zone A). As such only 36% percent of the structures at risk are carrying flood insurance. There are no repetitive loss properties located in Marshfield.

Roads damaged in May 2011 Flooding

- Bailey Pond Rd
- Beaver Meadow Rd
- Brook Rd
- Calais Rd
- Cassady Rd
- Eaton Cemetery Rd
- Folsom Hill Rd
- Folsom Hill Rd
- Gilman St
- Hollister Hill Rd
- Jake Martin Rd
- Laird Pond Rd
- Lower Depot Rd
- Route 2

In 2011, two widespread floods caused significant damage to most of Marshfield's roads and infrastructure. During the May 2011 flooding event, washouts occurred on numerous back roads and near the town garage - totaling over $750,000 in damage to public roads (see **Figure 2** to **Figure 7**.) Additionally, the access road to the Wastewater Treatment Plant was cut off due to flooding (see **Figure 6**). Jim Brimblecombe, the operator of the WWTP, states that the water "jumped the wing walls on the bridge/culvert, ran down Depot Hill Road, past the Town Garage, and down the access road to the facility". Additionally, the WWTP lost power for a period of time Following this flooding, the Town installed cement blocks, raising the wing walls to prevent this from happening again. A generator was also purchased that runs on diesel, with a portable tank if fuel is needed in an emergency. The fuel level is checked weekly, and after each outage to ensure there is sufficient fuel.

Figure 2: Beaver Meadow Rd damage from May 2011 flood. Source: Town of Marshfield

Figure 3 Jake Martin Road damage from May 2011 flood. Source: Town of Marshfield

Figure 4: Hollister Hill Rd damage from May 2011 flood. Source: Town of Marshfield

Figure 5: Laird Pond Rd damage from May 2011 Flood. Source: Town of Marshfield

Figure 6: Lower Depot Rd damage from May 2011 flood. Source: Town of Marshfield

Figure 7: Town Garage flooding during May 2011 flood. Source: Town of Marshfield

Town roads were damaged to a lesser extent during Tropical Storm Irene in August 2011, but dam failure and subsequent downstream flooding was a great concern as Green Mountain Power considered an emergency release to prevent a collapse of the

Marshfield Dam. FEMA administered $115,515 in Irene Relief and Recovery funds to the residents and the Town of Marshfield (see **Figure 8**).

Program	Subtotal	Total
Individuals and Households Program		$58,026
Housing Assistance	$52,761	
Other Needs	$5,265	
Public Assistance		$57,489
Hazard Mitigation Grant Program		$0
Total		$115,515

Figure 8: FEMA Irene Relief & Recover Funds for Marshfield

A severe storm including high winds and flooding in October 2017 (DR 4356) caused damage to roads in Marshfield and downed trees and power lines on Hollister Hill and Jerusalem Hill Road. Marshfield received $9,114.44 in damages from FEMA Public Assistance. The PA Project Worksheet notes 40 cubic yards of vegetative debris and hazardous leaning trees, and the need to place barricades on Jerusalem Rd and Hollister Hill Rd to warn motorists of downed trees and power lines.

In October 2019, a severe storm including high winds and flooding (DR 4474) caused damages. Marshfield received $5,338.68 through FEMA Public Assistance. The PA Project Worksheet notes 70 cubic yards of vegetative debris and downed trees.
As previous events have made clear, even areas beyond the NFIP designated 100-year floodplain may be vulnerable to flood related hazards. Channel adjustments with devastating consequences have frequently been documented wherein such adjustments are linked to historical channel management activities, floodplain encroachments, adjacent land use practices and/or changes in watershed hydrology associated with conversion of land cover and drainage activities, within and beyond the NFIP floodplain. The attached Areas of Local Concern Map identifies the Fire Station, as well as other government buildings, as outside the designated floodplain, but near the river. As noted earlier in this section, the Marshfield Selectboard noted at the April 20 meeting that most of the flooding seems to come from flash flood events, with undersized culverts clogging with precipitation and debris and leading to damages and road wash outs.

Bridges and roads are particularly susceptible to damage in the event of a flood related event. The Areas of Local Concern Map (attached) identifies one bridge that has been washed out in recent memory, the Potter Bridge on Holt Road, near the intersection of Laird Pond Road. Roads that have been susceptible to washouts are Lower Depot Road, Beaver Meadow Road, Pike Road, and Ennis Road at the intersection of Calais Road.

Additionally, in 2011, Jake Martin Road washed out; a culvert on the road was upgraded following this flooding (see **Figure 9**).

Figure 9: Jake Martin Rd damage from May 2011 flood. Source: Town of Marshfield

The 2018 Town Plan recognizes the importance of respecting flood hazard and riparian areas, indicating that Marshfield has recently updated its bylaws that protect flood hazard and riparian areas. In 2008, the Town approved substantial changes to Flood Hazard District (previously titled the Floodplain and Water Conservation District) regulations in order to bring the regulations into conformance with FEMA minimum standards. In 2009, additional minor amendments were approved to ensure compliance with the Federal Emergency Management Agency (FEMA) minimum standards. This is required by FEMA in order to make flood insurance available to the residents of Marshfield. As such, no development is permitted within the floodplain designated on Marshfield's Flood Insurance Rate Map (FIRM). Additionally, the 2018 Town Plan includes a strategy to explore options for adopting River Corridor bylaws.

In 2008, the Town also approved creating a Watercourse Conservation District that restricted development activities near streams and lakes. Previously, these restrictions were contained within the Floodplain and Water Conservation District regulations. Creation of a separate overlay district helped clarify the regulations. Currently no development is allowed within certain setbacks from streams and lakes. The 2008 amendment also allowed for some minor activities to occur within the setback areas. Additionally, steep slope standards help reduce vulnerability to faster flow of water on steep grades; these regulations prohibit development on slopes greater than 25% and require a conditional use permit for development on slopes between 15% and 25%.

The Selectboard noted anecdotally that many culverts have been upgraded following washouts and floods. These include culverts on Jake Martin Road. Members of the road crew noted that when culverts are scheduled to be replaced, the Town ensures a 18" culvert is installed to handle higher volumes of water.

In 2019, CVRPC conducted a Road Erosion Inventory to identify locations that result in problematic road erosion - the sites with the most significant hydrological impact due to erosion. The inventory found that out of the 318 hydrologically connected road segments in Marshfield, 26% do not fully meet the standards of the Municipal Roads General Permit (MRGP). Sixteen segments were identified as Very High Priority - segments on slopes greater than 10% that do not meet standards and should be addressed in the next 5 years. These are:

- Bent Road (1)
- Dwinell Road (1)
- E Hill Road (1)
- Folsom Hill Road (1)
- John Fowler Road (3)
- Maple Hill Rd (1)
- May Rd (1)
- Nasmith Brook Rd (1)
- Pike Rd (1)
- Upper Depot Rd (5)

See **Attachments** for a full list of high priority segments. Implementation plans to bring segments to MRGP compliance standards will include measures like grass and stone-lined drainage ditches, stone check-dams, sheet flow infiltration, ditches and turnouts disconnected from surface waters, road crowning, upgrading culverts, installing outlet stabilization headwalls, and stabilizing exposed soil.

Table 9: Flash Flooding Hazard Risk Assessment					
Hazard	*Location*	*Vulnerability*	*Extent*	*Impact*	*Probability*
Flash Flooding	Town/Village wide --Winooski River along Route 215 and Route 2, Molly's Brook and Creamery Brook --Side streams/ tributaries, small undersized culverts	--Undersized culverts get clogged w/ rain and debris, bridges, roads, residences and wells, special needs residents --Wastewater Treatment Plant --Lower Depot Road, Beaver Meadow Road, Pike Road, Ennis Road, Hollister Hill Road subject to flooding/ washouts	5-7" of rain during TS Irene, 3-5" of rain during May 2011 event. Fluvial erosion extent data is unavailable. Estimated loss for severe flooding event is $35,15,000 based on 2008 Grand List value (34.8% of total value of properties in Marshfield)	--May 2011- Significant damage to roads/infrastructure, over $750,000 in damage to roads --TS Irene- $115,515 in FEMA Relief --2017- DR 4356- ($9,114.44 in damages) debris removal for vegetative debris, removing hazardous tree- downed trees and power lines on Jerusalem Rd and Hollister Hill Rd --2019- DR 4474 debris costs, knocked down trees and vegetative debris blocked roads ($5,338.68)	High

6.2 Dam Failure

Although spring snowmelt, ice-jams, and heavy downpours represent the most common flood events, dam failure was of significant concern during the Marshfield LHMP update meeting. There are four dams of concern in Marshfield: Marshfield Dam, Richards Dam, Lairds Pond, and Beaver Meadow (see **Table 10**). For the purposes of contextualizing storage, an acre foot of water is equal to 326,000 gallons, or enough water to cover an acre of land at 1 foot deep. So, 9,259 acre feet would be enough water to cover 9,259 acres of land at 1 foot deep.

Table 10: Dams of Concern in Marshfield						
Name	Date built	Type	Location	Length and Height	Dimensions	Hazard Class
Marshfield No. 6 Dam (Molly's Falls Dam, owned by GMP)	1927	Earthfill	Molly's Brook, Cabot	1,100 ft. x 48 ft.	Drainage: 19 sq. miles Surface area: 411 acres Storage: 9,259-acre ft. Max storage: 13,526 acre ft.	High hazard potential
Beaver Brook Pond (Richards Dam) (private owners)	1969	Earthen	Beaver Brook Pond, Winooski River	235 ft. x 15 ft.	Drainage: 1.07 sq. miles Surface area: 16 acres Storage: 40-acre ft. Max storage: 115 acre ft.	Significant hazard potential
Laird Pond (Nasmith Brook, private owners)	1900	Stone/ masonry/earth	Laird Pond, Nasmith Brook	14 ft. x 296 ft.	Drainage: 4.4 sq. miles Surface area: 11 acres Storage: 80-acre ft. Max storage: 100 acre ft.	Breached, Significant Hazard potential
Bailey Pond Dam (Drew Mountain Assn)	1900	Stone, masonry	Bailey Pond, Marshfield Brook	80 ft. x 7 ft.	Drainage: 5.92 sq. miles Surface area: 18 acres Storage: 55-acre ft. Max storage: 90 acre ft.	Low Hazard potential

Marshfield No. 6 Dam

The Marshfield No. 6 Dam (also referred to as Molly's Falls Dam) is a Green Mountain Power owned and operated hydroelectric dam located on the Marshfield Reservoir (Molly's Falls Pond). The Dam and Pond are located just over and up-gradient of the Marshfield town line. The earth fill dam was constructed in 1927, and impounds 4,000-acre flood control/hydroelectric recreation reservoir (Molly's Falls Pond). The dam is currently classified as a high hazard dam, meaning "*failure may cause serious damage to homes, extensive agricultural, industrial and commercial facilities, important public*

utilities, main highways or railroads" and potential loss of life (Vermont Dam Safety Division).

The Marshfield Dam's flood retention capacity was challenged during the winter of 2002 by above average spring rains and snow melt, as well as an inoperable outflow. The outflow was fixed without incident by mid-spring. Since this event, the Dam's outflow has been returned to historic levels. Two of the Village's 4 bridges that are located downstream of the dam were built prior to the construction of the Dam, while the remaining two were constructed no more than three years after. It is assumed that all of these bridges were built to withstand the historic water flow.

During Tropical Storm Irene in August 2011, Green Mountain Power announced that it might have to release water from the Marshfield Dam into the Winooski in order to prevent a collapse of the earthen structure. 350 homes downstream of the dam in Marshfield, Montpelier and East Montpelier, Plainfield and Groton were evacuated. One hundred and three of these homes are in Marshfield and 48 are in Marshfield Village. A dam failure would have caused more damage than the release of water. Plant staffers removed one of the emergency stop logs, adding marginally to the spillover but not enough to add to flooding problems downstream, and far short of the maximum possible release.

Green Mountain Power presented the Town with a revised emergency plan for the Marshfield Dam in December 2011, marking color-coded areas that outline how much additional flooding would occur as pent-up water is released into the Winooski River from the dam during a weather emergency, such as a storm or hurricane. The water would be released through the main spillway or emergency spillway, both of which flow into the Winooski.

Though maximum release proved unnecessary in August 2011, Town Officials expressed concern over transportation infrastructure located downstream of the release, a culvert supporting Rt. 2 in particular (C83 - see **Local Areas of Concern Map**).

BRIDGE/ROAD NAME	TOWN, STATE	STATUS IN MODEL	OVERTOPPING FLOW ESTIMATE (CFS)	REASON FOR EXCLUSION/ALTERNATION
PORTER RD.	Marshfield, VT	Included	750	
HWY 232 (NEW DISCOVERY RD.)	Marshfield, VT	Included	600	
ROUTE 2	Marshfield, VT	Included	1,500	
ROUTE 2	Marshfield, VT	Included	9,000 (approx. 500-yr.)	
GILMAN ST.	Marshfield, VT	Included	>12,000 (>500-yr.)	
SCHOOL RD.	Marshfield, VT	Included	8,000 (> 100-yr.)	
SASS AVE.	Marshfield, VT	Included	4,000 (approx. 10-yr.)	
PATTY'S CROSSING	Marshfield, VT	Included	4,000 (approx. 10-yr.)	
CASSADY RD.	Marshfield, VT	Included	8,000 (> 100-yr.)	
NAISMITH BROOK RD.	Marshfield, VT	Included	15,000 (approx. 500-yr.)	
ONION RIVER CAMPGROUND (TOWN RD. 57)	Marshfield, VT	Included	9,000 (> 50-yr.)	
JOHN FOWLER RD.	Marshfield, VT	Included	6,000 (> 10-yr.)	

Figure 10: Overtopping Flow Estimates. Source: 2015 Marshfield LHMP

The Town is concerned about an emergency dam release of Marshfield No. 6 partly due to the US Route 2 culvert. Based on best available information, the culvert can handle flows of 900 – 1100 cubic feet per second (cfs). However, flow for the service spillway during an emergency release would be 2000 cfs, and maximum flow for both spillways would be 5,500 cfs, nearly 5x the capacity of the culvert. These numbers are based on simple and approximate inlet hydraulics and do not consider sediment, ice, debris, flood storage, or other site specific information.

Figure 10 documents overtopping flow estimates for the bridge/culvert locations downstream of Marshfield No. 6. The Gilman St. and School Rd. culverts are located in Marshfield Village. The overtopping flow estimate for the Route 2 culvert is 1,500 cfs, or 32.8% of the emergency spillway flow in the event of release.

Replacement of the culvert on Route 2 to accommodate a potential emergency dam release was identified as a mitigation action in the 2015 LHMP. However, this culvert is state owned and the Town of Marshfield has limited authority to implement this action.

In January 2018, Kleinschmidt developed a report summarizing reservoir water level management and flood routing for the Marshfield Dam *"comparing downstream effects associated with outflows from the Dam when different flood conditions occur*". According to the report, GMP is planning the following improvements:

- Regrade the low areas of the crest to provide adequate freeboard for the Probable Maximum Flood (PMF) event (15.82 inches over 72 hours) and help protect the dam from erosion due to overtopping by wave action during floods.
- Replace the service spillway stanchion gate with a vertical slide gate system, providing GMP with improved control of flow through the service spillway and allowing operators to respond more rapidly and safely to storm events. Flows through the spillway could be regulated more gradually, and the reservoir could be more quickly returned to normal operating levels

As of March, 2021, GMP has proposed a construction schedule beginning work in spring 2021 and completing work in Summer/Fall 2022.

Beaver Brook Pond (Richard's Dam)
Vermont DEC is scheduled to complete a new inspection report and hazard class check soon. A DEC Inspection Report from 2014 notes the overall condition of the dam is good, and is classified as a Significant Hazard. The Inspection Report recommends continuing mowing and maintenance of the embankments and emergency spillway, removing trees in the radius of the downstream outlet, and developing an Emergency Action Plan to warn downstream residents in the event of an emergency situation.

Laird Pond contains a beaver dam upstream of the structure, and is considered breached by Vermont DEC. The Selectboard has not observed beaver activity in recent years so considers this dam less of a hazard. Previous breaches have led to damage on roads and culverts, downstream towards Plainfield. A DEC Inspection Report from 2011 recommends keeping the upstream beaver dam breached at all times and the pond drained, as the "dam is in no condition to hold back any water and could fail if neglected". The Inspection Report also recommends keeping the outlet clear of debris.

Bailey Pond: A DEC inspection report from 2009 recommends removal of the beaver dam that extends the length of the dam, and clearing brush and debris.

Table 11: Dam Failure Hazard Risk Assessment

Hazard	*Location*	*Vulnerability*	*Extent*	*Impact*	*Probability*
Dam Failure	Marshfield No. 6: residences, Town Office, sewer plant, Depot Hill Rd	Marshfield No. 6: 2 bridges downstream US Route 2 culvert, Gilman St and School Rd culverts 103 homes in Marshfield evacuated during TS Irene due to possibility of breach	Marshfield No. 6: during Tropical Storm Irene, was 542 ft. above sea level (normally	Marshfield No. 6: $10m if damage to power plant Bailey Pond: overtopping in 2009 led to minor town road damage, minor damage to private driveway Laird Pond: previous reaches have led to downstream road and culvert damage Brook Pond Dam (Richard's Dam): significant hazard	Marshfield No. 6: low Laird Pond: currently breached

6.3 Severe Winter Storms (Ice, Snow, Extreme Cold)

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 and 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, 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.

"Climate data confirms that the contiguous United States is warming at a rate 50% greater than the global average, with the most significant warming observed in New England in the warmer months1. During these more frequent, warmer winters, snow, which acts as a protective, insulating layer between the cold air and the ground, is more likely to melt. When seasonable, cold air moves back into the region after prolonged exposure to above-freezing temperatures that have melted much of the snow coverage, the exposed ground experiences deeper soil frost, which can negatively impact road infrastructure (i.e. frost heaves), water lines (i.e. burst pipes from water-ice expansion) and perennial crops that rely on the snow for protection from cold temperatures and winds.
--2018 SHMP

According to the 2014 National Climate Assessment, there is an observable increase in severity of winter storm frequency and intensity since 1950[3]. Changes in seasonal precipitation are likely to include more winter rain and less snow. The 2018 SHMP states "by 2050, winter precipitation could increase by 11-16% on average.", and storms are projected to become more intense.

Snow and/or ice events occur on a regular basis. Recent significant events have included (from NCDC website and FEMA DR List):

Table 12: Severe Winter Storms Historical Events

Date	*Event*	*Location*	*Extent*
03/23/20-03/24/20	Winter Storm	State-wide; Washington County	Total snowfall ranged from 2" to 4" in northwest VT to 4" to 7" across much of the state, pockets of 7" to 10" in eastern VT.
02/07/20	Winter Storm	State-wide; Washington County	Storm total snowfall of 10" to 16" fell across the region, up to 1/4 " of ice

[3] https://nca2014.globalchange.gov/report/our-changing-climate/changes-storms

Table 12: Severe Winter Storms Historical Events			
Date	*Event*	*Location*	*Extent*
			accumulated.10-20,000 people lost power across the State
03/22/2019-03/23/2019	Winter Storm	Washington County	A heavy wet snow fell across Washington County
02/12/2019-02/13/2019	Winter Storm	Washington County	A widespread 7" to 15" of snow fell across Washington County.
01/29/2019-01/30/2019	Winter Storm	Washington County	A widespread 6" to 10" of snow fell across Washington County
01/19/2019-01/20/2019	Winter Storm	Washington County	Widespread snowfall of 10" to 18" occurred across Washington County
11/26/2018-11/28/2018	Winter Storm	State-wide; Washington County	Heavy wet snow resulted in downed tree limbs and power outages across VT. In Washington county, snow accumulated 6" to 14"
3/13/2018	Winter Storm	Washington County	Long duration snow event delivered 12-30" across Washington county
3/7/2018	Winter Storm	Washington County	Long duration snow event deposited 7-13" across Washington county
2/7/2018	Winter Storm	Washington County	Widespread 5-8" of snow fell across Washington county
12/22/2017	Winter Storm	Washington County	Snowfall amounts of 6-12" were reported
12/12/2017	Winter Storm	Washington County	Widespread 6-12" of snow fell across Washington county
3/31/2017	Winter Storm	Washington County	Widespread 6-12" of a heavy, wet snow fell across the region
3/14/2017	Winter Storm	Washington County	Snowfall totals across Washington county generally ranged from 14-24" with isolated higher totals
2/12/2017	Winter Storm	Washington County	Widespread 8-14" of snowfall reported
12/29/2016	Winter Storm	Washington County	A widespread 5-10" of snow was observed
11/20/2016	Winter Storm	Washington County	Snowfall across Washington county was 6-12"
2/2/2015	Winter Storm	Washington County	Snowfall across Washington county was 6-12"
2/1/2015-2/28/2015	Extreme Cold	State-wide, Washington	February 2015 record cold for much of VT. Recorded 15 to 20+ days below zero and on several days, dangerously cold wind

Table 12: Severe Winter Storms Historical Events			
Date	*Event*	*Location*	*Extent*
		County, Marshfield	chills of 30 below zero or colder occurred. Many communities witnessing the coldest month since December 1989 or January 1994. The average departure was 13 to 17 degrees below normal.
1/18/2015	Winter Storm	Washington County	Heavy wet snow of 2-6" fell across Washington county
1/7/2015 - 1/8/2015	Extreme Cold	State-wide, Washington County	Plummeting temperatures and brisk, strong winds (15 to 30+ mph) caused dangerously cold wind chills of 25 to 40 degrees below zero during the evening of January 7th into the morning hours of January 8th. 27 below in Marshfield
12/9/2014	Winter Storm	Washington County	Heavy, wet snowfall totals across Washington county ranged from 6-24"
11/26/2014	Winter Storm	Washington County	Snowfall totals of 8-14"
3/12/2014	Winter Storm	Marshfield, County wide	12-20" of snow
12/14/2013	Winter Storm	Washington County	A widespread 8-12" of snow fell across Washington county
3/19/2013	Winter Storm	Marshfield, County wide	Total snowfall accumulations were generally 6-14" with some locally higher amounts
2/8/2013	Winter Storm	Washington County	6-12" of snow fell across Washington county
12/26/2012	Winter Storm	Marshfield, County wide	Snowfall totals of 9-18" were common in Washington County
2/24/2012	Winter Storm	Marshfield, County wide	Total storm snowfall accumulations ranged from 3-36" across Washington County
11/23/2011	Winter Storm	Marshfield, County wide	5-12" of heavy, wet snow mixed with rain and sleet
4/27/2010	Winter Storm	Marshfield, County wide	12" in Marshfield
3/6/2011	Winter storm	Marshfield, County wide	12-18" of snow, 10,000 customers lost power statewide
2/23/2010	Winter Storm	Marshfield, County wide	20" of snow and 50,000 customers lost power statewide
2/22/2009	Winter Storm	Marshfield, County wide	16" of snow, 30 mph wind gusts

Table 12: Severe Winter Storms Historical Events			
Date	*Event*	*Location*	*Extent*
1/14/2009-1/18/2009	Extreme Cold	State-wide, Washington County	Temperatures averaged 20 to 25 degrees below normal values, daytime maximum temperatures ranged from single digits above and below zero while nighttime minimums were 10 to 30 below zero with isolated readings colder than 40 below zero at times. 22 degrees below zero at Plainfield and Marshfield.
2/1/2008	Winter storm	Marshfield, County wide	3-7" of snow and ice ¼-1/2"thick, 50 mph wind gusts
12/21/2008	Winter storm	Marshfield, County wide	18" in Marshfield
12/08/2008	Extreme Cold	State-wide, Washington County	Wind chill readings during the early to mid-morning hours of 12/08 were 15 to 25 below zero across the state.
12/17/2007	Winter storm	Marshfield, County wide	Storm total snowfall across VT was 8" to 18". 14" in Marshfield
12/4/2007	Winter storm	Marshfield, County wide	12" in Marshfield
3/09/2007	Extreme Cold	Marshfield, County-wide	Morning lows were 10 to 34 degrees below zero, -20 degrees in Plainfield (adjacent town)
2/14/2007	Winter storm	Marshfield, County wide	22" of snow
02/27/2006	Extreme Cold	State-wide, Washington County	Combination of brisk winds and very cold temperatures produced wind chills of 15 to 30 degrees below zero.
02/18/2006	Extreme Cold	State-wide, Washington County	Brisk winds of 10 to 20 mph with higher gusts; wind chills of 15 to 25 below zero in northern Vermont
2/14/2006	Winter storm	Marshfield, County wide	30" of snow
01/15/2006	Extreme Cold	State-wide, Washington County	An arctic cold front moved across northern Vermont during the early morning of 15th. Blustery northwest winds 20 to 30 mph with gusts to 40 mph created wind chills of 10 to 25 degrees below zero and an apparent temperature change from Saturday (14th) of 50 to 70 degrees colder.

Table 12: Severe Winter Storms Historical Events			
Date	*Event*	*Location*	*Extent*
01/15/2004	Extreme Cold	State-wide, Washington County	Wind chills during 01/15 and 01/16 were generally between 25 and 45 below zero. Some sprinkler systems froze and burst in several area locations.
1/4/2003	Winter storm	Marshfield, County wide	19" of snow in Plainfield (adjacent town)
3/5/2001	Winter storm	Marshfield, County wide	15-30" of snow
12/31/2000	Winter storm	Marshfield, County wide	10" of snow
1/15/1998	Winter storm	Marshfield, County wide	10-12" snow (not a DR in Washington County)
12/29/1997	Winter storm	Marshfield, County wide	21" of snow
01/19/1997	Extreme Cold	State-wide, Washington County	An arctic air mass centered over the Northeast resulted in bitterly cold early morning low temperatures on 01/19/1997.
01/17/1997	Extreme Cold	State-wide, Washington County	An outbreak of arctic air resulted in extreme wind chills across much of Vermont. Wind chills ranged from between 30 and 60 below zero. 8 inches in Marshfield
12/7/1996	Winter Storm	Marshfield, County wide	20" of snow
3/21/1994	Winter storm	Marshfield, County wide	5-11" of snow
11/1/1993	Winter storm	Marshfield, County wide	15" of snow
1/3/1993	Freezing Rain	Marshfield, County wide	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 and 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, 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.

Extreme cold is arctic air, together with brisk winds, that can lead to dangerously cold wind chill values. People exposed to extreme cold are susceptible to frostbite in a matter of minutes. Areas most prone to frostbite are uncovered skin and the extremities, such as hands and feet. Hypothermia is another threat during extreme cold. Hypothermia occurs when the body loses heat faster than it can produce. Wind chills can be life threatening. The wind chill temperature is how cold a person or animal feels when outside. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As wind increases, it draws the heat from the body through exposed skin and reduces the body's skin temperature and eventually the body's core temperature. Often times exposed skin can freeze within minutes of exposure. These extremely cold temperatures can pose a significant risk to vulnerable populations who live in Marshfield, especially when combined with Wind.

The physical impacts of winter storms and extreme cold are town wide due to the expansive nature of winter storms. Vulnerability in the Village is somewhat diminished as roadways are readily cleared from the Town Garage, power lines are less likely to be downed by trees and neighbors and emergency services are readily accessible. Based on past occurrences, the worst anticipated winter weather Marshfield could experience would be 2-3' in 24 hrs. of snow with more at higher elevations and several days of power outages. Using the wind chill scale and historical information, the estimate for extreme cold is a – 60 degrees Fahrenheit. The worst recent storm was in March 2011 and after that the Blizzard of 1888. Scales to measure the extent of winter storms are:

Heavy snowfall – Marshfield is significantly affected when they experience an accumulation of 7 inches or more of snow in a 12-hour period or 13 inches or more in a 24-hour period.
Blizzard – Marshfield is significantly affected when they experience sustained wind speeds in excess of 40 mph accompanied by heavy snowfall or large amounts of blowing or drifting snow.
Ice storm – Marshfield is significantly affected when they experience ice accumulations of ¼" or greater.

The NOAA Wind Chill Chart identifies those temperatures and associated wind speeds that may cause frostbite if skin is exposed to the air over a certain period of time **(Figure 11).**

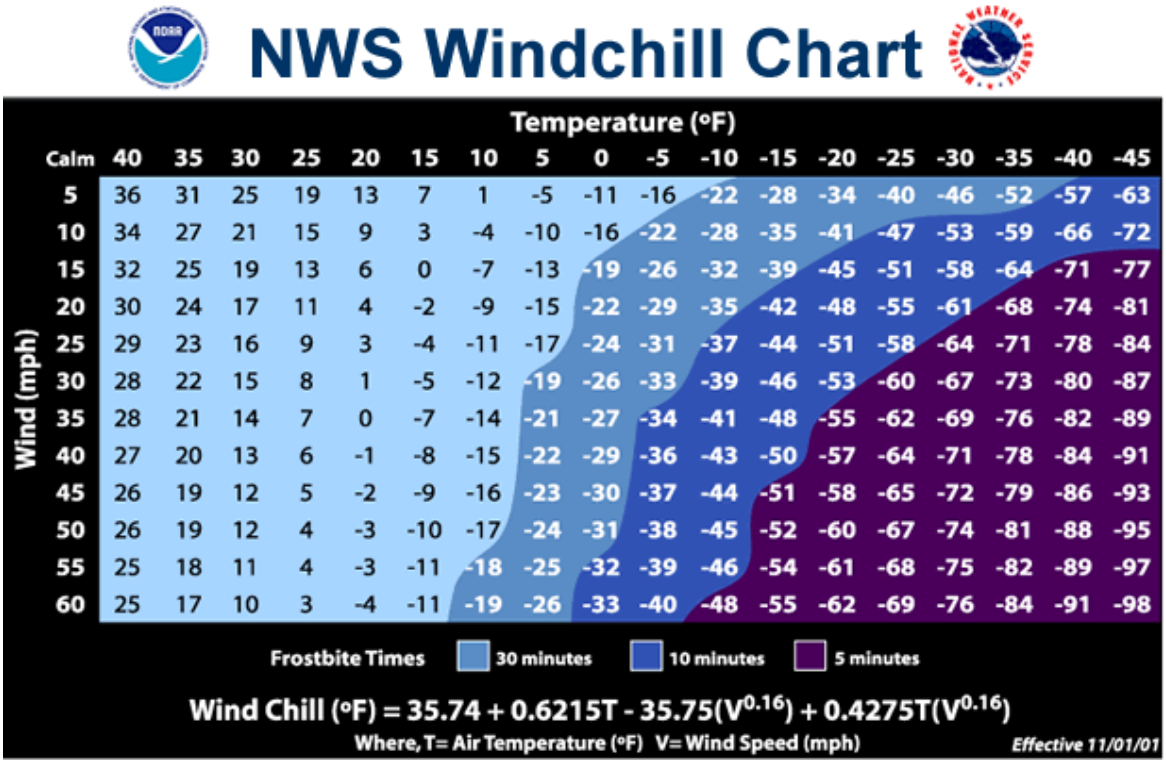


Figure 11: NOAA Wind Chill Chart. Source: NOAA

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.

Additionally, sensitive populations such as the elderly or handicapped may be susceptible to extreme cold when power is lost and heating systems are run on electricity (versus gas or natural fuels). If power is lost, some populations may need to be relocated to areas with power so that medical equipment can function. Additionally, limited mobility of some persons may make it difficult to relocate in general or in times of emergencies. The Town encourages neighbors to check on those neighbors who they may believe to be at risk during times of emergency. The Fire Department also has a list of those with medical needs. In the future, the Town can map the location of sensitive populations and trouble spots on roads that reach those populations in order to identify additional routes. Also, the Town can continue to provide outreach and education of the impacts of winter storms to these populations. Other major impacts include closed roads, restricted transportation and large buildings collapsing under the weight of heavy snows.

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 the Town of Marshfield. 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, are the primary challenges facing community officials. Marshfield should plan and prepare for these emergencies. That planning and preparedness effort 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. Shelters within Marshfield include the Twinfield Union School, Old Schoolhouse and Masonic Lodge. Backup power generation is needed at the Twinfield Union School. The Town encourages residents who are in remote locations to be equipped with generators and backup fuel supplies in the event of prolonged power outages and travel restrictions.

The extent of winter storms on Marshfield is difficult to estimate as it is dependent on the size and path of the storm. For the next plan update, Marshfield will more closely monitor winter storms to determine the worst impacts possible on the Town.

Marshfield is served by two energy utilities, Green Mountain Power and Washington Electric Cooperative. The Power generation of both entities is based upon substations which are not set by jurisdictional lines. As a result, frequency and specific dates of power shortage/failure could not be attained. This level of detail could be provided in the future by working directly with the utilities in order to research this data.

This type of event is especially hazardous if it occurs during the winter, particularly in conjunction with another hazard, such as a winter storm/ice storm or extreme cold. Vulnerable populations, such as the elderly and handicapped are of greatest risk to this hazard. If this type of multiple hazard event takes place for an extended period of time, back-up power would be necessary for critical facilities such as the Marshfield Fire Department and the Twinfield Union School. Most recently, in early June 2013, a passing severe storm left a number of residents and businesses without power for over 24 hours resulting in loss of business and risk to vulnerable populations, particularly those with special home health needs.

Table 13: Severe Winter Storms Hazard Risk Assessment					
Hazard	*Location*	*Vulnerability*	*Extent*	*Impact*	*Probability*
Severe Winter Storms (Snow, Cold, Ice)	Town/Village wide	Elderly & handicapped populations, remote structures, old/under-insulated structures, utilities, trees	Below freezing and severe wind chill factor for multiple days; depends on severity of event; Winter Storm: March 2011- 12" to 18" of snow Extreme Cold: 01/07/2015- 27 below Ice: 2/1/2008- ¼ to ½ inch thick ice	Depends on severity – additional sheltering/ plowing/ emergency services costs for town	High

6.4 High Wind

High wind is defined as an event with sustained wind speeds of 40 m.p.h. or greater lasting for 1 hour or longer or an event with winds of 58 m.p.h. or greater for any duration. Wind events can be recorded using the Beaufort (see **Figure 12**) or Saffir-Simpson (see **Table 15**) wind scales. Hail events can be recorded using the Torro/Hailstorm Scale.

As stated in the 2018 State Hazard Mitigation Plan, high wind can be a result of any of the following:

- Wind Storm: high wind event without precipitation.
- Hurricanes/Tropical Storms: the most significant impacts from hurricanes/tropical storms in Vermont are inundation flooding and fluvial erosion.
- Thunderstorm: high wind event with the potential for compounding impacts due to precipitation, lightning, and/or hail. Thunderstorms can generate high winds and down hundreds of large trees within a few minute
- Tornado: a violently rotating column of air extending from a thunderstorm; capable of damaging or destroying structures, downing trees and power lines and creating injuries and death from collapsing buildings and flying objects. Tornadoes are less common than hail storms and high winds, but have occurred throughout Vermont. Across the State, 34 tornadoes have been recorded

between 1950 and 1999, 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.

See **Table 14** for a list of high wind events in Marshfield and adjacent towns.

Table 14: High Wind Historical Events

Date	*Event*	*Location*	*Extent*
8/12/2019	Thunderstorm Wind	Marshfield	Storm traveled along the Route 2 corridor in central-northeast VT with some damaging winds in Plainfield, Marshfield and Cabot. Spotty tree and wire damage due to fallen trees along the Route 2 corridor between Plainfield and Cabot.
10/16/2018	Strong Wind	County Wide	MPV airport reported wind gust of 48 mph. Most wind gusts were in the 38 to 45 mph range with downed tree limbs and isolated power outages.
6/18/2018	Thunderstorm	County Wide	Several small lines of thunderstorms moved across the state causing some thunderstorm wind damage
10/30/2017	High Wind	County Wide	Numerous downed branches, trees and some snapped and uprooted trees causing widespread power outages, more than 100,000 customers were without power. Trees fell on residences and vehicles as well. Numerous tree damage and power outages with measured wind gusts in the 40-50 mph range with a measured 58 mph at Barre-Montpelier airport in Berlin.
7/8/2017	Thunderstorm	County Wide	Scattered thunderstorms developed and moved across the state with a few producing isolated damaging winds
1/10/2017	Strong Wind	County Wide	Numerous measured wind gusts of 40-45 mph with some isolated 50 mph gusts. Isolated to Scattered power outages due to downed tree limbs and small trees on utility lines.
2/29/2016	Strong Wind	County Wide	Wind gusts in excess of 35 to 40 mph across large portions with a few scattered wind gusts that approached 50 mph. Estimated and measured wind gusts of 35 to 45 mph

Table 14: High Wind Historical Events			
Date	*Event*	*Location*	*Extent*
			impacted the region with an isolated report of 59 mph. Isolated to scattered tree limbs and power lines downed by these winds.
7/8/2014	Thunderstorm	County Wide	Scattered to widespread wind damage across portions of Vermont. Much of the wind damage was tree and utility line damage
1/20/2013	Strong Wind	County Wide	Scattered reports of tree limbs, tree branches down and power outages across the region. A few measured wind gusts reached 50 mph.
10/29/2012	Strong Wind	County Wide	East-northeast winds of 15 to 30 mph sustained with frequent gusts in excess of 40 mph caused scattered damage to tree limbs, branches and a few small trees.
9/8/2012	Thunderstorm	County Wide	Southerly winds of 20 to 30 mph with frequent gusts in excess of 40 mph across the region
7/4/2012	Thunderstorm	County Wide	Widespread wind damage and frequent lightning with several reports of scattered trees and power lines downed by thunderstorm winds. 65 knots reported.
7/6/2011	Thunderstorm	County-wide	50 knot winds, 15,000 people in VT lost power
5/26/2011	Hail/ Thunderstorms/ Flash Flooding	County Wide	*DR-4001*. 3-5" of rain, 1" hail, 50 knot winds, 25,000 customers lost power in VT. Montpelier gauge at 17.59 ft.
7/9/2007	Hail, Thunderstorm	County-wide	DR 1715- baseball sized hail, damaging winds, and structures struck by lightning
9/29/2005	Thunderstorm	County wide, Marshfield	Winds were generally estimated at a sustained 35 to 45 mph with higher gusts. In Washington county, trees and power lines were down in the towns of Warren, Barre, Berlin and Marshfield.
6/9/2005	Severe Thunderstorms	Calais (adjacent town)	Downed power lines, 60 knot winds
11/25/2004	Thunderstorm	County wide	A severe thunderstorm moved from Marshfield to Cabot with damaging winds. Trees and power lines were blown down. Winds were estimated to be between 70 and 100 mph.

Table 14: High Wind Historical Events			
Date	*Event*	*Location*	*Extent*
10/15/2003	Thunderstorm	Marshfield	Trees were uprooted by the wind in Marshfield with numerous power outages.
9/16/1999	Tropical Storm Floyd	Statewide	*DR-1307*. Tropical storm winds and flooding. Montpelier flood gauge at 9.30 ft.
6/29/1998	Thunderstorm	Marshfield, Calais, Plainfield	In Marshfield, Calais and Plainfield) trees and wires were blown down by strong winds from thunderstorms. 1/2 inch hail was reported in Marshfield
9/22/1938	Hurricane	Statewide	Category 1 force winds

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2
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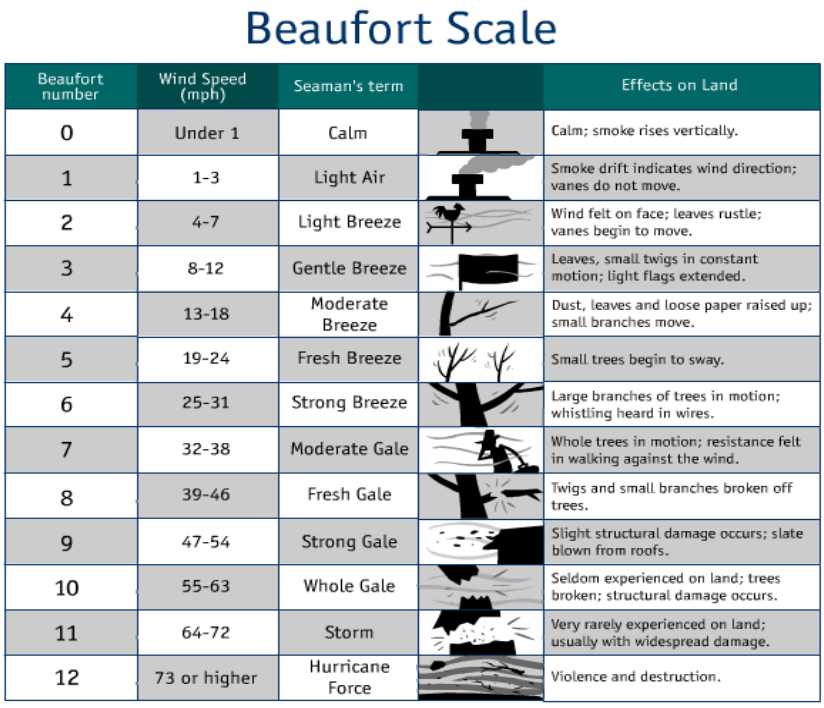

Figure 12: Beaufort Wind Scale

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Table 15: Saffir-Simpson Hurricane Wind Scale				
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		

As detailed in **6.1 Flash Flooding** and **Table 14**, there have been two declared disasters for Wind in Marshfield

- October 2017 (DR 4356): downed trees and power lines on Hollister Hill and Jerusalem Hill Road. Marshfield received $9,114.44 in damages from FEMA Public Assistance. The PA Project Worksheet notes 40 cubic yards of vegetative debris and hazardous leaning trees, and the need to place barricades on Jerusalem Rd and Hollister Hill Rd to warn motorists of downed trees and power lines.
- October 2019(DR 4474): a severe storm including high winds and flooding caused damages. Marshfield received $5,338.68 through FEMA Public Assistance. The PA Project Worksheet notes 70 cubic yards of vegetative debris and downed trees.

The most significant concern from a wind event is the impact to infrastructure, predominately utilities. High winds pose a serious concern for all electric and telecommunication utilities in Vermont due to the customer outages and damage to infrastructure they may cause. Power outages can have a significant impact on Vermonters, especially if they occur in the winter.

Table 16: High Wind Hazard Risk Assessment					
Hazard	*Location*	*Vulnerability*	*Extent*	*Impact*	*Probability*
High Wind	Town/Village wide Jerusalem Hill Rd, Hollister Hill Rd, Depot Hill Rd have previous damages	Power lines, trees, structures	*DR 4356*: $9,000+ in damages, 40 cubic yards of debris *DR 4474*: $5,009+ in damages, 70 cubic yards of debris	Depends on severity of event	High

6.5 Highway/Transport Accident

The majority of Marshfield's vehicular accidents have taken place on US Route 2 (see **Table 17**). US Route 2 contains various acute turns that prove difficult to drivers. The **Areas of Local Concern Map (Attached)** identifies two sections of Marshfield's roads that were identified as 2006-2010 high crash location sections by the Agency of Transportation.

Table 17: History of Occurrences (Source: VT Agency of Transportation)		
Year	*# of crashes*	*#, % of crashes on Route 2*
2020	19	10 (53%)
2019	29	21 (72%)
2018	14	9 (64%)
2017	31	20 (65%)
2016	21	17 (81%)
2015	20	15 (75%)
2014	10	8 (80%)
2013	13	10 (77%)
2012	19	15 (79%)
2011	15	13 (87%)
2010	9	7 (78%)

Since US Route 2 serves as a major connector for St. Johnsbury and the North East Kingdom to points to the southwest, this route is regularly traveled by vehicles containing hazardous materials. A dangerous situation could result if a truck containing hazardous materials had an accident on this thoroughfare. The severity of this situation increases if it was to take place within the densely populated Village.

In July 2020, a tanker carrying 12,500 gallons of propane slid into the Winooski River on Route 2 near the intersection of Onion River Road (see **Figure 13**). Several fire department and other agencies including Vermont Fish & Wildlife, Washington County Sherriff's Department, Agency of Transportation, Green Mountain Power, and Vermont Department of Motor Vehicle, as well as the state HAZMAT team, responded to the incident. The crash closed Route 2 for 8 hours. The crash also took out a utility pole, and power to the Village was cut for 9 hours, affecting 577 customers, so the crew could safely work on removing the trailer from the River[4].

The 2020 Marshfield Town Report states that this incident points out several things, *"one is the dependence on mutual aid…we have mutual aid pacts with both Cabot and Plainfield. The other is that the job has become more technical, and we need expert help to do some of the jobs."*

Figure 13: Tanker Truck in Winooski River. Source: Times Argus

[4] https://www.timesargus.com/news/local/police-speed-equipment-may-have-caused-propane-tanker-crash/article_4ac28aea-2ea1-5a69-b2c3-9e47e7eff5a1.html

Table 18: Highway/Transport Accident Hazard Risk Assessment					
Hazard	*Location*	*Vulnerability*	*Extent*	*Impact*	*Probability*
Highway/ Transport Accident	US Route 2 Corridor	Road infrastructure, vehicles, residential development and businesses	July 2020- tanker slide into Winooski River on Route 2, closing R2 for 8 hours and cutting power to Village for hours	Pressure on Fire Dept., road closures, power outage, potential to affect Village residents if hazardous spill affects sewer system	Medium- 2015 to 2020: 134 crashes in Marshfield, 69% were on Route 2 --2010 to 2020: 11 roadside incidents hazardous materia 9 were on Route 2

6.6 Pandemic

The Vermont State Hazard Mitigation Plan states, "an epidemic emerges when an infectious disease occurs suddenly in numbers that are in excess of normal expectancy. Infectious disease outbreaks put a strain on the healthcare system and may cause continuity issues for local businesses. These outbreak incidents are a danger to emergency responders, healthcare providers, schools, and the public. This can include influenza (e.g. H1N1), pertussis, West Nile virus, and many other diseases." The World Health Organization defines pandemic as "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people"[5].

The most recent pandemic was the influenza (H1N1) pandemic of 2009-2010. The H1N1 flu was relatively mild, but killed three people in Vermont. The locations of those deaths have not been reported.

The novel coronavirus (SARS-CoV-2) was first detected in China at the end of 2019. It has now spread to more than 100 locations internationally, including the United States. The disease the virus causes has been named "coronavirus disease 2019" (abbreviated "COVID-19").

[5] https://www.who.int/bulletin/volumes/89/7/11-088815/en/#:~:text=A%20pandemic%20is%20defined%20as,are%20not%20considered%20pandemics.

Major dates in the COVID-19 pandemic include:

- December 2019: First human cases of COVID-19 reported by officials in Wuhan, China
- January 21, 2020: U.S. Centers for Disease Control (CDC) confirms first case of COVID-19
- February 2020: United States declares public health emergency due to COVID-19 outbreak.
- March 7, 2020: Health officials announce first case of novel coronavirus in Vermont
- March 11, 2020: State Emergency Operations Center (SEOC) partially activates in response to COVID-19
- March 11, 2020: World Health Organization (WHO) confirms COVID-19 is now a pandemic
- March 13, 2020: COVID-19 is declared a national emergency
- March 13, 2020: Governor Phil Scott declares a state of emergency in Vermont
- March 2021: The Marshfield Town Office closed to the public and remains closed as of the writing of this plan. All town meetings are being held remotely.
- March 24, 2020: Governor Scott enacts a 'Stay Home, Stay Safe' order directing closure of in-person operations for all non-essential businesses, requiring remote work if possible, and directing residents to reduce trips outside the home to limit human-to-human contact.
- April 10, 2020: Stay Home, Stay Safe order extended to last until May 15, 2020.
- April 17, 2020: Governor Scott issues phased "restart" plan
- January 27, 2021: Vaccinations begin for Vermonters age 75+
- April 6, 2021: Governor Scott releases Vermont Forward Plan- phased reopening guide
- April 19, 2021: Vaccinations for all Vermonters age 16+ open
- June 14, 2021: Vermont reaches 80% vaccination, State lifts COVID-19 restrictions.
- June 15, 2021: State of Emergency expires and is not renewed.

As of the writing of this plan (August 2021), there have been:

- Statewide: 25,219 cases, 260 deaths
- Washington County: 1,980 cases; 15 deaths
- Marshfield: 38 cases, deaths unknown

As shown in **Figure 14**, cases in Washington County increased sharply in November and December and continued to climb into 2021, plateauing in April 2021, and beginning to

climb again in Summer 2021. Individuals 60+ are especially vulnerable to pandemics including COVID-19.

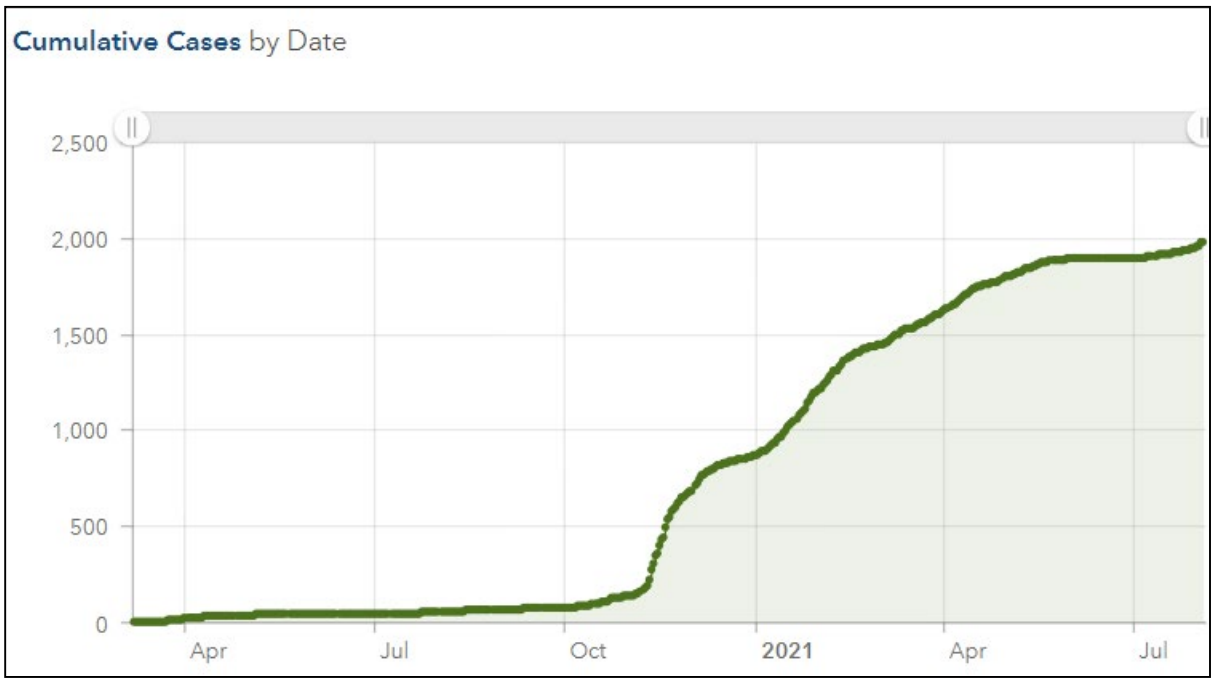


Figure 14: COVID-19 Cumulative Cases by Date in Washington County. Source: VDH COVID-19 Public Dashboard

As shown in **Figure 15**, 54% (1067) of COVID-19 cases in Washington County have been in residents age 40 or younger, while 47% of cases have been in residents age 40 or older.

To mitigate impacts from COVID-19, the Town implemented several policies and procedures including:

Changes to Town Services

- Closed Old Schoolhouse Common to public
- Required employees to wear masks and conduct daily health and temperature checks (see **Figure 16**)
- Conducted drive-up voting to maintain social distancing
- Installed wall and Plexiglas to create separate entryway in Town Clerk's office
- Reorganized Office and installed additional outlets to allow for social distancing
- Installed secure drop box

- Purchased Zoom license to allow Boards, Commissions, and Committees to meet remotely
- Closed Jaquith Public Library for first time in 126 years and transitioned to curbside service
- Installed Wi-Fi hotspot to provide residents with point of access for telehealth and remote learning
- Attended Governor Scott's bi-weekly press conferences, weekly State Emergency Operations Center (SEOC) briefings, and providing updates to residents via the Town website on the current health and safety guidance from the Vermont Department of Health and the Governor

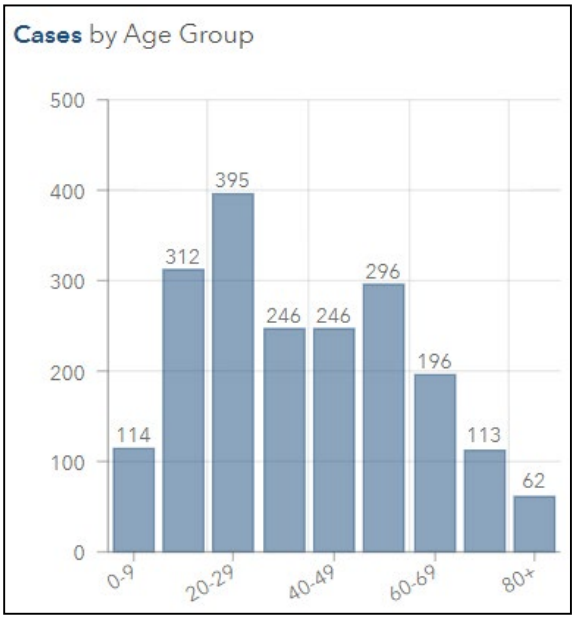


Figure 15: COVID-19 Cases in Washington County by Age Group. Source: [VDH COVID-19 Public Dashboard]

Figure 16: Sign Posted at Old Schoolhouse Common Requiring Masks. Source: Town of Marshfield

The scale and complexity of COVID-19 has not been seen in this country since the 1918 Spanish Flu. With a major pandemic, the hazard to Marshfield is its effect on individuals, vulnerable populations, the medical system, and the economy. The current evolving

situation makes it impossible at this time to fully understand and capture short and long term impacts in this LHMP. Some impacts noted by the LHMP Planning Team include

- Food insecurity - stores are offering curb side pickup and Planning Team members noted sales have surged
- Changes/reduction in Town services due to social distancing and health and safety requirements, as noted above
- Potential impacts on town revenue due to loss of income - unknown at this time

Figure 17: Governor Scott Celebrates Vermont Reaching 80% Vaccination Milestone on June 14, 2021. Source: Governor Scott Facebook Page

Table 19: Pandemic Hazard Risk Assessment

Hazard	*Location*	*Vulnerability*	*Extent*	*Impact*	*Probability*
Pandemic	Town-wide, County wide, state wide	Seniors, vulnerable populations	--Statewide: 25,219 cases, 260 deaths --Washington County: 1,980 cases; 15 deaths --Marshfield: 38 cases, deaths unknown	Town services impacted	Unknown, may reoccur seasonally

7. Mitigation

7.1 Town Plan (2018) Goals that Support Local Hazard Mitigation

- Ensure zoning regulations protect against erosion by, regulating development on slopes.
- Ensure zoning regulations are compatible with the requirements, but may be more restrictive than, those of the Federal Emergency Management Agent's Federal Flood Insurance Program.
- Maintain, at a minimum, existing protection for surface waters, including riparian area protections in the Zoning Bylaws.
- Work with the state to regulate the operation of the Green Mountain Power dam on Marshfield Reservoir to address current impacts to water quality.
- Explore options for adopting Fluvial Erosion Hazard regulations.
- Pursue options to reduce traffic speeds and introduce traffic calming infrastructure on Route 2 and other roadways throughout the village

Marshfield's town plan will be updated in 2022. The goal of this 2021 hazard mitigation plan is to:

- To take actions to reduce or eliminate the long-term risk to human life and property from:
    - Flooding/Flash Flooding/Fluvial Erosion
    - Dam failure
    - Severe Winter Storms
    - High Wind
    - Highway/Transport Accident
    - Pandemic
- 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 Marshfield 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
- Improve public messaging of hazards at all stages (before, during, after)/ increase education, outreach, and awareness of emergency communication systems such as VT Alert, CARES program
- Increase cooperation and coordination among private entities, local agencies, State agencies, and Federal agencies

- Maintain natural and man-made systems that protect the community from natural hazards
- Minimize loss of life, injury, and damage to property, the economy, and the environment from natural and man-made hazards

7.2 Identified Hazard Mitigation Programs, Projects & Activities

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

Table 20: 2021-2026 Hazard Mitigation Programs, Projects, and Activities					
Hazard Mitigated	*Mitigation Action*	*Local Leadership*	*Prioritization*	*Possible Resources*[6]	*Time Frame*
All hazards	Develop list/map of potential fuel locations for use during emergencies	Selectboard	High	CVRPC (GIS)	2021-2023 *(1-2 yrs.)*
All hazards	Incorporate information from LHMP into Town Plan Update (expires 2026)	Planning Commission, CVRPC	Medium	CVRPC, Selectboard, Planning Commission	2021 to 2026
All hazards	Receive periodic training on VT Alert account to stay up to date, confirm with VEM that all addresses in Town & Village are included in account, conduct outreach to increase sign ups (signup sheet at Town Meeting Day. paper form to sign up)	Selectboard, VEM	High	VEM, Selectboard	2021-2026 *(Annual)*
All hazards	Sign onto public works mutual aid agreement to share resources during emergencies	Selectboard, CVRPC	Medium	CVRPC, Town staff	2021-2023 *(1-2 yrs.)*

[6] HMGP – Hazard Mitigation Grant Program, EMGP – Emergency Management Grant Program, PSIC/NTIA – National Telecommunications and Information Administration, USDA – United States Dept. of Agriculture

Table 20: 2021-2026 Hazard Mitigation Programs, Projects, and Activities					
Hazard Mitigated	*Mitigation Action*	*Local Leadership*	*Prioritization*	*Possible Resources*[6]	*Time Frame*
All hazards	Spread awareness of CARES program- distribute info on program and sign-up card through following methods: • Meals on Wheels • Distribute survey for info on CARES registrants in Town/Village and resident status (seasonal/permanent) • Town Meeting Day, Town Report, Town website	Selectboard, VEM	High	VEM, 211, CVRPC	2021-2023 (1-2 yrs.)
Flash Flooding	Distribute information on importance of flood insurance to residents in floodplain	Town Clerk	Medium	CVRPC	2021-2023 (1-2 yrs.)
Flash Flooding	Investigate feasibility and steps needed for storm water management ordinance	Selectboard,CVRPC	Medium	CVRPC, DEC	2021-2025 (2-4 yrs.)
Flash Flooding	Upgrade and replace culverts identified as "poor" condition in CVRPC culvert inventory	Selectboard, Road Crew	High	Local staff, VTrans	2021-2026 Evaluate annually, upgrade as needed
Dam Failure	Publicize info on fire station flash flood warning system	Town Clerk, Fire Chief	Medium	Town staff	2021 (1 yr.)

Table 20: 2021-2026 Hazard Mitigation Programs, Projects, and Activities					
Hazard Mitigated	*Mitigation Action*	*Local Leadership*	*Prioritization*	*Possible Resources*[6]	*Time Frame*
Pandemic	Renovate Old Schoolhouse Common to add porch to Jaquith Library side to allow access to Wi-Fi with social distancing	Selectboard	High	Town funds	2021 (1 yr.)
Pandemic	Update Continuity of Operations Plan (COOP)	Selectboard	Medium	CVRPC	2021 (1 yr.)
Highway/ Transport Accident	Work with VTrans as needed on US Route 2 repaving, advocate for traffic calming measures	Selectboard/VTrans	High	VTrans	Draft construction plans by Fall 2021

VEM also emphasizes a collaborative approach to achieving mitigation on the local level, by partnering with ANR, VTrans, 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.

Table 20 lists mitigation activities in regards 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. The action's cost was evaluated in relation to its benefit as outlined in the STAPLEE[7] guidelines.

Additionally, Marshfield discussed developing river corridor bylaws, however as there is no foreseen development pressure in the river corridor in Marshfield, therefore the town did not prioritize an action to adopt river corridor bylaws for this plan.

Marshfield understands that in order to apply for FEMA funding for mitigation projects, a project must meet FEMA benefit cost criteria. In addition, the Town must also have a FEMA approved Hazard Mitigation Plan.

A High prioritization denotes that the action is either critical or potential funding is readily available and should have a timeframe of implementation of less than two years. A Medium prioritization is warranted where 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. A Low prioritization indicates that the timeframe for implementation of the action, given the action's cost, availability of funding, and the community's need to address the issue, is more than four years.

Attachments

- Draft Template to Evaluate Effectiveness of LHMP at Achieving Purpose & Goals
- Areas of Local Concern Map
- Water Wise Woodlands: Target Parcels for Flood Protection
- 2019 Road Erosion Inventory: Summary Table
- Marshfield 2019 Road Erosion Inventory: Map of Very High Priority Segments
- High Priority Culvert Inventory – Town of Marshfield (Culverts in Poor Condition)
- LHMP Survey Results
- 03_16_21 Selectboard Meeting Agenda: LHMP Kick Off
- 04_20_21 Selectboard Meeting Agenda: LHMP Hazard Identification

[7] A method of evaluating mitigation actions based on **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **E**conomic, **E**nvironmental criteria

- 05_18_21 Selectboard Meeting Agenda: Vulnerability Assessment
- 06_01_21 Selectboard Meeting Agenda: Mitigation Strategies
- 06_15_21 Selectboard Meeting Agenda: Mitigation Goals, Maintenance Process
- 07_28_21 Village Trustees Meeting Agenda: Draft LHMP Overview
- 08_17_21 Selectboard Meeting Agenda: VEM Comment Review
- 5-year review and maintenance process

Draft Template to Evaluate Effectiveness of LHMP at Achieving Purpose & Goals

1. **Goal 1:** Ensure existing and future drainage systems are adequate and functioning properly., maintain natural and man-made systems that protect the community from natural hazards
2. **Goal 2:** Preserve and prevent development in areas where natural hazard potential is high
3. **Goal 3**: Ensure that all residents and business owners are aware of the hazards that exist within Marshfield and ways they can protect themselves and insure their property.
4. **Goal 4**: Ensure that emergency response services and critical facilities functions are not interrupted by all hazards
5. **Goal 5:** Improve public messaging of hazards at all stages (before, during, after)/ increase education, outreach, and awareness of emergency communication systems such as VT Alert, CARES program
6. **Goal 6:** Increase cooperation and coordination among private entities, local agencies, State agencies, and Federal agencies
7. **Goal 7**: Minimize loss of life, injury, and damage to property, the economy, and the environment from natural and man-made hazards

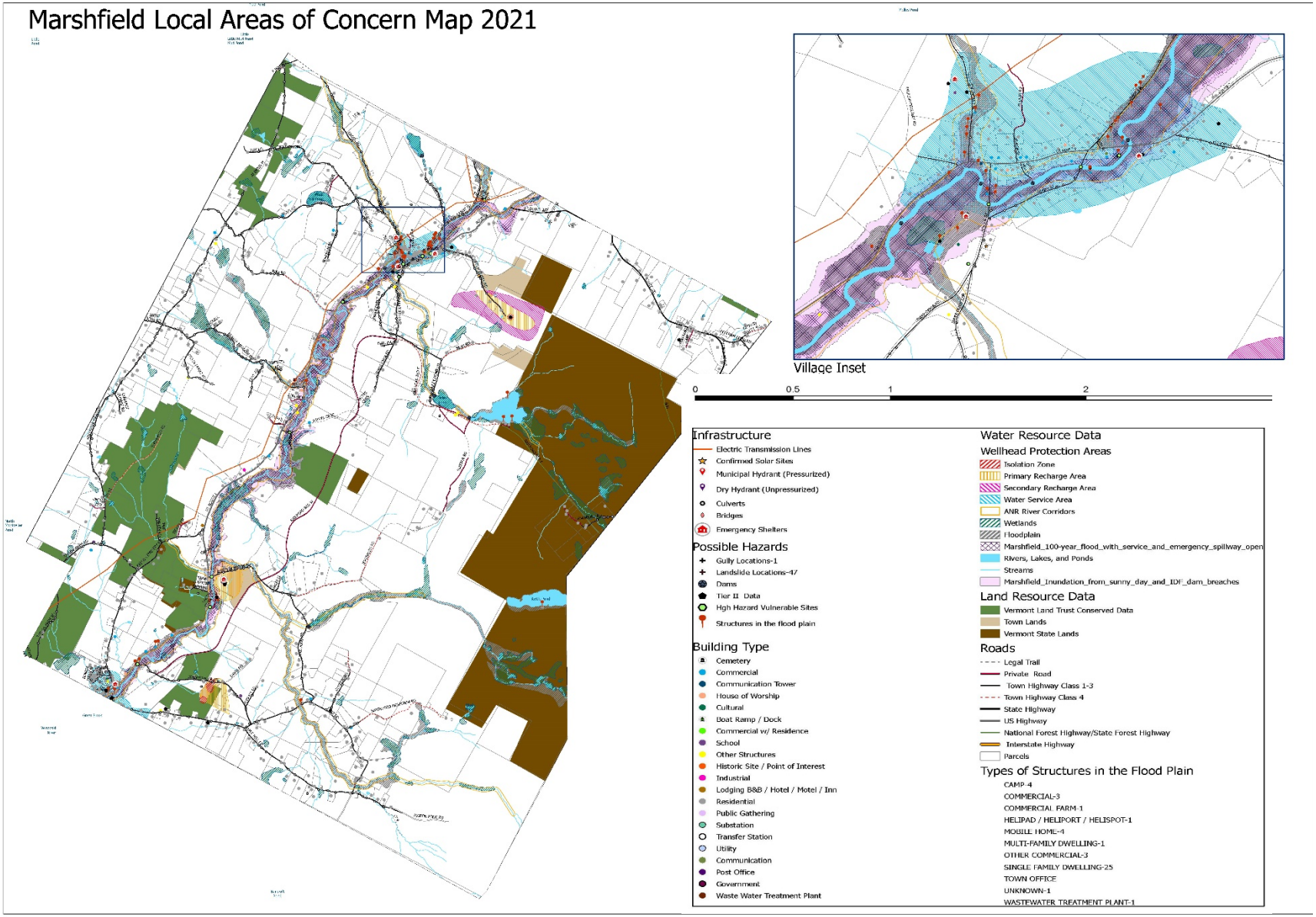
Evaluation Metric	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7
# of culverts upgraded or put on Road Crew schedule to be upgraded	X	X					
# of website visits following posting of info (flash flood warning system, etc.)			X				X
# of people signed up for CARES program (compare annually)					X		X

Evaluation Metric	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7
# of people signed up for VT Alert (compare annually)			X	X			
# of people who receive VT Alerts (compare annually)			X	X			
Adoption of LEMP annually		X	X	X	X	X	X
COOPs updated or reviewed annually		X	X	X			
# of permits issued to administer and enforce Flood Hazard regulations		X					

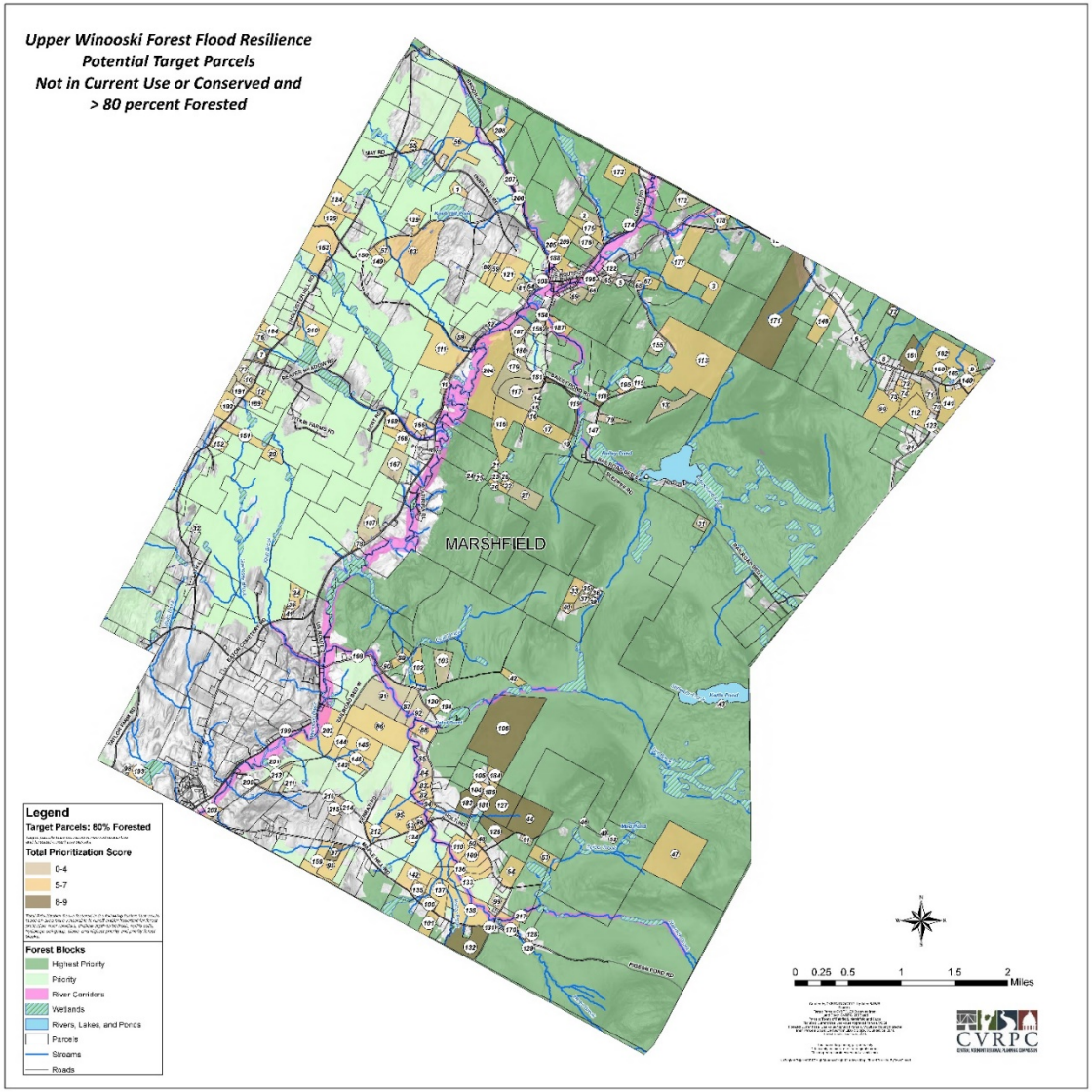
Evaluation Metric	2022 Status
# of culverts upgraded or put on Road Crew schedule to be upgraded	
# of website visits following posting of info (flash flood warning system, etc.)	
# of people signed up for CARES program (compare annually)	
# of people signed up for VT Alert (compare annually)	
# of people who receive VT Alerts (compare annually)	
Adoption of LEMP annually	
COOPs updated or reviewed annually	
# of permits issued to administer and enforce Flood Hazard regulations	

2021 Areas of Local Concern

See full sized map at https://centralvtplanning.org/towns/marshfield/



Water Wise Woodlands: Target Parcels for Flood Protection

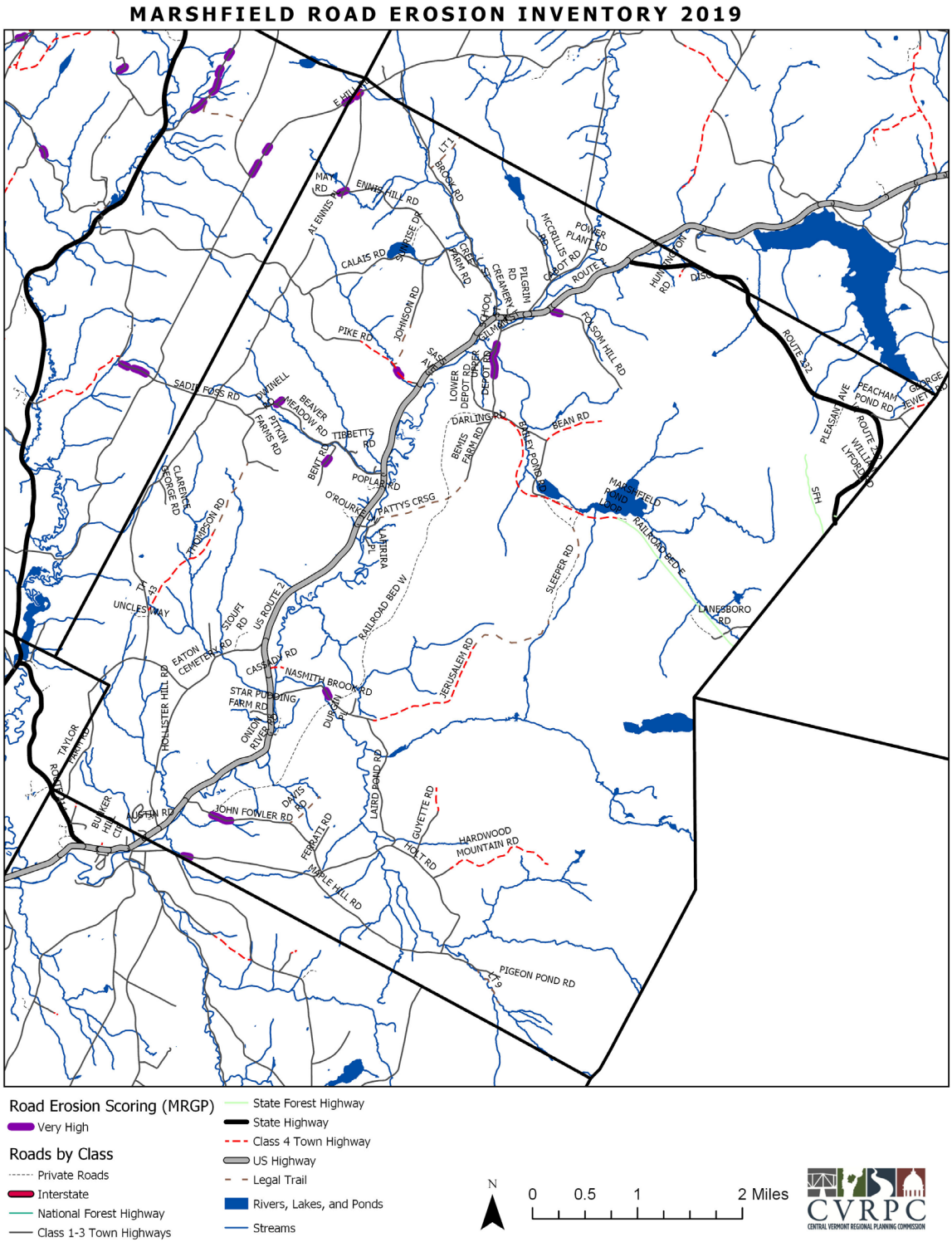


2019 Road Erosion Inventory: Summary Table

Priority						
Road	*Very High-Within the First 5 Years*	*Low*	*Moderate*	*Very High-Within the First 5 Years*	*Grand Total*	*Possible Year*
BAILEY POND RD			1		1	
BEAVER MEADOW RD	4	9	6		19	
BENT RD	1	1	1	1	4	
BROOK RD	4	3			7	
CALAIS RD	3	8			11	
CLARENCE GEORGE RD		1			1	
CREAMERY ST	1	4	1		6	
CREE FARM RD	2	1			3	
DARLING RD	1				1	
DWINELL RD				1	1	
E HILL RD				1	1	
EATON CEMETERY RD		3	2		5	
ENNIS HILL RD	2	7	2		11	
FOLSOM HILL RD	1	2		1	4	
GILMAN ST	2	1			3	
GUYETTE RD	2	2			4	
HARDWOOD MOUNTAIN RD	1				1	
HOLLISTER HILL RD	5	5	8		18	
HOLT RD		6	5		11	
JAKE MARTIN RD		1	1		2	
JOHN FOWLER RD		1	2	3	6	
JOHNSON RD		1			1	
JURKIEWICZ PL		1	1		2	
LAFIRIRA PL	2	1			3	
LAIRD POND RD	1	4	1		6	
LANESBORO RD		2			2	
LOWER DEPOT RD		5			5	
MAPLE HILL RD	8	2	1	1	12	
MAY RD				1	1	
MCCRILLIS RD		3			3	
NASMITH BROOK RD	3		4	1	8	

Priority						
Road	*Very High-Within the First 5 Years*	*Low*	*Moderate*	*Very High-Within the First 5 Years*	*Grand Total*	*Possible Year*
ONION RIVER RD		1			1	
PATTYS CRSG	1		2		3	
PEACHAM POND RD	1		1		2	
PECK PL	1				1	
PIGEON POND RD	1	3	2		6	
PIKE RD			2	1	3	
POWER PLANT RD			1		1	
SASS AV	1				1	
TAYLOR FARM RD		3	3		6	
TIBBETTS RD		2			2	
UPPER DEPOT RD				5	5	
Grand Total	48	83	47	16	194	

Marshfield 2019 Road Erosion Inventory: Map of Very High Priority Segments



High Priority Culvert Inventory – Town of Marshfield (Culverts in Poor Condition)

Source: VTrans Culvert Inventory

Road	# of High Priority Culverts
Beaver Meadow Rd	3
Calais Rd	1
Creamery St	1
Eaton Cemetary Road	2
Hollister Hill Rdd	2
Jake Martin Rd	1
Lafirira Place	2
Laird Pond Rd	3
Lower Depot Rd	2
Nasmith Brook Road	7
Pike Rd	1

Road	# of culverts with high erosion
Beaver Meadow Rd	3
Lower Depot Road	2
Nasmith Brook Road	2

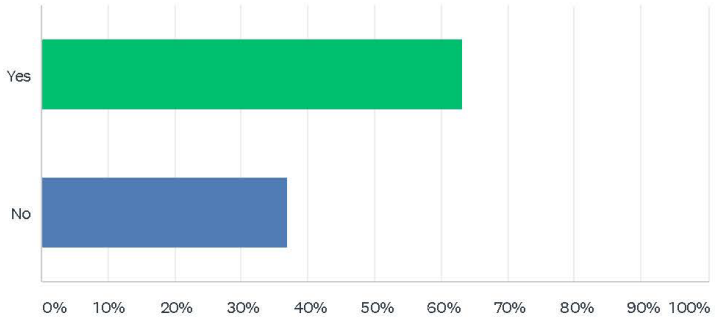
LHMP Survey Results

Q1 What street do you live on?

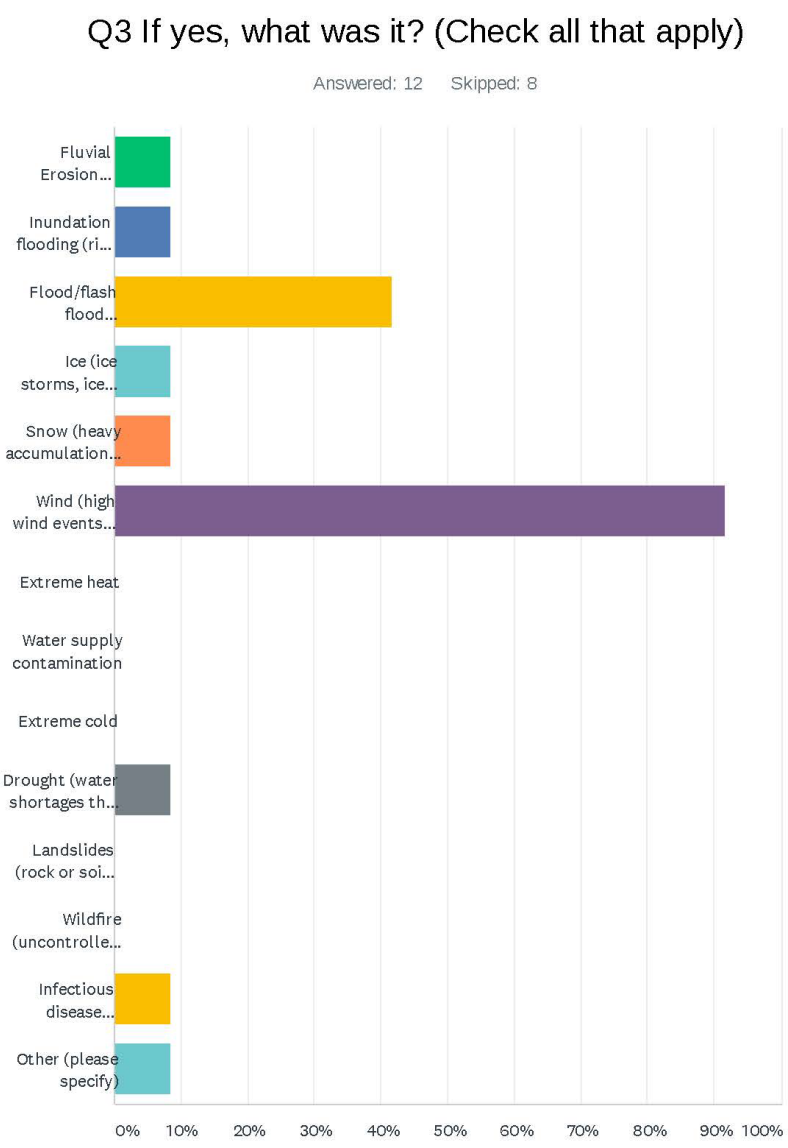
Route 232
Uncles Way
Cree Farm Rd
US Route 2 (2)
Nasmith Brook Road (2)
Laird pond
School Street
Bailey Pond Rd (2)
Hollister Hill Road (3)
Maple Hill Rd
Folsom Hill Rd.
Beaver Meadow (2)
McCrillis Road

Q2 In the last 5 to 10 years, have you been impacted by a natural or other disaster in Marshfield?

Answered: 19 Skipped: 1

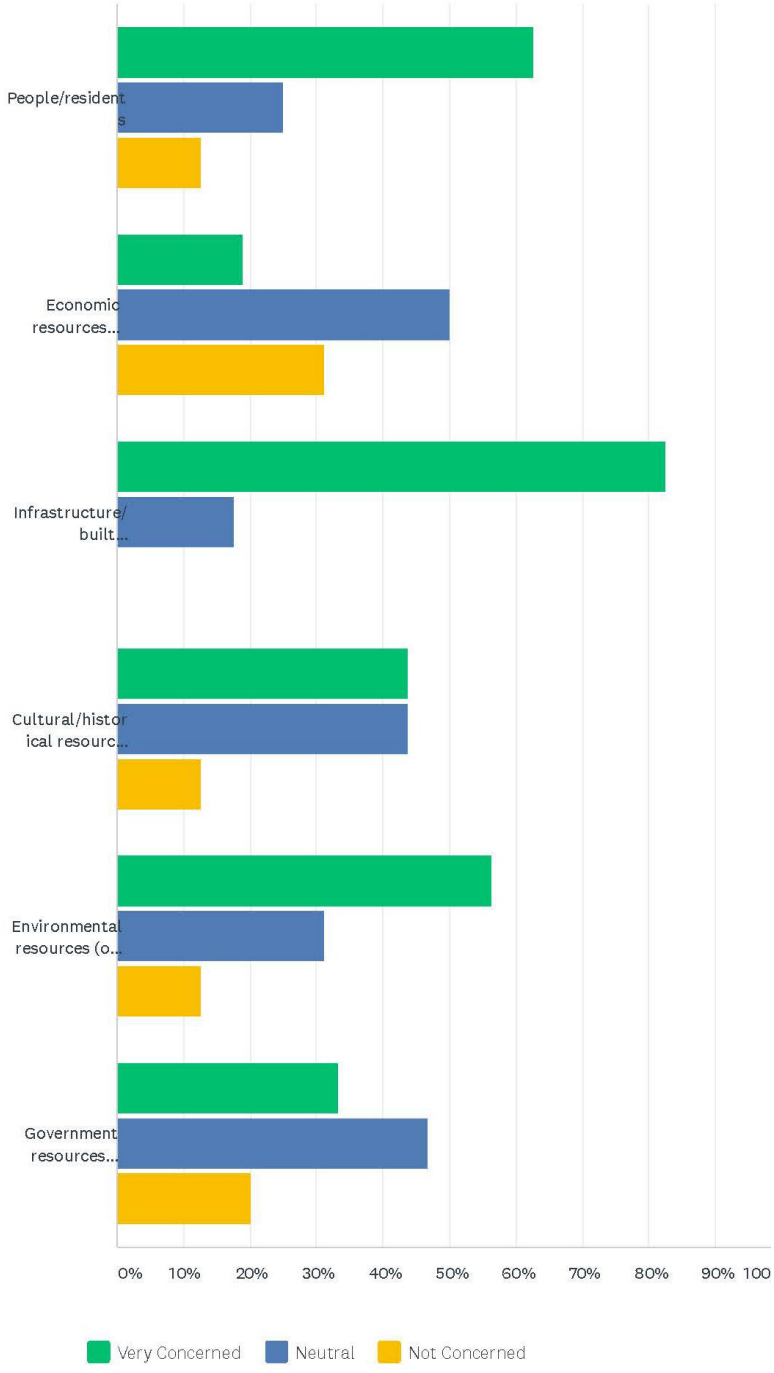


ANSWER CHOICES	RESPONSES	
Yes	63.16%	12
No	36.84%	7
TOTAL		19


Q3 If yes, what was it? (Check all that apply)
Answered: 12 Skipped: 8
Fluvial Erosion...
Inundation flooding (ri...
Flood/flash flood...
Ice (ice storms, ice...
Snow (heavy accumulation...
Wind (high wind events...
Extreme heat
Water supply contamination
Extreme cold
Drought (water shortages th...
Landslides (rock or soi...
Wildfire (uncontrolle...
Infectious disease...
Other (please specify)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

ANSWER CHOICES	RESPONSES	
Fluvial Erosion (streambed and streambank erosion caused by adjusting width and depth of a stream)	8.33%	1
Inundation flooding (rise of river or lake water levels)	8.33%	1
Flood/flash flood (significant amount of precipitation over a short amount of time)	41.67%	5
Ice (ice storms, ice jams)	8.33%	1
Snow (heavy accumulation of snow which can also include drifting snow, low visibility, hazardous travel)	8.33%	1
Wind (high wind events that can damage trees, electrical lines, etc.)	91.67%	11
Extreme heat	0.00%	0
Water supply contamination	0.00%	0
Extreme cold	0.00%	0
Drought (water shortages that can lead to damage to crops, pastures, etc.)	8.33%	1
Landslides (rock or soil that falls/slides/spreads across an area and can damage infrastructure, buildings, and the environment)	0.00%	0
Wildfire (uncontrolled burning of forest, brush, or grasslands)	0.00%	0
Infectious disease (bacteria, viruses, or parasites- could include COVID-19, Lyme disease, West Nile Virus)	8.33%	1
Other (please specify)	8.33%	1
Total Respondents: 12		

Q4 How concerned are you about hazard impacts on these resources in your community?



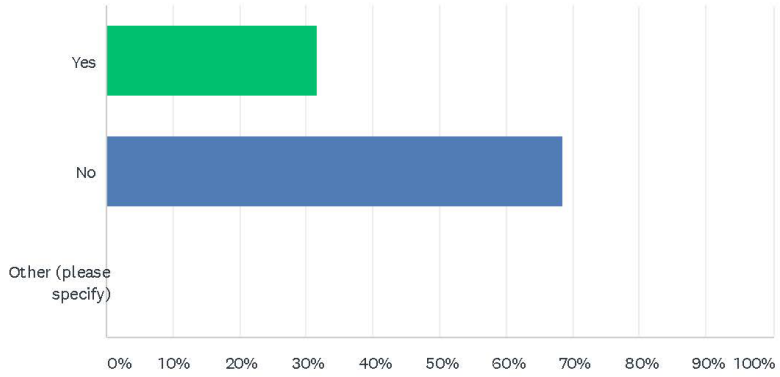
	VERY CONCERNED	NEUTRAL	NOT CONCERNED	TOTAL
People/residents	62.50% 10	25.00% 4	12.50% 2	16
Economic resources (losing your job as a result of disasters, for example)	18.75% 3	50.00% 8	31.25% 5	16
Infrastructure/built environment (your home, roads, sidewalks, bridges, water supply)	82.35% 14	17.65% 3	0.00% 0	17
Cultural/historical resources (access to parks, playgrounds, historical buildings)	43.75% 7	43.75% 7	12.50% 2	16
Environmental resources (open green space, streams, rivers, trees, for example)	56.25% 9	31.25% 5	12.50% 2	16
Government resources (public facilities)	33.33% 5	46.67% 7	20.00% 3	15

Q5 Think about your home and community. What hazards are you concerned about that you would like the Hazard Mitigation Plan to include?

Road deterioration, power and internet
Water issues, like drought. High winds and trees
Clearing of downed trees in stream beds
Breach of dam on Marshfield Reservoir
Rock outcropping very close to the road on west side Rte. 2 between Pike Road and Beaver Meadow Rd, is marked only with dab of faded yellow paint. This could take out the passenger side of a vehicle if someone failed to negotiate the curve in the road, plus it's just scary looking and unfriendly. Also the curve 35mph curve on Rte. 2 just south of Nasmith Brook Rd, where a tanker truck recently dumped its tank when it failed to negotiate the curve could use a few more caution arrows on the east side guard rail - it has one arrow. Why not a series of arrows to let folks not familiar with the road understand that that is a curve that keeps on curving and you need to slow down.
Plan if extended power outage; Plan if Marshfield dam fails
geological and meteorological hazards; water contamination; dam breach
Road Cut Off from culvert blowouts
Field Erosion. High wind damage.
Flooding and storm damage to roads etc.
Falling trees
A dam failure at Molly's Falls Reservoir.
Keep an eye on "improvements" to the Marshfield dam
Mostly concerned about the dam at Molly's Pond.

Q6 Have you ever received information about how to make your home safer from natural or other disasters?

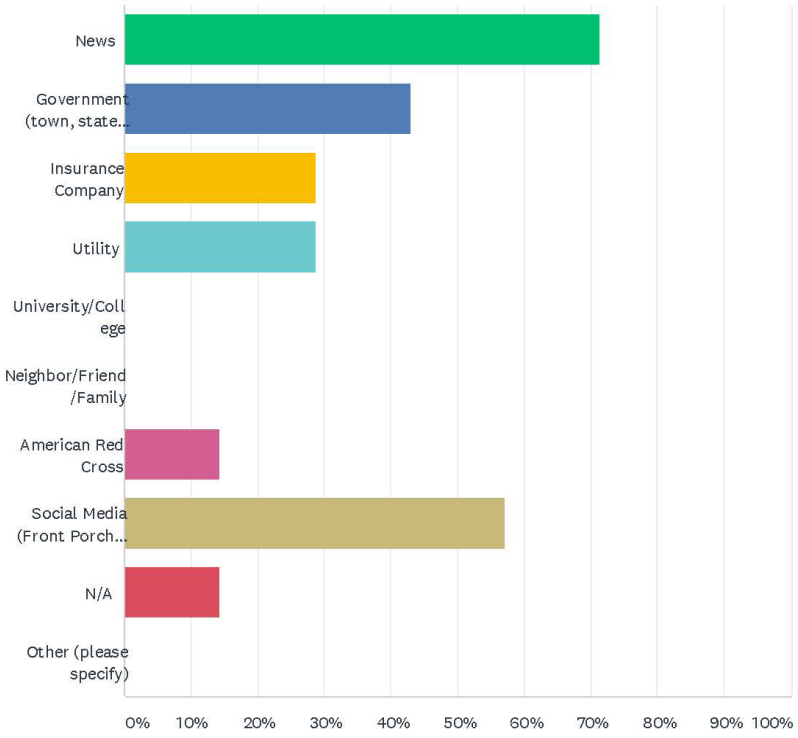
Answered: 19 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	31.58%	6
No	68.42%	13
Other (please specify)	0.00%	0
TOTAL		19

Q7 If so, from what source (check all that apply)

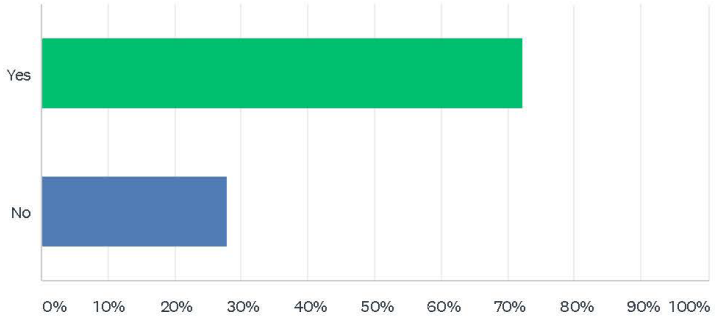
Answered: 7 Skipped: 13



ANSWER CHOICES	RESPONSES	
News	71.43%	5
Government (town, state, neighborhood network)	42.86%	3
Insurance Company	28.57%	2
Utility	28.57%	2
University/College	0.00%	0
Neighbor/Friend/Family	0.00%	0
American Red Cross	14.29%	1
Social Media (Front Porch Forum, Facebook, Twitter)	57.14%	4
N/A	14.29%	1
Other (please specify)	0.00%	0
Total Respondents: 7		

Q8 Are you signed up for VTAlert? (Link to sign up: https://vem.vermont.gov/vtalert)

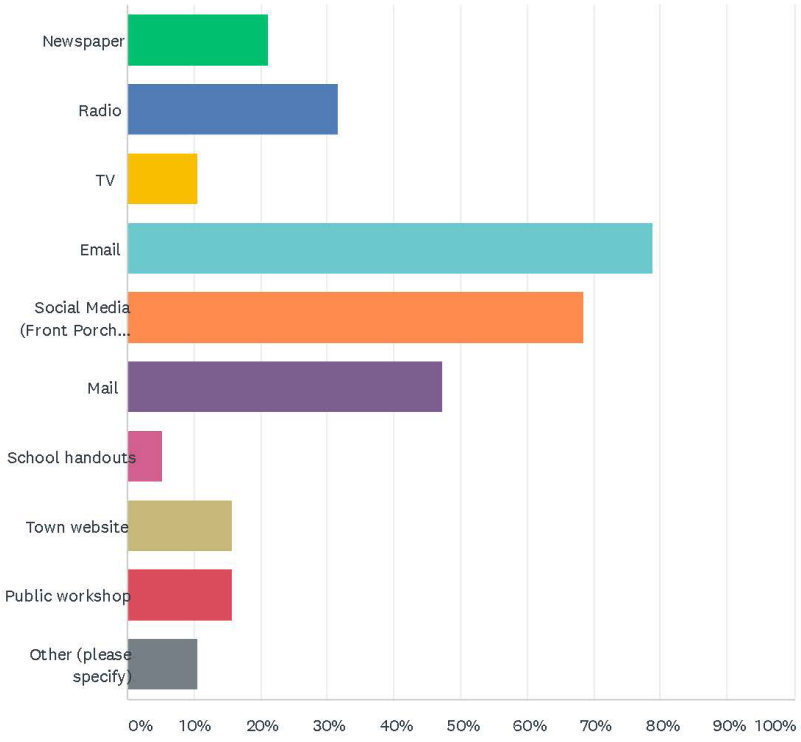
Answered: 18 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes	72.22%	13
No	27.78%	5
TOTAL		18

Q9 What is the most effective way for you to receive information about making your home safer from natural or other disasters? (check all that apply)

Answered: 19 Skipped: 1

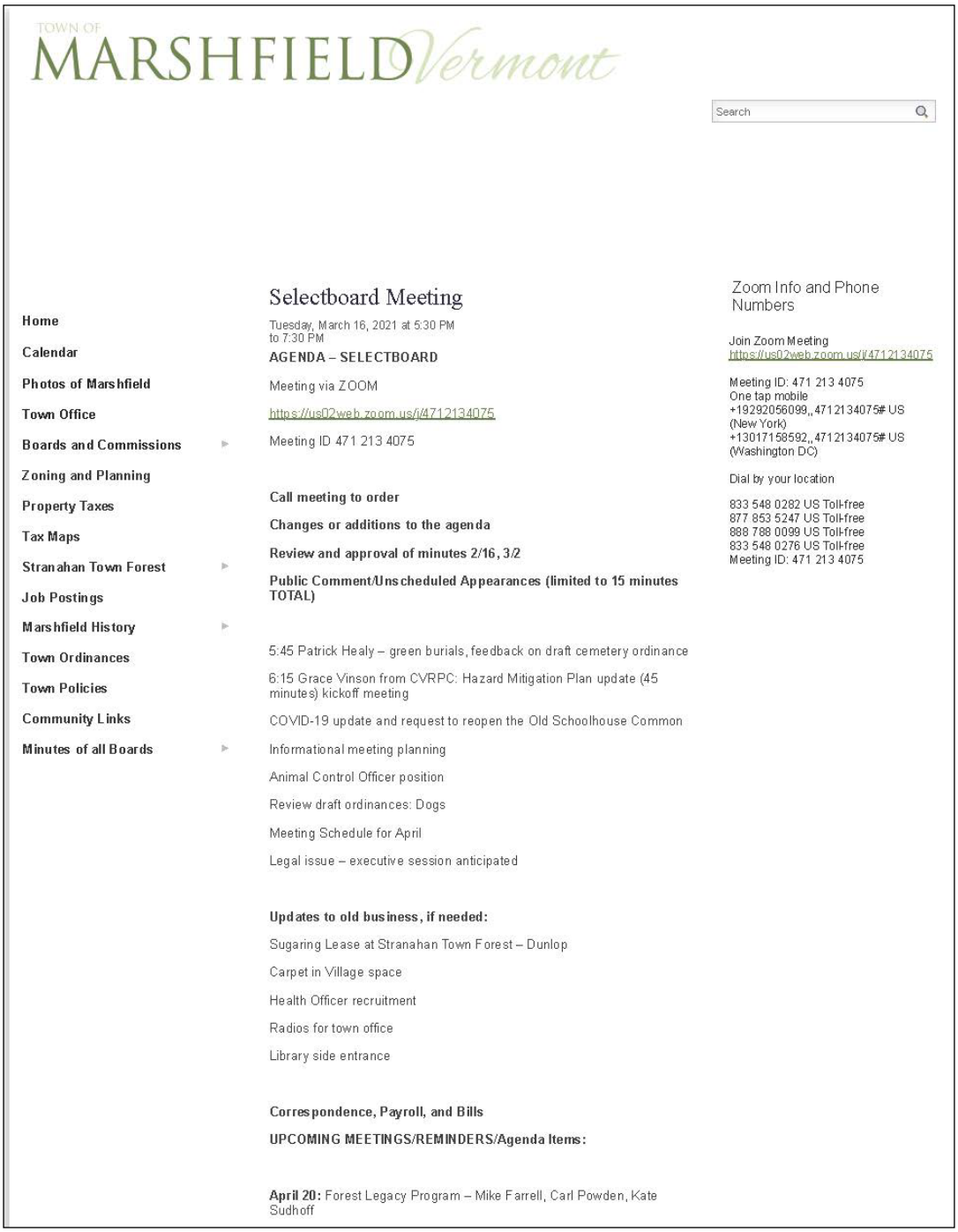


ANSWER CHOICES	RESPONSES	
Newspaper	21.05%	4
Radio	31.58%	6
TV	10.53%	2
Email	78.95%	15
Social Media (Front Porch Forum, Facebook, etc)	68.42%	13
Mail	47.37%	9
School handouts	5.26%	1
Town website	15.79%	3
Public workshop	15.79%	3
Other (please specify)	10.53%	2
Total Respondents: 19		

Q10 Please provide any additional information that you feel will be beneficial in the drafting of our hazard mitigation plan (short answer)

Allowing for stream bed cleaning and tree cutting along stream beds of dead or dying trees.
During Irene we were advised to evacuate as water covered road and bridge. Fire Dept advised us that the dam was on the verge of being breached. Several days afterward GMP was noted ferrying material to the dam site. My fields were inundated and areas of the stream banks collapsed. In anticipation of the hurricane, GMP could have gradually (over a period of days) drawn down the reservoir in anticipation of the torrential rain and avoided much of the down-stream property flooding. For the life of me I don't know why this issue is getting more attention from the town of Plainfield than Marshfield.
Government interference with my life is my number 1 fear.
Interactive Map on Website

03/16/21 Selectboard Meeting Agenda: LHMP Kick Off



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Selectboard Meeting

Tuesday, March 16, 2021 at 5:30 PM
to 7:30 PM

AGENDA – SELECTBOARD

Meeting via ZOOM

https://us02web.zoom.us/j/4712134075

Meeting ID 471 213 4075

Call meeting to order

Changes or additions to the agenda

Review and approval of minutes 2/16, 3/2

Public Comment/Unscheduled Appearances (limited to 15 minutes TOTAL)

5:45 Patrick Healy – green burials, feedback on draft cemetery ordinance

6:15 Grace Vinson from CVRPC: Hazard Mitigation Plan update (45 minutes) kickoff meeting

COVID-19 update and request to reopen the Old Schoolhouse Common

Informational meeting planning

Animal Control Officer position

Review draft ordinances: Dogs

Meeting Schedule for April

Legal issue – executive session anticipated

Updates to old business, if needed:

Sugaring Lease at Stranahan Town Forest – Dunlop

Carpet in Village space

Health Officer recruitment

Radios for town office

Library side entrance

Correspondence, Payroll, and Bills

UPCOMING MEETINGS/REMINDERS/Agenda Items:

April 20: Forest Legacy Program – Mike Farrell, Carl Powden, Kate Sudhoff

Zoom Info and Phone Numbers

Join Zoom Meeting
https://us02web.zoom.us/j/4712134075

Meeting ID: 471 213 4075
One tap mobile
+19292056099,,4712134075# US (New York)
+13017158592,,4712134075# US (Washington DC)

Dial by your location

833 548 0282 US Toll-free
877 853 5247 US Toll-free
888 788 0099 US Toll-free
833 548 0276 US Toll-free
Meeting ID: 471 213 4075

04/20/21 Selectboard Meeting Agenda: LHMP Hazard Identification

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Selectboard Meeting

Tuesday, April 20, 2021 at 5:30 PM
to 7:30 PM

AGENDA – SELECTBOARD

Meeting via ZOOM

https://us02web.zoom.us/j/4712134075

Meeting ID 471 213 4075

Dial: +1 929 205 6099
+1 301 715 8592
+1 312 626 6799
+1 669 900 6833
+1 253 215 8782
+1 346 248 7799

Meeting ID: 471 213 4075

Call meeting to order

Changes or additions to the agenda

Review and approval of minutes 4/8

Public Comment/Unscheduled Appearances (limited to 15 minutes TOTAL)

5:35 Forest Legacy Program – Mike Farrell, Carl Powden, Kate Sudhoff

6:00 Hazard Mitigation Plan update - Grace Vinson, CVRPC

6:45 COVID-19 update if required

Decide whether to rent the Old Schoolhouse Common this summer

Speed Limit on Route 2 in Plainfield village

Possible burn pile on Gilman St

Review draft ordinances: Dogs

American Rescue Plan

Updates to old business, if needed:

Highway grants

Curb Cut applications – OK to use newer driveway standards?

Carpet in Village space

Radios for town office

Library side entrance

Christ Covenant Church abatement

Correspondence, Payroll, and Bills

UPCOMING MEETINGS/REMINDERS/Agenda Items:

May 4 - Appointments to Boards and Committees

Address: https://us02web.zoom.us/j/4712134075

05/18/21 Selectboard Meeting Agenda: Vulnerability Assessment

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Selectboard Meeting

Tuesday, May 18, 2021 at 5:30 PM
to 7:30 PM

AGENDA – SELECTBOARD

Meeting via ZOOM

https://us02web.zoom.us/j/4712134075

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Meeting ID: 471 213 4075

Call meeting to order

Changes or additions to the agenda

Review and approval of minutes 5/4

Public Comment/Unscheduled Appearances (limited to 15 minutes TOTAL)

Sign for Community Garden

Grace Vinson, CVRPC – Hazard Mitigation Plan Update

COVID-19 update if required

Underground Storage Tank testing

Town web domain – suggestion to change

School Street Bridge project

Local Emergency Management Plan

Appointments

Personnel and Legal issues – executive session anticipated

Review draft ordinances: Dogs

Updates to old business, if needed:

Library porch RFP and permit

Carpet in Village space

American Rescue Plan

Speed Limit on Route 2 in Plainfield village

Curb Cut applications – OK to use newer driveway standards?

Radios for town office

Correspondence, Payroll, and Bills

UPCOMING MEETINGS/REMINDERS/Agenda Items:

Update to Traffic Ordinance

06/01/21 Selectboard Meeting Agenda: Mitigation Strategies

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Selectboard Meeting

Tuesday, June 1, 2021 at 5:30 PM
to 7:30 PM

AGENDA – SELECTBOARD

Meeting via ZOOM

https://us02web.zoom.us/j/4712134075

Meeting ID 471 213 4075

Dial: +1 929 205 6099
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+1 669 900 6833
+1 253 215 8782
+1 346 248 7799

Meeting ID: 471 213 4075

AGENDA – SELECTBOARD

DATE: Tuesday, May 18, 2021

TIME: 5:30 p.m.

Call meeting to order

Changes or additions to the agenda

Review and approval of minutes 5/4

Public Comment/Unscheduled Appearances (limited to 15 minutes TOTAL)

5:30 Nick Seifert – Energy Committee (15 minutes)

5:45 Shauna Clifford, School Street Bridge project update, curb cut driveway standards

6:00 Grace Vinson, CVRPC – Hazard Mitigation Plan Update

6:45 Rich Phillips – Picnic shelter

– Old Home Days

COVID-19 update if required

Local Emergency Management Plan adoption

CTCL grant – how to spend remaining funds

Service contract for solar trackers

Tax Sale bid permission

Town email address for Health Officer

Cross Vermont Trail update

Personnel Policy update

Results of speed study

Updates to old business, if needed:

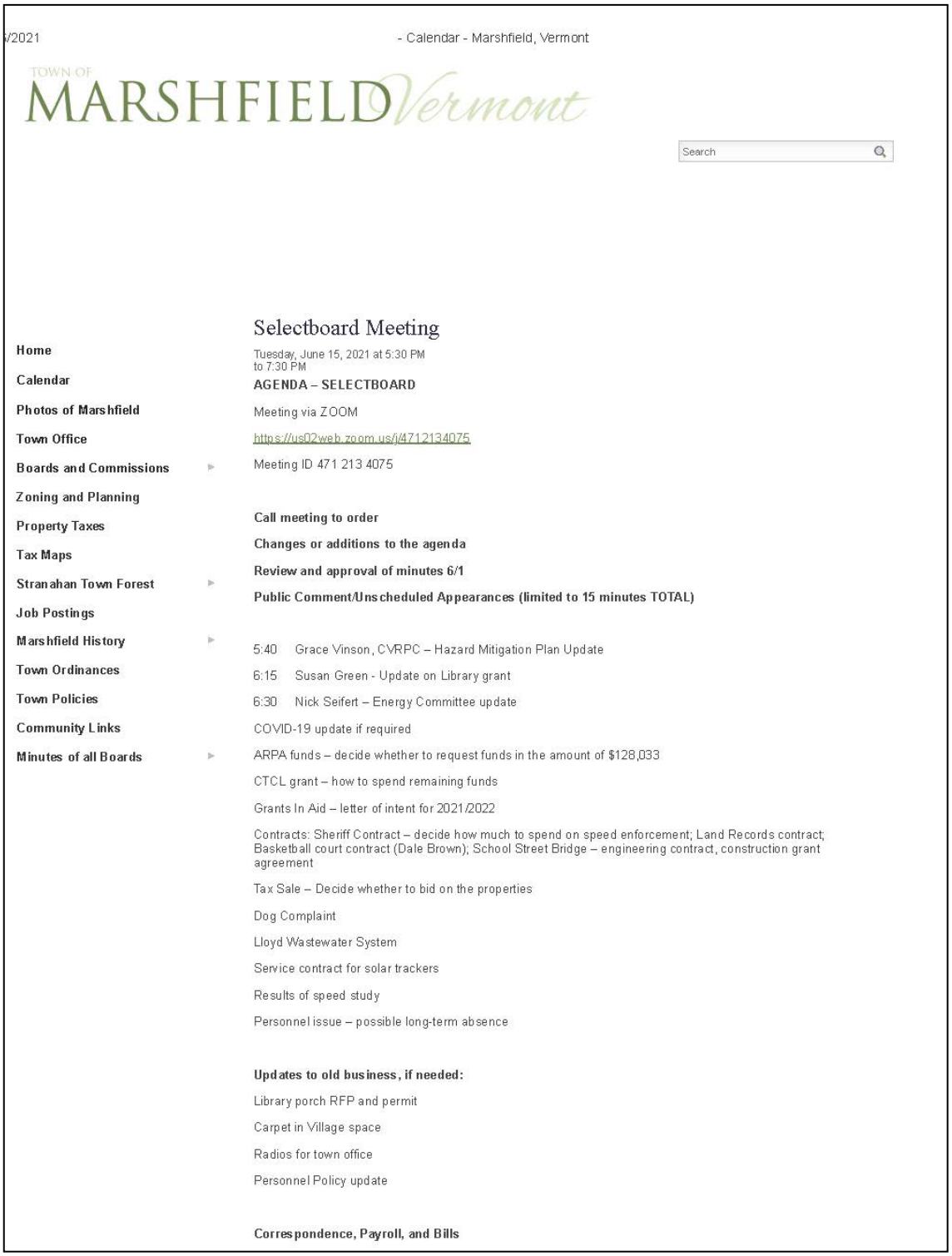
Library porch RFP and permit

Carpet in Village space

American Rescue Plan

Speed Limit on Route 2 in Plainfield village

06/15/21 Selectboard Meeting Agenda: Mitigation Actions, Maintenance Process



/2021 - Calendar - Marshfield, Vermont

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Selectboard Meeting

Tuesday, June 15, 2021 at 5:30 PM
to 7:30 PM

AGENDA – SELECTBOARD

Meeting via ZOOM

https://us02web.zoom.us/j/4712134075

Meeting ID 471 213 4075

Call meeting to order

Changes or additions to the agenda

Review and approval of minutes 6/1

Public Comment/Unscheduled Appearances (limited to 15 minutes TOTAL)

5:40 Grace Vinson, CVRPC – Hazard Mitigation Plan Update

6:15 Susan Green - Update on Library grant

6:30 Nick Seifert – Energy Committee update

COVID-19 update if required

ARPA funds – decide whether to request funds in the amount of $128,033

CTCL grant – how to spend remaining funds

Grants In Aid – letter of intent for 2021/2022

Contracts: Sheriff Contract – decide how much to spend on speed enforcement; Land Records contract; Basketball court contract (Dale Brown); School Street Bridge – engineering contract, construction grant agreement

Tax Sale – Decide whether to bid on the properties

Dog Complaint

Lloyd Wastewater System

Service contract for solar trackers

Results of speed study

Personnel issue – possible long-term absence

Updates to old business, if needed:

Library porch RFP and permit

Carpet in Village space

Radios for town office

Personnel Policy update

Correspondence, Payroll, and Bills

07/28/21 Marshfield Village Trustees Meeting Agenda: LHMP Draft Review

Village of Marshfield, Inc.
PO Box 244 Marshfield, VT 05658
(802) 426-3393
marshfieldvillage@fairpoint.net

NOTICE AND AGENDA FOR A REGULAR BOARD OF TRUSTEES MEETING

Notice is hereby made that a regular meeting of the Village of Marshfield Board of Trustees shall be held on Wednesday, July 28, 2021, at 7:00 p.m. The meeting will be held at the Village Office in the Old Schoolhouse Common (122 School Street, Room 6) with an electronic option as well.

Following is information for participating via Zoom.

Join Village of Marshfield's Zoom meeting:

https://us02web.zoom.us/j/87121558712?pwd=S2tTWmFBYXp1dmtpVFROTDZOb1oyZz09

Meeting ID: 871 2155 8712
Passcode: 319568

To join by phone, dial +1 929 205 6099

AGENDA

- Public comments / Additions to the agenda
- Marshfield Hazard Mitigation Plan—Grace Vinson
- Water line, US Route 2 residence
- Water operator succession plan
- Approve draft warning for the Annual Meeting
- Generator for well
- Marshfield Harvest Festival
- Review of Village budget
- Village audit update
- Approval of previous meeting minutes
- Correspondence
- Review of bank statements

08/17/21 Selectboard Meeting Agenda: Review VEM Comments for Final Draft

'2021 - Calendar - Marshfield, Vermont

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Selectboard Meeting

Tuesday, August 17, 2021 at 5:30 PM
to 7:30 PM

AGENDA – SELECTBOARD

Meeting via ZOOM

https://us02web.zoom.us/j/4712134075

Meeting ID 471 213 4075

Call meeting to order

Changes or additions to the agenda

Review and approval of minutes 7/20

Public Comment/Unscheduled Appearances (limited to 15 minutes TOTAL)

Grace Vinson - Hazard Mitigation Plan update (needs to be out before 6 pm)

Local Emergency Management Plan

Robin Gomez – offer to spruce up monument

Old Schoolhouse Common

- Vandalism
- COVID restrictions – do we need to resume masking?

Maintenance needs – Library Director suggestions

- Maintenance position

Discussion fof Broadband as a potential use of ARPA funds

Jennifer Young – Charter Communications

Jeremy Hanson - CVFiber

Dog Complaint – Vivian Davis dogs, running at large

Park & Ride grant – lighting and paving at the Old Schoolhouse Common

Route 2 Speed Limit

Cemetery lot purchase

Updates to old business, if needed:

Service contract for solar trackers

Cemetery ordinance

Domestic pet ordinance

Library porch RFP and permit

Carpet in Village space

Radios for town office

://marshfieldvt.gov/index.asp?SEC=D0A32F8D-D5DC-42C7-B77E-DB9497F8D558&DE=527790FD-7744-41D2-9FDB-1F13A3684E3F&Type=B_... 1/2

5-Year Plan Review/Maintenance Process

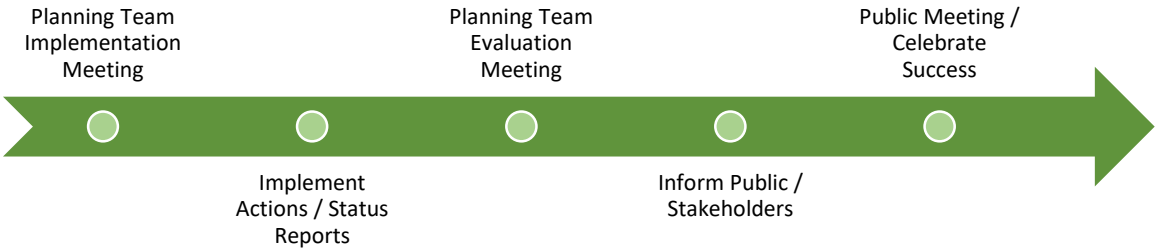
- Brief local leadership on plan approval
- Formally adopt plan
- Publicize plan approval and adoption
- Celebrate success

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

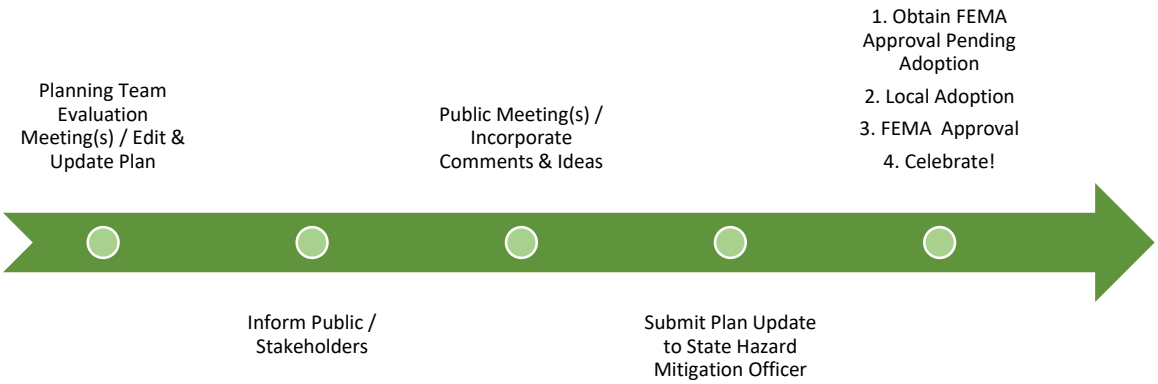
- Effectiveness of planning process
- Effectiveness of actions
- Document success & challenges of actions
- Update and involve community
- Celebrate successes

- 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



Certificate of Adoption

The Town of Marshfield
Village of Marshfield Trustees
A Resolution Adopting the Marshfield 2021 Local Hazard Mitigation Plan
August 31 and Sept. 22, 2021

WHEREAS, the Town and Village of Marshfield have historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the 2021 Marshfield, 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 and Village of Marshfield have worked with the Central Vermont Regional Planning Commission to identify hazards, analyze past and potential future losses due to natural and manmade-caused disasters, and identify strategies for mitigating future losses; and

WHEREAS, the Town and Village of Marshfield have developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its 2021 Town of Marshfield, Vermont Local Hazard Mitigation 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 and Village of Marshfield; and

WHEREAS, the Marshfield Local Hazard Mitigation Plan contains several potential projects to mitigate damage from disasters that could occur in the Town and/or Village of Marshfield; and

WHEREAS, adoption of this Plan will make the Town and Village of Marshfield eligible for funding to alleviate the impacts of future hazards; and

WHEREAS, a duly-noticed public meeting was held by the Town of Marshfield Select Board on August 31, 2021 and Village of Marshfield Trustees on Sept. 22, 2021 to formally adopt the Marshfield Local Hazard Mitigation Plan;

NOW, THEREFORE BE IT RESOLVED by the Marshfield Select Board and Village of Marshfield Trustees:

1. The 2021 Town and Village of Marshfield Local Hazard Mitigation Plan is hereby adopted as an official plan of the Town and Village of Marshfield;

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 Coordinator of this Plan

Chair of Select Board

President of Village Trustees

ATTEST

Marshfield Town Clerk

ATTEST

Marshfield Village Clerk