

*Adopted by the Town of Brownington Select board
on September 22, 2021*



All-Hazards Mitigation Plan Update

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Prepared by:

The Town of Brownington, Vermont

CERTIFICATE OF LOCAL ADOPTION

Town of Brownington, Vermont

A Resolution Adopting the All-Hazards Mitigation Plan Update

WHEREAS, the Town of Brownington has worked with its residents and stakeholders to identify its hazards and vulnerabilities, analyze past and potential future losses due to natural and human-caused hazards, and identify strategies for mitigating future losses; and

WHEREAS, the Town of Brownington All-Hazards Mitigation Plan contains recommendations, potential actions and future projects to mitigate damage from disasters in the Town of Brownington; and

WHEREAS, the Town of Brownington and the respective officials will pursue implementation of the strategy and follow the maintenance process described in this plan to assure that the plan stays up to date and compliant; and...

WHEREAS, a meeting was held by the Town of Brownington to formally approve and adopt the Multijurisdictional All Hazards Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Town of Brownington adopts this Hazard Mitigation Plan Update.

Sept 22, 2021
Date

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Executive Summary

In April 2021, the Town of Brownington began to develop this All-Hazard Mitigation Plan update from the last approved plan in 2016. This update reflects recent changes in the Vermont State Hazard Mitigation Plan and works to identify the updated profiled hazards and associated mitigation actions for the next planning cycle. The results of this work represent the collaborative efforts of the Hazard Mitigation Planning Team and associated residents, towns and agencies that contributed to the development of this plan. As hazard mitigation is a sustained effort to permanently reduce or eliminate long-term risks to people and property from the effects of reasonably predictable hazards, the town has communicated its efforts related to developing this plan to its residents and surrounding municipalities, providing a formal opportunity to provide input and review relevant sections of the plan. Along these lines, the town has documented the planning process so that future updates can follow an efficient pattern in addition to capturing this important component as means of establishing institutional memory. In realization that eligibility to receive federal hazard mitigation grants and optimize state-level reimbursement or “match” dollars during a federally declared disaster is dependent on a federally approved plan, the town remains committed to sustaining its mitigation efforts and by developing this plan, will have a guide for action that will foster enhanced emphasis on mitigation in the years to come. The town realizes the importance of mitigation inherent to its own resilience as well as means to establishing strong partnerships with regional support agencies and associations, state government and FEMA. The pandemic-related events of 2020 have resulted in new considerations in the financial, health and safety arenas and the town feels it must formally engage in pandemic planning to mitigate risk. As the town moves towards formally adopting this All-Hazards Mitigation Plan update, the purpose of this plan is to:

- Identify specific hazards that impact the town
- Prioritize hazards for mitigation planning
- Recommend town-level goals and strategies to reduce losses from those hazards
- Establish a coordinated process to implement goals and their associated strategies by taking advantage of available resources and creating achievable action steps

This plan is organized into 5 Sections:

Section 1: Introduction and Purpose explains the purpose, benefits, implications and goals of this plan. This section also describes demographics and characteristics specific to the town and describes the planning process used to develop this plan.

Section 2: Hazard Identification expands on the hazard identification in the Town Plan with specific municipal-level details on selected hazards.

Section 3: Risk Assessment discusses identified hazard areas in the town and reviews previous federally declared disasters to identify what risks are likely in the future. This section presents a hazard risk assessment for the municipality, identifying the most significant and most likely hazards which merit mitigation activity. Building upon the identified hazards from 2005, the updated profiled hazards are introduced in the grid below:

Severe winter/Ice storm	Extreme Cold	Flooding/Erosion
Pandemic		

Section 4: Vulnerability Assessment discusses buildings, critical facilities and infrastructure in designated hazard areas and estimates potential losses.

Section 5: Mitigation Strategies begins with an overview of goals and policies in the most recent Town Plan that support hazard mitigation and then formulates a work plan around major infrastructure projects, community awareness and documentation. An analysis of existing municipal actions that support hazard mitigation, such as planning, emergency services and actions of the highway department are also included. The following all-hazards mitigation goals are summarized below:

- 1) Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- 2) Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- 3) Maintain and increase awareness amongst the town’s residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.
- 4) Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
- 5) Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
- 6) Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5). This mechanism will be developed by the Planning Commission, Selectboard and NVDA and integrate the strategies into the existing town plan as annexes until the next formal update occurs, where a section devoted to mitigation planning will be integrated into the plan.
- 7) Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan, particularly the recommended mitigation actions, into the municipal/town operating and capital plans & programs as they relate to public facilities and infrastructure within political and budgetary feasibility. The Planning Commission will review the updated LHMP and use language/actions from it to inform the integration and future update processes. Town Meeting Day will serve as the formal time that mitigation strategy budgetary considerations will be approved and incorporated into the town budget.

Section 5 also identifies and provides a detailed discussion on the following mitigation actions:

Action #1: Improve road infrastructure and municipal systems protection programs

Action #2: Improve resilience to severe winter storms

Action #3: Reduce impact of extreme cold durations

Action #4: Raise public awareness of hazards and hazard mitigation actions

Action #5: Continue fluvial geomorphology assessments in collaboration with DEC and develop strategies and regulatory actions in response to identified risk

Action #6: Reduce risk and impact of pandemic

In conclusion, Section 5 provides an Implementation Matrix to aid the municipality in implementing the outlined mitigation actions with an annual evaluation process to be coordinated and administered by the Planning Commission.

Table of Contents

Executive Summary	i
SECTION 1: INTRODUCTION AND PURPOSE	1
1.1 Purpose and Scope of this Plan	1
1.2 Hazard Mitigation	1
1.3 Hazard Mitigation Planning Required by the Disaster Mitigation Act of 2000	1
1.4 Benefits	2
1.5 All-Hazards Mitigation Plan Goals	2
1.6 Town of Brownington: Population and Characteristics	3
1.6.3. Income and Employment:	4
1.6.4. Town Locations:	5
1.7 Summary of Planning Process	5
SECTION 2: HAZARD IDENTIFICATION	8
2.1 Natural Hazards Overview	8
2.1.1. Profiled Hazards	10
Severe Winter Storm	11
Ice Storm	14
Extreme Cold	14
Flooding	16
Fluvial Erosion	23
Pandemic	24
SECTION 3: RISK ASSESSMENT	25
3.4 Hazard Assessment and Risk Analysis	29
<i>Table 3-2 Natural hazards risk estimation matrix, Brownington</i>	31
SECTION 4: VULNERABILITY ASSESSMENT	32
<i>Table 4-1: Vulnerability Summary Table</i>	34
<i>Table 4-1 Critical facilities in the Town of Brownington</i>	35
<i>Table 4-4 Inventoried bridges in the Town of Brownington with identified risk</i>	37
4.2.3 Water, Wastewater and Natural Gas Service Areas	38
4.2.4 Electric Power Transmission Lines and Telecommunications Land Lines	39
4.4.2 Future Development and Housing	40
SECTION 5: MITIGATION STRATEGY	41

5.2	Existing Town of Brownington Actions that Support Hazard Mitigation	45
5.3	Town of Brownington All-Hazards Mitigation Goals	48
5.4	Mitigation Actions	48
5.4.1	Current Capabilities and Need for Mitigation Actions	48
5.4.2	Specific Mitigation Actions	51
5.4.3	Prioritization of Mitigation Strategies	57
5.5.1.	<i>Public Involvement following Plan Approval</i>	59
5.5.2.	<i>Project Lead and Monitoring Process</i>	59
5.5.3	<i>Plan Evaluation and Update Process</i>	59
5.5.4.	<i>Plan Update Process</i>	60
5.5.5.	<i>Implementation Matrix for Annual Review of Progress</i>	61
	Appendix A: Notices of Planning Process	67
	Appendix B: Community Survey Results	71

SECTION 1: INTRODUCTION AND PURPOSE

1.1 Purpose and Scope of this Plan

The purpose of this Local All-Hazards Mitigation Plan Update is to assist this municipality in identifying all hazards facing their community and in identifying strategies to begin to reduce the impacts of those hazards. The plan also seeks to better integrate and consolidate efforts of this municipality with those outlined in the Town Plan as well as efforts of NVDA, the Local Emergency Planning Committee and the State Hazard Mitigation Plan.

This document constitutes an All-Hazards Mitigation Plan Update for the Town of Brownington. Community planning can aid significantly in reducing the impact of expected, but unpredictable natural and human-caused events. The goal of this plan is provide hazard mitigation strategies to aid in creating disaster resistant communities throughout Orleans County.

1.2 Hazard Mitigation

The 2018 Vermont State All-Hazards Mitigation Plan (SHMP) states:

“The impact of anticipated yet unpredictable natural events can be reduced through community planning and implementation of cost effective, preventive mitigation efforts. The State of Vermont understands that it is not only less costly to reduce vulnerability to disasters than to repeatedly repair damage, but that we can also take proactive steps to protect our economy, environment and most vulnerable citizens from inevitable natural hazard events. This Plan recognizes that communities have the opportunity to identify mitigation strategies during all phases of emergency management (preparedness, mitigation, response, and recovery) to more comprehensively address their vulnerability. Though hazards themselves cannot be eliminated, Vermonters can reduce our vulnerability to hazards by improving our understanding of both the natural hazards we face and their potential impacts. The 2018 Vermont State Hazard Mitigation Plan (SHMP) presents the hazard impacts most likely to affect Vermont and a mitigation strategy to reduce or eliminate our most significant vulnerabilities.”

Hazard mitigation strategies and measures can reduce or eliminate the frequency of a specific hazard, lessen the impact of a hazard, modify standards and structures to adapt to a hazard, or limit development in identified hazardous areas. This plan aligns and/or benefits from the State’s 2018 Hazard Mitigation Plan and as part of the Emergency Relief Assistance Funding (ERAF) requirements. With enhanced emphasis on community resiliency, many state agencies and local organizations have an increased awareness of the importance of mitigation planning and have produced plans and resources that towns can use to support their planning efforts. This plan will reference, when relevant, pertinent tools and resources that can be used to enhance mitigation strategies.

1.3 Hazard Mitigation Planning Required by the Disaster Mitigation Act of 2000

Hazard mitigation planning is the process that analyzes a community’s risk from natural hazards, coordinates available resources, and implements actions to reduce risks. According to 44 CFR Part 201, Hazard Mitigation Planning, this planning process establishes criteria for State and local hazard mitigation planning authorized by Section 322 of the Stafford Act as amended by Section 104 of the *Disaster Mitigation Act of 2000*. Effective November 1, 2003, local

governments now must have an approved local mitigation plan prior to the approval of a local mitigation project funded through federal Pre-Disaster Mitigation funds. Furthermore, the State of Vermont is required to adopt a State Pre-Disaster Mitigation Plan in order for Pre-Disaster Mitigation funds or grants to be released for either a state or local mitigation project after November 1, 2004.

There are several implications if the plan is not adopted:

- After November 1, 2004, Flood Mitigation Assistance Grant Program (FMAGP) funds will be available only to communities that have adopted a local Plan
- For disasters declared after November 1, 2004, a community without a plan is not eligible for HMGP project grants but may apply for planning grants under the 7% of HMGP available for planning.
- For the Pre-Disaster Mitigation (PDM) program, a community may apply for PDM funding but must have an approved plan in order to receive a PDM project grant.
- For disasters declared after October 14th, 2014, a community without a plan will be required to meet a greater state match when public assistance is awarded under the ERAF requirements (Emergency Relief Assistance Funding).

1.4 Benefits

Adoption and maintenance of this Hazard Mitigation Plan will:

1. Make certain funding sources available to complete the identified mitigation initiatives that would not otherwise be available if the plan was not in place.
2. Ease the receipt of post-disaster state and federal funding because the list of mitigation initiatives is already identified.
3. Support effective pre- and post-disaster decision making efforts.
4. Lessen each local government's vulnerability to disasters by focusing limited financial resources to specifically identified initiatives whose importance has been ranked.
5. Connect hazard mitigation planning to community planning where possible.

1.5 All-Hazards Mitigation Plan Goals

This All-Hazards Mitigation Plan establishes the following general goals for the town as a whole and its residents:

1. Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
2. Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
3. Maintain and increase awareness amongst residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.

4. Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
5. Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
6. Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan into the multi-jurisdictional municipal comprehensive plan as described in 24 VSA, Section 4403(5). This mechanism will be developed by the Joint Planning Commission, Selectboard and NVDA and integrate the strategies into the existing town plan as annexes until the next formal update occurs, where a section devoted to mitigation planning will be integrated into the plan.
7. Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan, particularly the recommended mitigation actions, into municipal operating and capital plans & programs as they relate to public facilities and infrastructure within political and budgetary feasibility. The Joint Planning Commission will review the plan and use language/actions from it to inform the integration and update process. Town Meeting Day will serve as the formal time that mitigation strategy budgetary considerations will be approved and incorporated into the town budgets

1.6 Town of Brownington: Population and Characteristics

Chartered: February 16, 1782
 Coordinates: 72 10'W, 44 50'N
 Altitude ASL: 1,025'

1.6.1 Population:

The Town of Brownington is a small rural community in north-central Vermont. This Orleans county community is part of an area known as the Northeast Kingdom and covers 18,232 contiguous acres. It is located 15 miles from the Canadian border and is composed of forestland interspersed by active farmland and residential property. The 2010 U.S. Census reports a total population of 988 residents, 51% female and 49% male, indicating a population density of about 31 people per square mile acres. Population figures indicate that the number of people residing in Brownington in the 1920's was 741. Between 1920 and 1970 the population declined to a low of 522 persons. A dramatic increase of 35.6% in the 1970's made up for much of the loss. The 1980's saw little change. The latest figures through 2010 show a continued steady increase in population since the 1990s.

Table 1-1 Town of Brownington, selected population characteristics, 2010 Census

Category	Number	%
Total Population	988	100
Median Age	38	--
Population age 65 years and over	100	10.1

Population under 18 years old	269	27.2
Population between 18 and 24	74	7.5
Population between 25 and 44	284	28.8

1.6.2. Housing:

The bulk of residential development occurs along the major travel routes in town (Frog Pond Hill, Hinman-Settler Road, and Routes 58 and 5) and the three villages in town (Brownington Village, Brownington Center and Evansville). According to the 2010 Census, there are 509 housing units in Brownington, with 110 vacant. Of the vacant housing stock, 85 are for seasonal, recreational and occasional use. Brownington has 399 households, of which 274 are family households. The average household size is 2.48, and the average family size is 2.86. Of the 399 occupied housing units, 357 are owner-occupied. The remaining 42 housing units were renter occupied. At the time of the 2010 Census 880 individuals were living in owner-occupied dwellings, and 108 in renter-occupied dwellings. The main source of household heating energy is fuel oil (67%), wood (24%), bottled, tank, or LP gas (8%) and electricity (1%).

The following shows the types of housing within Brownington, also based on the 2010 U.S. Census data:

Table 1-2 Town of Brownington, selected housing unit data

Category	Number	%
Total Housing Units	672	--
Occupied housing units	447	66.5
Vacant housing units	225	33.5
Owner-Occupied	363	54
Renter Occupied	84	12.5
Population in Renter-occupied	201	19.6
Households with individuals under 18	110	10.8

1.6.3. Income and Employment:

Brownington is considered a bedroom community, indicating that the majority of the town's population in the work force is employed outside of the community. According to most current American Community Survey (ACS) 5-Year averages (2009-2013), about 37% of Brownington residents travel at least 30 minutes to work, which is higher than Orleans County or the state (27% and 29% respectively). About 10% of the population works outside of Orleans County, and 1.9% work outside of the state. Compared to the rest of the Northeast Kingdom, Orleans County has a higher percentage of jobs in services and retail trade, which tend to have lower average wages. According to the ACS 5-year averages, 511 of the Town's residents are in the civilian labor force with 475 employed (63.6%) and 36 unemployed (4.8%). The median household income is \$41,250, 15 which is a little lower than the county median (\$41,953), and considerably lower than the statewide median (\$54,267). About 11.6% of Brownington families had incomes

that fell below the poverty line within the past 12 months. People employed in Brownington tend to make their living close to the land, with small businesses connected to farming and agriculture, forestry and logging, agri-tourism, retail of farm and maple sugar products, auto repair, and real estate. The Stonehouse Museum and Orleans County Historical Society offer educational programs and tours. All enterprises, commercial or non-profit, are on a smaller scale appropriate to the town. The town encourages business appropriate to the culture of farming and agriculture to ensure the rural quality of the community. The most common industries in the town are: furniture and related product manufacturing (21%), agriculture, forestry, fishing and hunting (16%), construction (12%), education services (9%), public administration (6%), automotive parts (4%), metal and metal products (3%).

Source: Brownington Town Plan, 2015

1.6.4. Town Locations:

Notable locations: Brownington School, town offices/garage, Will-O-Wood Campground, Athenian Hall, Orleans County Historical Society Museum, Orleans County Historical Society Building, Old Stone House Library, Old Stone House.

Hospitals and medical centers near Brownington:

- Maple Leaf Nursing Home (about 9 miles away in Barton, VT)
- Newport Health Care Center (Nursing Home about 10 miles away in Newport, VT)
- Orleans Essex VNA (Home Health Center about 10 miles away in Newport, VT)
- Fletcher Allen Health Care – North Country Dialysis Unit (Dialysis Facility about 10 miles away in Newport, VT)
- North Country Hospital and Health Center (Critical Access Hospitals about 10 miles away in Newport, VT)
- Union House Nursing Home (about 12 miles away in Glover, VT)

Cemeteries: Brownington Village Cemetery, Brownington Center Cemetery, East Cemetery, North Cemetery, East Brownington Cemetery

Lakes and reservoirs: Brownington Pond, Lubber Lake

Streams, rivers, and creeks: Moody Brook, Lord Brook, Dutton Brook, Bassett Brook, Wells Brook, Brownington Branch

Park: Brownington Village Historic District

1.7 Summary of Planning Process

The work to update this plan was led by the planning team made up of municipal officials, school officials, local businesses, service agencies, and the regional planning organization (NVDA). The update project followed a work plan which provided the public and other stakeholders the opportunity for two-way communication. Existing documents were also researched and incorporated into the plan update. Planning team members, for the most part,

fulfill multiple roles in the community and represent a broad array of stakeholders. The following table presents the Planning Team members and their title:

- Clayton Butler, Road Foreman
- Beverly White, Selectboard Chair
- Valerie Faust, Town Clerk/Treasurer
- Bruce Melendy, NVDA
- Larry Fliegelman, Principal Brownington School
- Chris Myott, Selectboard
- Bill Falconer, Selectboard
- Tim Cota, Orleans EMS
- Sandy Thorpe, Transit Manager for Rural Community Transportation, Inc.

There is a current understanding of the need to integrate the content of this update and its goals, actions and reporting into the daily operational structure and awareness of all town officials so that mitigation planning establishes itself as a consistent topic of concern and discussion. The community survey was made available at both Green Up day and the local newspaper. Five responses were received and focused on flooding, emergency notification, sheltering, and pandemic issues (surveys are included in Appendix B). All neighboring towns were sent notification via the town clerk of the plan's development and the subsequent draft and were given an opportunity to provide input through email and/or phone call to the town clerk. No responses were obtained from this solicitation. Following FEMA guidance in Local Mitigation Plan Review Tool Regulation Checklist, the plan was written using data sources that included:

- Surveys and warned, public meetings collecting public comment (issues raised were addressed in plan and the public meeting)
- 2015 Town Plan (provided current goals and regulations supporting mitigation, recent capital expenditures and infrastructure value helped to drive vulnerability assessment)
- 2018 Vermont State Hazard Mitigation Plan (provided key guidance language and definitions throughout the plan).
- Vermont Agency of Natural Resources (ANR) and Transportation (VTrans) (Provided key policy recommendations on environmental conservation, high accident locations, climate change and fluvial erosion data).
- Vermont Departments of Health (VDH) and Environmental Conservation (DEC) (provided information related with public health services that could be impacted during a disaster and state support functions designated to both VDH and DEC. DEC also provided river corridor data for mapping purposes).
- FEMA Open Source (data.gov) Data for Disaster History and PA funding (provided comprehensive declared disaster by year and type as well as project descriptions and cost per event).
- FEMA NFIP "Bureau.Net" database (provided detailed information on repetitive loss properties and associated flood insurance claims).

- EPA’s Incident Action Checklist for cold weather resilience of water systems (provides a guidance tool for public works to cross-reference actions on the system).
- 2013 ACCD Mobile Home Resilience Plan (serves as resource for future mitigation actions)

Based on the information obtained, input from town and state officials, the planning team, state and federal databases, local associations and NVDA, the plan was created. While many small communities in Vermont face similar circumstances (e.g. flooding, winter storms and remote residents), each one has unique considerations and opportunities. There was a point made to capture the subtle characteristics of the town and its distinct villages. From this, the specific risks, vulnerabilities and mitigation strategies were developed and applicable, broken down to the specific entity impacted. NVDA’s role in assisting the entire region with all facets of planning provided crucial information and NVDA’s Emergency Management Planning representative attended planning team meetings and provided guidance. While the LEPC provides the best platform to engage representatives from various towns and agencies, all bordering towns were contacted with planning objectives and asked to provide input through a formal email invitation. Vermont Emergency Management (VEM) also provided information during the development of the plan. VEM also has representation at the LEPC meetings and will continue to provide input and guidance as the town moves forward with their mitigation strategies. The following summary represents the timeline for the planning process:

- 4/22/21: Planning Team named and introduced to update process. “Kick-off” meeting at warned community (selectboard) meeting with proposal and acceptance of updated hazards. Community survey logistics decided upon. The public was notified and in attendance at this meeting, however, no comments were received.
- 4/23/21: Meeting with Town Road Foreman to discuss mitigation projects and progress on 2016 mitigation action items related to infrastructure
- 5/3/21: Planning team sent community survey, mitigation action status summary from 2016 plan. Road foreman and town officials sent infrastructure summary status and request for new projects in the next planning cycle
- 5/5/21: Planning team was sent draft sections I and II of update. Comments received included enforcement of wetland protection and suggested addition of the school, town offices, and town garage to “notable location” list.
- 5/10/21: Second meeting with Road Foreman to discuss specific projects for next planning cycle
- 5/20/21: Warned meeting to provide planning update. No comments received.
- 5/25/21: Draft Sections III, IV and V sent to planning team for review and comment. Comments collected, assessed and integrated into final draft.
- 5/28/21 All returned Community Input Surveys collected, reviewed and/included in final draft.

- 6/2/21: Proposed mitigation goals and actions were discussed at warned community meeting. The public was notified and in attendance at this meeting, however, no comments were received.
- 6/2/21: All neighboring towns received notice of availability of draft plan for review and comment via the town clerk. No comments were received.
- 6/2/21: Draft plan submitted to VEM for review and approval.
- : VEM review and request for edits obtained
- : Plan revision made and resubmitted to VEM

The draft plan was then revised based on input from planning team (e.g., minor corrections to names and titles of fire department and EMS service and removal of some incorrect information). The revised draft was made available for review at the town office and residents were informed via meeting minutes and the town bulletin board of the ability to review the draft and additional opportunity for formal comment and suggestions. No additional public comment was received. Minor edits were made to the plan following State recommendations and the final draft was resubmitted to VEM for formal review and approval pending municipal adoption. A resolution of adoption will occur following VEM review and “approval pending adoption” status. For reference, the meeting notices, notice of community survey and survey results are included in Appendix A and B.

SECTION 2: HAZARD IDENTIFICATION

For this update, the planning team considered the continued inclusion or deletion of the 2016 hazards profiled by developing and researching the natural hazard categories outlined in the state mitigation plan and for each, considered prior history, current trends and available data to estimate risk. Some profiled hazards remain a risk for the town. However, other hazards, due to lack of occurrence frequency, risk and/or vulnerability have been removed in this update. The definitions of each hazard, along with historical occurrence and impact, are described below.

Types of Natural Hazards: weather /climate hazards (drought, hurricane/tornado, high winds, severe winter storm, extreme temperatures, climate change, lightning, hail), flooding, geological hazards (landslide / erosion, earthquake, naturally-occurring radiation), and fire hazards.

2020 Updated Profiled Natural Hazards: Severe Winter Storm/Ice, Flooding/fluvial erosion, Extreme Cold Temperature, Pandemic (listed as “Epidemic” in 2016 plan).

2.1 Natural Hazards Overview

There have been 22 disasters and 4 emergencies declared in Orleans County from 1964 through 2020 (it is noted that “Hurricane Irene” was listed as an Emergency, and then “Tropical Storm Irene” was listed as a Disaster a few days later). The following discussion on natural hazards is based upon information from several sources. Often, extent data specific to Brownington is not

available but when appropriate and available, nearby Newport City data can be used to capture the extent of natural hazard events for the town and villages. General descriptions are based upon the 2018 Vermont State Hazard Mitigation Plan (SHMP). According to NOAA Storm data, there were over 460 severe weather events from 1995-2020 in Orleans County.

The highest risk hazards (severe winter/ice storm, flooding, extreme cold and pandemic) have been profiled to provide the basis of future mitigation strategies. However, lower risk natural hazards (drought, tornado, tornado, high winds, extreme heat, hail, landslide, earthquake, naturally-occurring radiation, hurricanes and fire hazards) are omitted from full profiling because they do not pose enough risk to substantiate mitigation efforts at this time. And while the risk of a hazardous materials incident as outlined remain moderate due to border crossings and the associated vulnerabilities that result, the town will focus on natural hazards and pandemic response for this update. Additionally, impacts from hurricanes are addressed under flooding hazard.

Table 2-1: Summary of Vermont Emergency Declarations

Number	Year	Type
3437	2020	Pandemic (COVID-19) national 3/13/20
3338	2011	Hurricane Irene
3167	2001	Snowstorm
3053	1977	Drought

Source: FEMA

Table 2-2: Summary of Orleans County Disasters (Green rows indicate town PA received)

DN	Date	Disaster Type	Incident Type	Title
397	1973	DR	Flood	SEVERE STORMS, FLOODING, & LANDSLIDES
518	1976	DR	Flood	SEVERE STORMS, HIGH WINDS & FLOODING
1063	1995	DR	Severe Storm(s)	EXCESSIVE RAINFALL, FLOODING
1307	2000	DR	Severe Storm(s)	TROPICAL STORM FLOYD
1559	2004	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1428	2002	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1184	1997	DR	Flood	EXCESSIVE RAINFALL, HIGH WINDS, AND FLOODING
1101	1996	DR	Flood	ICE JAMS AND FLOODING
1228	1998	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1715	2007	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
3167	2001	EM	Snow	SNOW

1995	2011	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
3338	2011	EM	Hurricane	HURRICANE IRENE
*4001	2011	DR	Severe Storms	SEVERE STORMS AND FLOODING
4178	2014	DR	Flood	SEVERE STORMS AND FLOODING
4207	2015	DR	Severe Storm(s)	SEVERE WINTER STORM
4163	2014	DR	Severe Ice Storm	SEVERE WINTER STORMS
4380	2018	DR	Severe Storm(s)	SEVERE STORM AND FLOODING
4022	2011	DR	Hurricane	TROPICAL STORM IRENE
4066	2012	DR	Severe Storm(s)	SEVERE STORM, TORNADO, AND FLOODING
4356	2018	DR	Severe Storm(s)	SEVERE STORM AND FLOODING
4140	2013	DR	Flood	SEVERE STORMS AND FLOODING
4474	2020	DR	Severe Storm(s)	SEVERE STORM AND FLOODING
160	1964	DR	Drought	DROUGHT & IMPENDING FREEZE
164	1964	DR	Flood	FLOODING
4532	2020	ED	Pandemic	COVID-19

2.1.1.1. Profiled Hazards

An Introduction to Climate Change:

“Over the past several decades, there has been a marked increase in the frequency and severity of weather-related disasters, both globally and nationally. Most notably, the Earth has experienced a 1°F rise in temperature, which has far-reaching impacts on weather patterns and ecosystems. This statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer), is known as climate change. The Intergovernmental Panel on Climate Change (IPCC) forecasts a temperature rise of 2.5°F to 10°F over the next century, which will affect different regions in various ways over time. Impacts will also directly relate to the ability of different societal and environmental systems to mitigate or adapt to change⁶. Increasing temperatures are forecasted to have significant impacts on weather-related disasters, which will also increase risk to life, economy and quality of life, critical infrastructure and natural ecosystems. The IPCC notes that the range of published evidence indicates that the costs associated with net damages of climate change are likely to be significant and will increase over time. It is therefore imperative that recognition of a changing climate be incorporated into all planning processes when preparing for and responding to weather-related emergencies and disasters. Most of the natural hazards identified in this plan are likely to be exacerbated by changes in climate, either directly or indirectly. The National Aeronautics & Space Administration (NASA) reports that global climate change has already had observable effects on the environment: glaciers are shrinking, sea ice is disappearing, sea level

rise is accelerating, heat waves are occurring more frequently and intensely, river and lake ice is breaking up earlier, plant and animal ranges have shifted, and trees are flowering sooner. Though climate change is expected to have global reach, the impacts differ by region. While the southwestern United States is expected to experience increased heat, wildfire, drought and insect outbreaks, the northeastern region is predicted to experience increases in heat waves, downpours and flooding. Accordingly, consideration of climate change was identified as a key guiding principle of the 2018 SHMP, addressed in each of the pertinent hazard profiles and incorporated into all relevant mitigation actions.” 2018 SHMP

From 1962 to 2006, each five-year period resulted in 0-6 Major Disaster Declarations in Vermont. From 2007-2020, there were 23. It is commonly accepted that weather extremes are becoming more commonplace in Vermont. Since 2011, record setting snow, rain and cold have been experienced in the state. In recent years, it has become evident that human activities, mostly associated with the combustion of fuel, have added to the natural concentration of greenhouse gases in the atmosphere and are contributing to rapid climate change on a global scale. While projections of the effects of climate change vary, it is generally predicted that Vermont will have warmer temperatures year-round, with wetter winters and drier summers. An increase in the size and frequency of storms is also predicted. Thus, climate change in the next century will likely increase the chance of weather-related hazards occurring. An increase in precipitation may also result in increased flooding and fluvial erosion. Drier summers may increase the chance of drought and wildfire. A warmer climate may also result in the influx of diseases and pests that cold winters previously prevented. The severity of climate change is difficult to predict, though the effects may be mitigated somewhat if greenhouse gas emissions are reduced soon. In 2011, Governor Shumlin formed the *Vermont Climate Cabinet*. The Cabinet, chaired by the Secretary of Natural Resources, is a multidisciplinary approach to enhance collaboration between various state Agencies. Its primary objectives include providing the Governor with advisory information and facilitating climate change policy adoption and implementation. In 2013, the Vermont Agency of Natural Resources (ANR) released the Climate Change Adaptation Framework which addresses climate change exposures, vulnerability-specific elements within each of the natural resource sectors, and ongoing and proposed actions that can be or have been taken to prepare for the expected changes. In line and in conjunction with the ANR report, the primary goal of a VTtrans climate change adaptation policy is to minimize long-term societal and economic costs stemming from climate change impacts on transportation infrastructure.

Severe Winter Storm

Winter storms impact the entire planning area and can include snowstorm, cold, blizzard and ice. According to the 2018 *Vermont State All-Hazards Mitigation Plan*:

“Severe winter storms bring the threat of heavy accumulations of snow, cold/wind chills, strong winds, and power outages that result in high rates of damage and even higher rates of expenditures. A heavy accumulation of snow, especially when accompanied by high winds, causes drifting snow and very low visibility. Sidewalks, streets, and highways can become extremely hazardous to pedestrians and motorists. Severe winter storms develop through the combination of multiple meteorological factors. In Vermont and the northeastern United States, these factors include the moisture content of the air, direction of airflow, collision of warm air

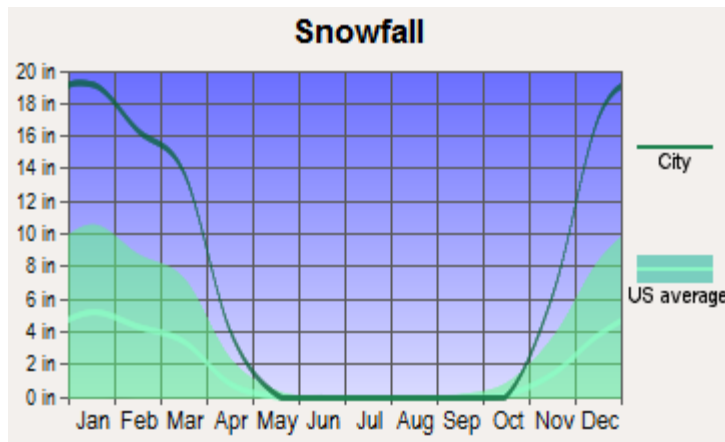
masses coming up from the Gulf Coast, and cold air moving southward from the Arctic. Significant accumulations of ice can cause hazardous conditions for travel, weigh down trees and power lines, and cause power outages. Freezing rain can also be combined with snowfall, hiding ice accumulation and further hindering travel, or with mixed precipitation and potentially ice jams or flooding.”

Winter storm frequency and distribution varies from year to year depending on the climatological patterns but snowfall in the town is significantly higher than the national average. County-wide, the winter of 2010-2011 was the third snowiest on record with a total of 124.3 inches. The record of 145.4 inches was set in 1970-1971. The potential for a major snowstorm that exceeds the capabilities of town exists every year but with the recent increase in snowfall totals and cold temperature duration, the town realizes that further consideration is required. NOAA's National Centers for Environmental Information is now producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the U.S. The RSI ranks snowstorm impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes. NCEI has analyzed and assigned RSI values to over 500 storms going as far back as 1900. As such, RSI puts the regional impacts of snowstorms into a century-scale historical perspective. The index is useful for the media, emergency managers, the public and others who wish to compare regional impacts between different snowstorms. The RSI and Societal Impacts Section allows one to see the regional RSI values for storms as well as the area and population of snowfall for those storms. The area and population are cumulative values above regional specific thresholds. For example, the thresholds for the Southeast are 2", 5", 10", and 15" of snowfall while the thresholds for the Northeast are 4", 10", 20", and 30" of snowfall. 2010, 2012 and 2015 have some of the highest rankings for notable storms in Brownington. These rankings are based, in part on the severity of the storm using the following system. Since 2000, there has only been one event that reached a category 4 in the Northeast, five reached Category 3, eight were “significant” and all others were notable.

Table 2-3: NOAA’s Regional Snowfall Index (RSI)

Category	RSI Value	Description
1	1–3	Notable
2	3–6	Significant
3	6–10	Major
4	10–18	Crippling
5	18.0+	Extreme

Table 2-4: Brownington Snowfall vs. U.S. Average



Brownington has received PA funding for one major snow event in 2001 for \$3,500. Because such storms are expected during a Vermont winter, the town is well-equipped to deal with snow removal and traffic incidents. The most damaging types of snowstorms are ice-storms caused by heavy wet snow or rain followed by freezing temperatures. This leads to widespread and numerous power and telephone outages as lines either collapse due to the ice weight or are brought down by falling trees and branches. While there is no consistent record of snowfall for Brownington, nearby Newport City had the following events which serve to reflect the extent with which snow can impact the area. In January of 2015, the City received 28” of snow compared to only 11.3” in 2014.

Historic January snowfall totals fell in 1987 (47.5”), 1978 and 1979 (46.5”, 45.8”). Total average snowfall in December is 26.2”, January is 22.6”, February averages are slightly less at 16.9” and March is 18.3”. February 14th-15th, 2007 saw the greatest 24-hour max snowfall total at 23.5”. The snowfall totals are annual averages based on weather data collected from 1981 to 2018 for the NOAA National Climatic Data Center. From 2011 to the first half of 2020, there were four recorded “extreme” weather events in Orleans County: February 4th and 15th: Heavy Snow. January 7th and February 1, 2015: Extreme Cold/Wind Chill.

On February 5, 2001, a winter storm event with accumulations of 10 to 14 inches across Orleans County had reported damage in several towns, including Brownington: “A storm system developed off the coast of Virginia early Monday, February 5, 2001 and moved northeast. It moved across extreme southeast coastal New England late Monday night and into the Gulf of Maine early Tuesday, February 6th. Steady snow spread across the area by the afternoon of Monday, February 5th and continued overnight and was heavy at times. The snow tapered off to flurries Tuesday morning, February 6th. Some minor automobile accidents were reported. Barn roofs collapsed in the Towns of Craftsbury and Holland (Orleans County), apparently due to the weight of the snow after the storm ended. Across the counties, generally 10 to 14 inches of snow fell, with Sutton (Caledonia county) reporting 14.4 inches, Chelsea (Orange county) with 12 inches, and Greensboro (Orleans county) with 10.”

There are no standard loss estimation models or methodologies for the winter storm hazards. Potential losses from winter storms are, in most cases, indirect and therefore difficult to quantify. According to the 2014 National Climate Assessment, there is an observable increase in severity

of winter storm frequency and intensity since 1950. While the frequency of heavy snowstorms has increased over the past century, there has been an observed decline since 2000 and an overall decline in total seasonal snowfall (2018 SHMP).

Ice Storm

Major Ice Storms occurred in January 1998 and again in December 2014. While both Morgan and Brownington received heavy damage to forest stands, Brownington did not sustain any significant damage in the 1998 event. Known as the North American Ice Storm of 1998 a series of surface low pressure systems passed in this atmospheric circulation between January 5 and January 10, 1998. For more than 80 hours, steady freezing rain and drizzle fell over an area of several thousand square miles of the Northeast, causing ice accumulation upwards of 2” in some areas. Brownington and the surrounding area received .5 to 1 inch of ice. The ice storm that hit Vermont on Thursday, January 8, 1998 was one of the worst weather calamities in Vermont history. It took Green Mountain Power seven days, one hour, and 29 minutes to restore power to all its customers. The power company supplying Brownington during the 1998 Storm is no longer operating and the Vermont Electric Cooperative has been supplying the town for about 10 years. With a recent generator grant application, the town has captured a recent history of outages with the greatest duration lasting four days but not due to an ice event. While there is evidence that supports an increase in weather and precipitation severity, the incidence of ice storms remains fairly spaced out. The town expects to have another ice storm but unlike rain and snow events, the occurrence of a major ice storm is not expected every year There has be no major ice event since the last approved plan. (www.wrh.noaa.gov/map/?wfo=sto).

Extreme Cold

“Extreme cold temperatures can have significant effects on human health and commercial and agricultural businesses, as well as primary and secondary effects on infrastructure (e.g. burst pipes from ice expansion and power failure). What constitutes “extreme cold” can vary across different areas of the country based on what the population is accustomed to in their respective climates. Exposure to cold temperatures can cause frostbite or hypothermia and even lead to heart attacks during physically demanding outdoor activities like snow shoveling or winter hiking. When temperatures dip below freezing, incidents of icy conditions increase, which can lead to dangerous driving conditions and pedestrian-related slipping hazards. A large area of low pressure and cold air surrounding the poles, known as a polar vortex, is strengthened in the winter. When these polar vortex winds are distorted, due to cyclical strengthening and weakening or interaction with high-amplitude jet stream patterns, they have the potential to split into two or more patterns, allowing arctic air to flow southward along a jet stream. As this arctic air is able to access more southerly regions, extreme cold conditions can be observed in Vermont, which also have the potential to remain over the region for extended periods” (2018 SHMP).

While there is no historical evidence to support a concern over the consequences of extremely hot temperatures on human health and safety, high temperatures can help to create severe storms

as the one evidenced on September 11th, 2013, where record heat helped to produce damaging hail and winds in parts of the NEK and other areas of Vermont and New York. Recent extremes in cold temperatures is a concern and impact the entire planning area and region. 2015 tied the coldest winter (January to March) on record (1923) for Vermont according to the NOAA's National Climatic Data Center whose dataset dates to 1895. The National Weather Service has the following, recent, temperature records for nearby Newport City:

- Highest: 95 degrees, August 2001
- Lowest: -38 degrees, February 1933

Cold temperatures are expected in the Northeast, but they can pose a serious threat to health and safety, especially as the severity and duration increases in conjunction with other technological (e.g. power outage, fuel oil delivery disruption) and societal (ability to purchase heating fuel) factors. The winter of 2015 was the coldest anyone could remember with a mean temperature of 7.8 degrees Fahrenheit. However, the January of 1994 had a mean temperature of 2.7 degrees Fahrenheit which is the coldest mean temperature since 1930 and January is the statistically coldest month in all of Vermont. Since 1930, January produced temperatures in the negative 20's and 30's consistently for Orleans County with record cold temperatures occurring in 1957 and 1933 (-38). While the temperatures for the town remain within averages seen in the last 85 years, dangerously cold temperatures are expected every winter.

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:

Table 2-5: NOAA Wind Chill Chart

		Temperature (°F)																	
		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind Speed (mph)	Calm	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	5	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	10	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	15	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	20	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	25	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	30	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	35	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	40	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
45	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	
50	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
55	25	17	10	3	-4	-11	-18	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	
60	25	17	10	3	-4	-11	-18	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	

30 minutes 10 minutes 5 minutes

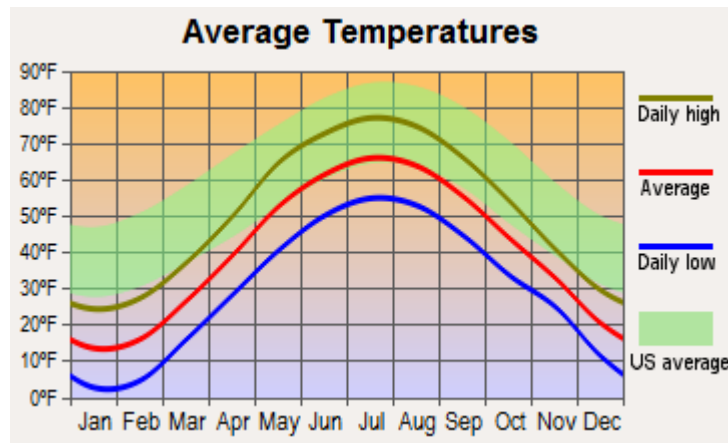
$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$
 Where, T = Air Temperature (°F) and V = Wind Speed (mph)

In anticipation of extreme cold temperatures, the National Weather Service may issue the following watches, warnings or advisories, which are aimed at informing the general public as well as the agricultural industry:

- Wind Chill Warning: Dangerously cold wind chill values are expected or occurring
- Wind Chill Watch: Dangerously cold wind chill values are possible

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

Table 2-6: Brownington Temperature Ranges vs. National Average



Flooding

There are three main types of flooding that occur in Vermont: flooding from rain or snow melt, flash flooding and urban flooding. Flooding has also been known to occur because of ice jams in rivers adjoining developed towns and cities. While ice jam risk for the town is considered low, these events may result in widespread damage in major river floodplains or localized flash flooding caused by unusually large rainstorms over a small area.

The effects of all types of events can be worsened by ice or debris dams and the failure of infrastructure (especially culverts), private and/or beaver dams. Rainstorms are the cause of most flooding in town. Winter and spring thaws, occasionally exacerbated by ice jams, are another significant source of flooding, especially when coupled with high rain levels. Much of this flooding is flash flooding, occurring within hours of a rainstorm or other event. Flash flooding, as opposed to flooding with a gradual onset, causes the largest amount of damage to property and infrastructure. Floods cause two major types of damage: water damage from inundation and erosion damage to property and infrastructure. The 2018 Vermont State All-Hazards Mitigation Plan discusses flooding extensively:

“Flooding is the most common recurring hazard event in Vermont. In recent years, flood intensity and severity appear to be increasing. Flood damages are associated with inundation

flooding and fluvial erosion. Data indicate that greater than 75% of flood damages in Vermont, measured in dollars, are associated with fluvial erosion, not inundation. These events may result in widespread damage in major rivers' floodplains or localized flash flooding caused by unusually large rainstorms over a small area. The effects of both inundation flooding and fluvial erosion can be exacerbated by ice or debris dams, the failure of infrastructure (often as a result of undersized culverts), the failure of dams, continued encroachments in floodplains and river corridors, and the stream channelization required to protect those encroachments." 2018 SHMP

Vermont experienced major floods long before Federal disaster assistance became available. But in November of 1927, Vermont experienced catastrophic flooding. In the month before the flood, rains more than 150% of normal precipitation fell after the ground had frozen. The flood itself was precipitated by 10 inches of rain falling over the course of a few days. The flood inundated parts of many towns and damaged or destroyed numerous bridges in the county. As the history of the flooding cited above bears out, the geography and topography are right for a significant localized storm with extreme damage at almost any location in Vermont. Numerous floods have resulted in Presidentially declared disasters and an influx of federal disaster assistance. Of these disasters, the 1973 flood inflicted the most widespread damage, and the residual rains of Hurricane Belle in 1976 resulted in the second highest amount of federal disaster assistance in Vermont.

Widespread, steady rainfall from frontal systems, tropical cyclones, or "northeasters" can result in flooding of large areas. Extensive and disastrous floods are rare but can result from intense spring rains combined with warm, humid winds that rapidly release water from the snowpack. Such was true for the devastating flood of March 11-12, 1936. During this flood, total rainfall and snowmelt ranged from 10 to 16 inches over the southeastern one-half of the State. Rainfall alone can cause disastrous flooding similar to that in November 1927. During that flood, rainfall totals of 5-9 inches were common, and much more occurred at higher altitudes. Intense rainfall caused extensive flooding on September 21, 1938, when the "great hurricane" reached landfall in the southern area of the State. Severe thundershowers more commonly cause localized street and cellar flooding.

Brownington is located in the Barton River watershed, a drainage area of approximately 164 square miles. A River Corridor Plan released in 2008 notes mass failures of riverbanks along reaches of the Willoughby River from Churchill Road to Center Road, where deposition of sediment have created steep riffles and flood chutes. The last two decades have resulted in an increase in flood events for the town. The summers of 1996, 1998 and 2002 saw moderate road damage but the disasters of 2011 created considerably more damage. Damage was largely contained to local back roads due to washouts. During Tropical Storm Irene, the Center Road Bridge (over the Willoughby River) which connects Brownington to Barton on Route 58, was destroyed. The bridge did not reopen until more than a year later in November of 2012. The total cost to replace the bridge was \$986,219.35. The discharge rate for the Clyde River during Irene was close to 1200 cubic feet per second compared to the average for that time of year at 100 cubic feet per second. While the data is for the portion of the Clyde River at Newport, it does indicate the magnitude of water resulting from the rains Irene produced. June 2015 broke records across the state for the wettest on record. Montpelier had the wettest June on record with 9.05

inches of precipitation, beating the old record of 8.36 inches set in 2013, according to the National Weather Service. Mount Mansfield also had record rain with 15.54 inches, topping the 15.28 inches that fell in 1998. During May of 2011, Brownington saw 7” of rain which is the most the town has seen in many years. Recent history, including the flooding events of 2011 and the records set in 2015 suggest that increases in total rain fall and severity in terms of rainfall per given unit of time are to be expected along the lines seen with the records seen across the state recently.

Tropical cyclones (storms) are officially ranked on one of five tropical cyclone scales, according to their maximum sustained winds and which tropical cyclone basin are located. Only a few scales of classifications are used officially by the meteorological agencies monitoring the tropical cyclones, but some alternative scales also exist, such as Accumulated cyclone energy, the Power Dissipation Index, the Integrated Kinetic Energy Index, and Hurricane Severity Index. Of most recent importance for Vermont was Tropical Storm Irene in 2011. Irene first struck the U.S. as a Category 1 hurricane in eastern North Carolina, then moved northward along the Mid-Atlantic Coast. Wind damage in coastal North Carolina, Virginia, and Maryland was moderate, with considerable damage resulting from falling trees and power lines. Irene made its final landfall as a tropical storm in the New York City area and dropped torrential rainfall in the Northeast that caused widespread flooding. Irene resulted in the worst Vermont flooding in 83 years but Brownington, along with much of the surrounding towns were not of the hardest hit. During Irene (August 20th-29th, 2011) Brownington received 3” of rain (NOAA). By comparison, the following chart shows the three highest recorded rain and wind events for Vermont towns during Irene.

Tropical Storm Irene Rain and Wind Extremes	
Rainfall	Wind
Mendon, 11.23 inches	Burlington, 51 mph
Walden, 7.60 inches	Morrisville, 40 mph
Randolph Center, 7.15 inches	Springfield, 40 mph

Source: <http://www.accuweather.com/en/weather-news/irenes-infamous-top-ten-1/54348>

While not classified as a Tropical Storm, the April 2011 rain totals for the NEK reached nearly 7” compared to the normal precipitation for the month at 3”. The heaviest rainfall event was associated with thunderstorms during the late afternoon of April 26th into the early morning hours of April 27th, 2011. These storms resulted in record and near record rainfall and flooding across portions of northern Vermont. Specific records for the town of Brownington regarding rainfall totals were not available but in using nearby Newport City (where the 7” of rain was recorded), the town feels that this event can be used as a benchmark regarding extent.

Table 2-5: 2011 “Irene” Discharge Rates for Clyde River

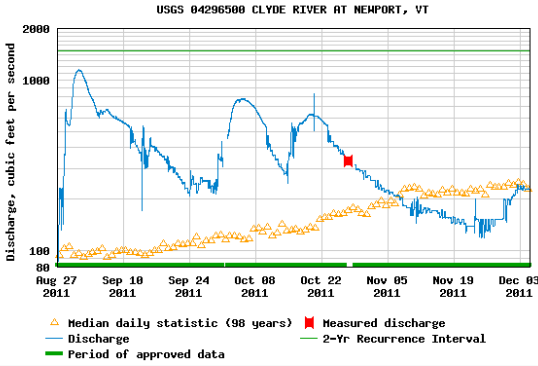
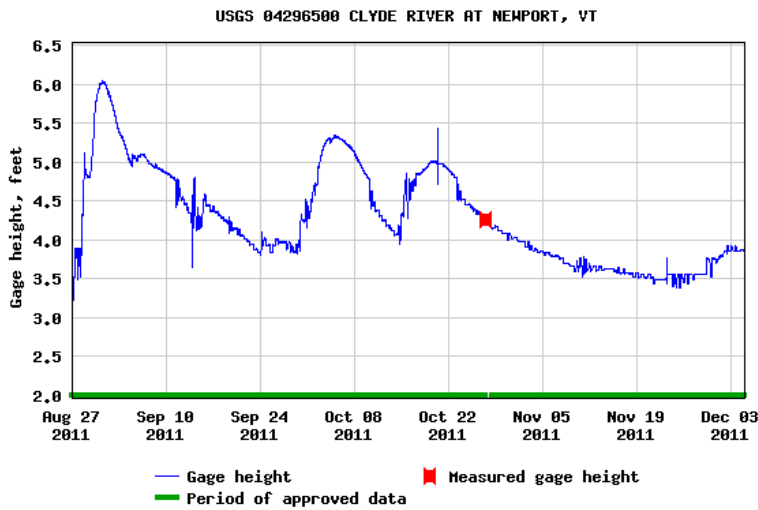


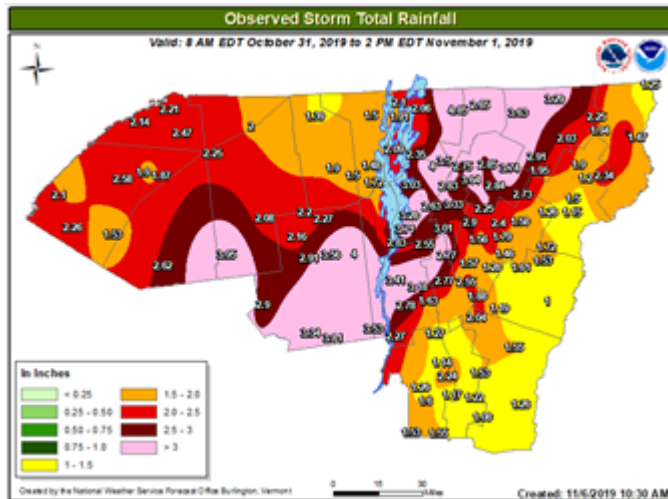
Table 2-6: 2011 “Irene” Gage Height for Clyde River



The “Halloween” storm of 2019 (DR4474) proved to be the most damaging flood event for many areas of the County in recent memory. This powerful storm system tracked across the eastern Great Lakes late on October 31st, 2019 and produced an axis of 3 to 5 inches of rain, which caused significant flooding across the region. Record rainfall occurred at Burlington, Vermont with 3.30 inches on October 31st, along with a record high temperature of 71 degrees. In addition, very gusty southwest winds developed behind this potent storm, which generated scattered to widespread power outages. Surface wind gusts measured up to 65 mph across northern New York and parts of Vermont, with gusts over 100 mph at the summits. The heavy rainfall washed out numerous roads and culverts from Essex County, New York into parts of central and northern Vermont, while 10 rivers reached flood stage with 8 reaching moderate to major levels. A new record high level of 14.72 feet was attained at North Troy on the Missisquoi River. Extensive flooding was observed in the following river basins: Missisquoi, Lamoille, Winooski, and Ausable, while flash flooding with very sharp rises of smaller streams and rivers occurred across the higher terrain of the eastern Adirondacks into central and northern Green

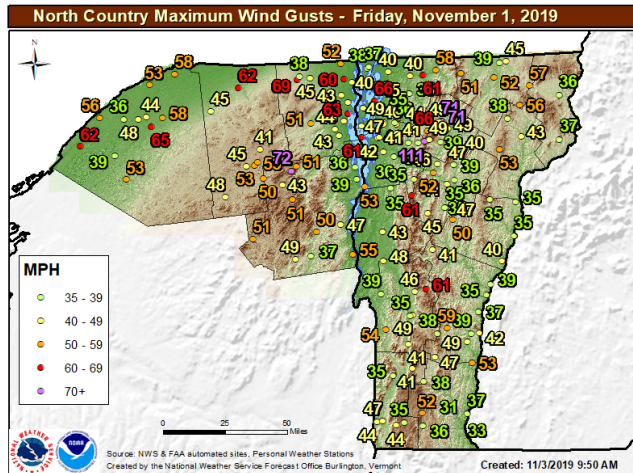
Mountains of Vermont, including the Champlain Valley. Observed total rainfall recordings were 5.26 inches in East Berkshire, 4.85 inches in Enosburg Falls, 4.80 in Fletcher, 4.32 Westford, and 4.0 inches in Elizabethtown, New York. Table 2-7 below shows the storm total precipitation from 31 October at 8 AM to 1 November 2019 at 2 PM.

Table 2-7: Observed storm total rainfall from 8 AM EDT on 31 October to 2 PM EDT on 1 November 2019



The second significant impact from this powerful storm was the high winds, which caused scattered to widespread power outages across northern New York into Vermont. The core of the strongest winds occurred early morning on November 1st across New York and spread into Vermont during the daytime hours. At the peak, over 120,000 customers were without power across the region. Given how saturated the soils were from the recent heavy rainfall, shallow rooted trees were easily uprooted, exacerbating power outages. A few peak wind gusts included 69 mph at Ellenburg, 65 mph in Potsdam and 62 mph in Malone, New York, while a gust to 71 mph was measured in Johnson, 66 mph at Burton Island and 111 mph at Mount Mansfield in Vermont. Figure 2 below shows a map of observed peak wind gusts across the North County on 1 November 2019. Brownington did sustain wind damage that was addressed by electric and telephone service providers.

Table 2-8: Maximum Wind Gust Map for 11/1/2020



The damage incurred in Brownington was minimal in comparison to other areas in the county. Parker road culvert were the hardest hit but the extent of damage did not allow for PA funding.

Inundation and Floodplains

The land area where inundation flooding occurs is known as the floodplain. During high water events, water flows out of the riverbank and spreads out across its floodplain. FEMA defines the portion of the floodplain inundated by the 1% annual chance flood as the Special Flood Hazard Area (SFHA); the area where the National Flood Insurance Program (NFIP) floodplain management regulations must be enforced and where the mandatory purchase of flood insurance applies for federally secured loans.

Inundation flooding on larger rivers and streams typically occurs slowly, over an extended period of time but can spread out over a large area of land. Due to the slower onset of inundation flooding on larger rivers, there is time for emergency management planning (e.g., evacuations, electricity shut-off considerations, etc.) to take place. Though the inundation floodwaters are slower to hit, they often take time to recede as well, and exposure to water for an extended period of time can result in significant property damage. U.S. Geological Survey’s (USGS) National Water Information System monitors real-time streamflow gaging stations in Vermont.

Inundation and fluvial erosion may both increase in rate and intensity as a result of human alterations to a river, floodplain, or watershed. For instance, when a dam fails there may be significant, rapid inundation which can occur without warning. Public and private structures and infrastructure become vulnerable when they are located on lands susceptible to inundation and fluvial erosion.

Brownington’s floodplains are depicted on a FEMA Flood Insurance Rate Map (FIRM) that was created in 1974 and somewhat revised in 1976. This map depicts the Special Flood Hazard areas, which are floodplains that would likely become inundated during a significant flood known as a “base flood.” The base flood is often referred to as the “100-year flood.” Brownington’s FIRM is not accompanied by any insurance studies or base flood elevations, which would indicate how

high the water would rise in a 100-year flood event. The 2018 Vermont State All-Hazards Mitigation Plan contains the following on inundation:

“Recent studies have shown that most flooding in Vermont occurs in upland streams and road drainage systems that fail to handle the amount of water they receive. Due to steep gradients, flooding may inundate these areas severely, but only briefly. Flooding in these areas generally has enough force to cause erosion capable of destroying roads and collapsing buildings. These areas are often not mapped as being flood prone and property owners in these areas typically do not have flood insurance (DHCA, 1998). Furthermore, precipitation trend analysis suggests that intense local storms are occurring more frequently. Additionally, irresponsible land use and development will exacerbate the preexisting vulnerability. Urban flooding usually occurs when drainage systems are overwhelmed and damages homes and businesses. This flooding happens in all urban areas, but specifically in Burlington where the area is located at the bottom of a gradient, which adds to the intensity of this localized flooding...

...Over the past two decades, flood damage costs have risen dramatically in Vermont due to increasing occurrences of flooding and increases in vulnerability associated with unwise land use development in flood plains or within stream corridors. The geography and topography are right for a significant localized storm with extreme damage at almost any location in Vermont. Heavy rains with previous ground saturation, which causes runoff, are a significant part of the flooding formula in Vermont. Steep topography and narrow, inhabited, stream and river valleys further increase the dangerous nature of this hazard. Furthermore, precipitation trend analysis suggests that intense, localized storms that can cause flash flooding are occurring with greater frequency. While flooding will continue, planning and other mitigation measures can help minimize damages.

All of Vermont’s major rivers have inhabited flood plains. While residents in mountain valleys are at risk, they may not be aware of the danger or may choose to ignore it. There are many reasons property owners are reluctant to relocate to less flood prone ground, not the least of which is the lack of personal experience of flooding. In addition, many communities originated beside rivers and streams, some of the most attractive property is located in vulnerable areas. Lakeshore property in Vermont is vulnerable to flooding from high water levels, either by surface water erosion or flooding. Occasionally, water-saturated ground and high-water tables cause flooding to basements and other low-lying areas. Lakeshore property is highly desirable and valuable, making the development of lakeshore areas very likely, even with the high potential for flooding. Restrictions on lakeshore property development have significant negative economic and tax revenue impacts that must be carefully weighed against the gains in personal safety and protection of property.” 2018 SHMP

All of the planning area has the potential to be affected by flooding. Although, comparatively, the town has remained insulated from the catastrophic flood damage that the state has seen in the last ten years, the community continues to have concerns about impacts of future flooding. The town does maintain current river corridor maps that include properties located within the river corridor (which may or may not include associated floodplains). Despite some historic damage to roads and bridges, the town remains protected from structures being damaged because of their

location within the floodplain and/or river corridor and has no history of receiving major or repetitive damage to municipal buildings, critical facilities or residential property.

Fluvial Erosion

Erosion occurs on a consistent, but small-scale, basis within the riparian corridor of the town's streams and rivers. This is a part of normal natural processes and as such is necessary for the proper functioning of the ecosystem of these waterways. However, fluvial erosion on a large scale can damage stream banks and undercut infrastructure such as roads, bridges and culverts as well as agricultural land and structures, causing severe damage. Most flood damage is associated with fluvial erosion rather than inundation. The 2018 Vermont State All-Hazards Mitigation Plan contains the following on fluvial erosion:

“In Vermont, most flood-related damage is due to fluvial erosion. Erosion occurs when the power of the flood (i.e. the depth and slope of the flow) exceeds the natural resistance of the river’s bed and banks. Rivers that have been overly straightened or deepened may become highly erosive during floods, especially when the banks lack woody vegetation, or when the course river bed sediments have been removed. In areas where rivers are confined due to human activity and development, they have become steeper, straighter, and disconnected from their floodplains. 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 such as roads and stream crossings, as well as homes, businesses, community buildings and other man-made structures built near rivers. Fluvial erosion is also increased downstream when all the eroded materials (i.e. sediment and debris) come to rest in a lower gradient reach, clog the channel, and cause the river to flow outside its banks. When severe enough, fluvial erosion can also be the cause of Landslides (see: Landslides). The land area that a river accesses to meander and overtop its banks to release flood energy without excessive erosion is known as the River Corridor. A river corridor includes the meander belt of a stream or river and a buffer of 50’. The River Corridor, as defined in Vermont statute, is: the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition, as that term is defined in section 1422 of this title, and for minimization of fluvial erosion hazards, as delineated by the Agency of Natural Resources in accordance with river corridor protection procedures.”

Vermont’s River Corridor maps delineate river corridors for larger streams and rivers, and standard setbacks for smaller, upland streams. The setbacks were determined by factoring in the same stable stream slope requirements used when delineating a river corridor using a meander centerline setback. These maps are located on the Vermont FloodReady and Vermont Natural Resources Atlas websites in addition to recent NVDA work for mapping river corridors for towns in the NEK.

The Vermont Agency of Transportation (VTrans) applies the term “scour critical” to stream crossing structures especially vulnerable to streambed scour—the undermining of bridge supports by water action and erosion. A spreadsheet database is maintained by VTrans and

continually updated by the Bridge Inspection Program. Structures inspected are only those of 20 feet or longer owned by a municipality or the state. The scour critical rating is based on the structure itself, and does not consider debris jams, outflanking, channel change, or other issues commonly associated with fluvial erosion. Water supply source and distribution systems are also endangered by fluvial erosion. Many water distribution systems involve buried pipes that cross streams, which are vulnerable to fluvial erosion. In December 2014, the Vermont Department of Environmental Conservation (DEC) released the “Flood Hazard Area and River Corridor Protection Procedures” guide, outlining specific actions and considerations. Erosion of stream banks was a concern but is less-so now. A FEMA study has shown very little increase in velocities resulting from over-bank events which are infrequent and have subsequently not caused channel migration.

In summary, flooding is a significant hazard in Brownington, a fact that is unlikely to change. Protecting river systems as a preventative measure, protecting property and human health and safety from flooding and flood-related damage remains important facets of mitigation planning for most Vermont communities including Brownington. Brownington remains committed to enhancing awareness and incorporating recommendations in future planning and mitigation work. The most common consequence to flooding for many Vermont towns is road and bridge (infrastructure) damage and Brownington has sustained infrastructure damage in previously declared disasters. The greatest magnitude of significance in both financial and logistical considerations as was seen in 2011 (DR4022) on the Center Road Bridge over the Willoughby River. The flood damage for this single site was over \$900,000. Secondly, the Pepin Road Bridge incurred \$56,000 in damage during the same disaster and previously that year (DR1995) for a similar amount. Aside from 2011, the town has remained relatively protected from major infrastructure failures resulting from both disaster and non-disaster events. The town has engaged the community in identifying transportation-related needs via a community survey. Improving and maintaining the condition of roads and bridges and improving safety were highest priorities reported from the survey. *(Source: Brownington Community Survey)*

Pandemic

Pandemic planning in Vermont appears to ebb and flow. Following the H1N1 Virus Outbreak in 2009-2010, increased emphasis on pandemic planning was seen across the state. From 2010 to 2019 however, without another major U.S. event, emphasis on pandemic planning diminished. While Vermont, due to its rural nature, has some level of protection from national infection rates during a pandemic, the financial implications experienced during the COVID-19 pandemic in 2020 hit the state extremely hard.

COVID-19 is a new disease, caused by a virus not previously seen in humans. COVID-19 is highly contagious and people with COVID-19 who do not have any symptoms can spread the virus to other people. On March 13, 2020, President Trump declared a nationwide emergency pursuant to Sec. 501(b) of Stafford Act to avoid governors needing to request individual emergency declarations. All 50 states, the District of Columbia, and 4 territories have been approved for major disaster declarations to assist with additional needs identified under the

nationwide emergency declaration for COVID-19. Additionally, 32 tribes are working directly with FEMA under the emergency declaration. FEMA announced that federal emergency aid has been made available for the state of Vermont to supplement the state and local recovery efforts in the areas affected by the Coronavirus Disease 2019 (COVID-19) pandemic beginning on January 20, 2020 and continuing. Public Assistance federal funding was made available to the state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency protective measures (Category B), including direct federal assistance under Public Assistance, for all areas in the state of Vermont affected by COVID-19 at a federal cost share of 75 percent.

In early 2020, there was a quick return to the tenets of effective pandemic planning. Preparing for hospital surge, high death rates and the medical equipment necessary for both patients and health care workers are examples of the state's early focus. Public information and guidance on safety, isolation, travel and quarantine also became extremely important while mitigating the pervasive economic consequences of reducing work forces, sending students home and closing businesses. Additionally, Vermont had to consider the implication of, and work to control, the immigration of people from other states. Both infection risk and taxing of local resources were the main concerns associated with this real consequence of the pandemic.

While the Northeast Kingdom remained insulated from infection rates (and subsequent deaths) seen elsewhere in the state (e.g., Burlington), issues of border closure, implementing safety protocol and procedures and economic resilience were experienced in every community, including Brownington. The town has received public assistance for the COVID-19 disaster 4532. As of December 2nd, 2020, there have been 5015 cases, 79 deaths and 2951 recovered in the state. According to the current data, Brownington has had less than 10 cases. COVID-19 vaccines are available and during the draft phase of this update, cases and deaths are in decline. (<https://www.healthvermont.gov/response/coronavirus-covid-19/current-activity-vermont#town>)

SECTION 3: RISK ASSESSMENT

3.1 Designated Hazard Areas

3.1.1 Flood Hazard Areas

All of Brownington is located in the Barton River watershed, a drainage area of approximately 164 square miles. The mainstem of the Barton originates from Tildy's Pond in Glover, then travels through Barton and the Village of Orleans, on to Lake Memphremagog's South Bay in Coventry, just bypassing Brownington at its southwest boundary. The Barton River watershed contains one large tributary watershed, the Willoughby River (62 square miles), which drains from Lake Willoughby in Westmore, runs through Evansville and enters the Barton River just north of Orleans Village. The Brownington Branch flows from northeast in Brownington, crossing Chilafox, Pepin, and Schoolhouse Roads, before joining the Willoughby near Center Road (*Brownington Town Plan, 2015*). Special Flood Hazard Areas are found mostly along the Brownington Branch and along the Willoughby River. The highest concentration of development in a flood hazard area appears to be near Route 58, in Evansville, along the Willoughby River. There are other hazard areas along Day Brook to Brownington Pond, where some development

may be affected. Remaining hazard areas have no development and appear to be in state conserved lands.” (*Brownington Town Plan, 2015*). It is difficult to estimate the total number of structures located in designated hazard area because current E911 maps do not correspond accurately to FIRMs. However, there are approximately 20 structures in or close to the flood hazard areas. These structures include road segments and bridges and the most vulnerable, based on prior history are near the Brownington Branch of the Willoughby River.

3.1.2 Fluvial Erosion Hazard Areas

About two-thirds of Vermont’s flood-related losses occur outside of mapped floodplains, and this reveals the fundamental limitations of the FEMA FIRMs. A mapped floodplain makes the dangerous assumption that the river channel is static, that the river bends will never shift up or down valley, that the river channel will never move laterally, or that river beds will never scour down or build up. In reality, river channels are constantly undergoing some physical adjustment process. This might be gradual, resulting in gradual stream bank erosion or sediment deposit – or it might be sudden and dramatic, resulting a stream bank collapse. The losses experienced during the May 2011 storms and Tropical Storm Irene were most often related to the latter. In fact, this type of flood-related damage occurs frequently in Vermont, due in part to the state’s mountainous terrain. Land near stream banks are particularly vulnerable to erosion damage by flash flooding, bank collapse, and stream channel dynamics. The Vermont Department of Environmental Conservation, Agency of Natural Resources, has identified river corridors, which consist of the minimum area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition. In other words, the river corridor provides “wobble room” for a stream as its channel changes over time. Keeping development out of the river corridors therefore reduces vulnerability to erosion. (*Brownington Town Plan, 2015*). A River Corridor Plan released in 2008 notes mass failures of riverbanks along reaches of the Willoughby River from Churchill Road to Center Road, where deposition of sediment have created steep riffles and flood chutes. The study noted that one riffle upstream of the Center Bridge Road had directed the majority of flow against a bridge abutment.

3.1.3 Repetitive Loss Properties

The town has no repetitive loss properties (buildings or homes). The Pepin Road Bridge was damaged twice in 2011 and has since remained functional.

3.2 Non-designated Hazard Areas

3.2.1 1998 Ice Storm Damage

Impacts of the January 1998 ice storm in Brownington were minimal in comparison to other areas of the state.

3.2.2 High Winds and Lightning

Ridgeline and hilltop homes as well as homes located in the midst of mature forests are the most vulnerable to damage from falling trees and tree limbs. High tension line runs along VT RT 105 and the Vermont Agency of Transportation works to keep limbs trimmed.

3.3 Previous FEMA-Declared Natural Disasters, Non-declared Disasters and Snow Emergencies

While the Town of Brownington has had a history of flooding, losses to public infrastructure have intensified in recent years. The summers of 1996, 1998 and 2002 saw moderate road damage throughout the town and in the village areas. Damage was largely contained to local back roads (unpaved) due to washouts. During Tropical Storm Irene, the Center Road Bridge, which connects Brownington to Barton on Route 58, was destroyed. The bridge did not reopen until more than a year later in November of 2012. The total cost to replace the bridge was \$986,219.35. FEMA provided \$806,508.86. The Town received \$44,806.06 from the state, with additional funding from three points on the grand list (\$44,359.81) and a state structures grant (\$78,435). The Town of Brownington shared remaining expenses with neighboring Barton. This repair has been the single greatest expense associated with a natural disaster the town has sustained in recorded history. Whiting Lane was damaged and needed immediate repair to reach an elderly, ill resident and the Pepin Road Bridge received damage twice in 2011 with numerous roads blocked by vegetative debris. The town has been fortunate that its buildings and residential property has remained unaffected by recent disasters. Despite disaster declarations since the last approved plan, there has not been any public assistance received for infrastructure repair either because of no damage or minimal damage. Brownington has received public assistance funding from FEMA for the following natural disasters:

Table 3-1: KEY:

DR	Date	Type
1428	07/12/2002	Severe Storm(s)
1995	06/15/2011	Severe Storm(s)
3167	04/10/2001	Snow
4022	09/01/2011	Hurricane
4532	03/13/2020	Pandemic

Table 3-2: Town of Brownington, FEMA-declared disasters and snow emergencies, 2005-2014

Disaster Number	PW #	Application Title	Applicant ID	Damage Category	Project Amount	Federal Share Obligated	Total Obligated

				Code			
3167	149	EMERGENCY PROTECTIVE MEASURES (SNOW REMOVAL ASSISTANCE)	019-09850-00	B – Protective Measures	\$4,667.26	\$3,500.45	\$3,713.28
4022	3	bcorlbroad b epm 4022	019-09850-00	B – Protective Measures	\$3,445.62	\$3,101.06	\$3,101.06
4022	207	MEBRC01 Center Road Bridge (TH1,B9) on Willoughby Riv.	019-09850-00	C – Roads & Bridges	\$986,219.35	\$806,508.87	\$806,508.87
4022	325	bcbr c 02 pepin rd bridge 4022	019-09850-00	C – Roads & Bridges	\$56,037.25	\$50,433.53	\$50,433.53
1428	93	ROAD & CULVERT REPAIR	019-09850-00	C – Roads & Bridges	\$3,044.00	\$2,283.00	\$2,421.80
1428	106	ROAD & CULVERT REPAIR	019-09850-00	C – Roads & Bridges	\$16,789.00	\$12,591.75	\$13,357.33
1995	166	NCORLBRO whiting	019-09850-00	C – Roads & Bridges	\$4,785.91	\$3,589.43	\$3,589.43
1995	245	NCORLBRO pepin rd. bridge	019-09850-00	C – Roads & Bridges	\$55,291.48	\$41,468.61	\$41,468.61
1995	246	NCORLBRO Dutton rd.	019-09850-00	C – Roads &	\$24,567.12	\$18,425.34	\$18,425.34

				Bridges			
1995	326	NCORLBRO Chalifoux rd.	019- 09850-00	C – Roads & Bridges	\$22,235. 72	\$16,676. 79	\$16,676.79
1995	456	NCORLBRO Ticehurst rd.	019- 09850-00	C – Roads & Bridges	\$25,759. 08	\$19,319. 31	\$19,319.31
1995	457	NCORLBRO hinman-settler rd.	019- 09850-00	C – Roads & Bridges	\$23,681. 81	\$17,761. 36	\$17,761.36

Sources: FEMA and the 2015 Brownington Town Plan

Non-declared disasters (e.g. snow and rain storms) have not resulted in damage above and beyond normal maintenance. Extreme, long-lasting cold temperatures during winter months do pose a concern for the town as in many communities where the price of heating fuel often exceeds resident’s ability to pay. Coupled with high unemployment, there is an increased risk for the town’s residents to not meet the financial requirements for adequate heat, especially during long periods of extremely cold temperatures. With a recent increase in Amish families living in town, the town maintains additional concern as the Amish only use wood heating systems and have limited means of transportation. With a recent HMGP application for a generator grant for the school, prior history of outages included a near-50 hour outage in December, 2013 from a localized ice storm. Without adequate provisions, 48 hours of extremely cold temperatures could create a serious health hazard.

3.4 Hazard Assessment and Risk Analysis

Although estimating the risk of future events is far from an exact science, the Planning Team used best available data and best professional judgment to conduct an updated Hazards Risk Estimate analysis, which was subsequently reviewed and revised by town officials in 2014. This analysis assigns numerical values to a hazard’s affected area, expected consequences, and probability. This quantification allows direct comparison of very different kinds of hazards and their effect on the town and serves as a method of identifying which hazards hold the greatest risk based on prior experience and best available data. The following scoring system was used in this assessment.

Area Impacted, scored from 0-4, rates how much of the municipality’s developed area would be impacted.

Consequences consists of the sum of estimated damages or severity for four items, each of which are scored on a scale of 0-3:

- Health and Safety Consequences
- Property Damage
- Environmental Damage
- Economic Disruption

Probability of Occurrence (scored 1-5) estimates an anticipated frequency of occurrence.

To arrive at the overall risk value, the sum of the Area and Consequence ratings was multiplied by the Probability rating. The highest possible risk score is 80.

3.4.1 Natural Hazards

According to the updated Hazard and Risk Estimation for Brownington, the following natural hazards received the highest risk ratings out of a possible high score of 80:

- Severe Winter Storm (32)
- Flooding (48)
- Pandemic (24)
- Extreme Cold (36)

Flood-related disasters have had the greatest financial impact on the town. While no deaths or injuries have been recorded for declared or non-declared disasters, the potential for health and safety risk during a pandemic, severe winter storm or extreme cold event is considered higher than that posed by a flooding event. While flooding is likely to have a significant impact over a smaller area, severe winter storms tend to affect the entire town and are more common, hence the higher rating. Brownington has minimal fluvial erosion hazard areas along stream banks.

Table 3-2 Natural hazards risk estimation matrix, Brownington

Brownington Natural Hazard Risk Analysis: NATURAL HAZARDS		Drought	Flooding	High Winds	Fluvial Erosion	Landslide	Lightning	Multi-structure Urban Fire	Pandemic	Winter Storm	Extreme Cold
		Area Impacted									
Key: 0 = No developed area impacted											
1 = Less than 25% of developed area impacted											
2 = Less than 50% of developed area impacted											
3 = Less than 75% of developed area impacted											
4 = Over 75% of developed area impacted		1	4	1	1	1	1	1	3	4	
Consequences											
<i>Health & Safety Consequences</i>											
Key: 0 = No health and safety impact											
1 = Few injuries or illnesses											
2 = Few fatalities or illnesses											
3 = Numerous fatalities											
		0	1	1	0	1	1	3	1	2	
<i>Property Damage</i>											
Key: 0 = No property damage											
1 = Few properties destroyed or damaged											
2 = Few destroyed but many damaged											
3 = Few damaged but many destroyed											
4 = Many properties destroyed and damaged											
		0	2	2	1	1	1	1	1	1	1
<i>Environmental Damage</i>											
Key: 0 = Little or no environmental damage											
1 = Resources damaged with short-term recovery											
2 = Resources damaged with long-term recovery											
3 = Resource damaged beyond recovery											
		2	2	1	2	1	1	1	1	1	1
<i>Economic Disruption</i>											
Key: 0 = No economic impact											
1 = Low direct and/or indirect costs											
2 = High direct and low indirect costs											
2 = Low direct and high indirect costs											
3 = High direct and high indirect costs											
		2	3	1	1	1	1	2	2	1	
Sum of Area & Consequence Scores		5	12	6	5	5	5	8	8	9	
Probability of Occurrence											
Key: 1 = Unknown but rare occurrence											
2 = Unknown but anticipate an occurrence											
3 = 100 years or less occurrence											
4 = 25 years or less occurrence											
5 = Once a year or more occurrence											
		1	4	4	4	1	4	1	4	4	
TOTAL RISK RATING											
Total Risk Rating =											
Sum of Area & Consequence Scores		5	48	24	20	5	20	5	8	32	36
x Probability of Occurrence											

3.4.4 Hazard Summary

According to the risk estimation analysis, the highest rated hazards for Brownington are:

- Severe Winter Storm
- Flooding
- Extreme Cold
- Pandemic

Flooding is the highest rated hazard for Brownington due to previous damage events and subsequent costs to repair. Within each of the highest rated hazards, there exists the potential for the secondary, but no less important, consequence of increased financial demand on residents because of an event. While winters in Vermont are characterized by cold weather, recent increases in extreme weather events, including extremely cold temperatures increases the costs of heating energy and this is a challenge that the state and local communities are being forced to address. Along these lines, the cases of COVID-19 were minimal in the planning area but the financial impact of protective measures implemented on a state-level impacted the planning area as it did many of the surrounding communities. Recovery from the pandemic will be a long road for some and the consequences for residents and the town have the potential of being severe. The next planning cycle will give the planning team an opportunity to assess and work to mitigate these consequences.

SECTION 4: VULNERABILITY ASSESSMENT

Vulnerability refers to the potential impact of a specific loss related to an identified risk. While the loss of any one facility would cause a disruption in town services and operations, the overall vulnerability is low. There are roads, bridges and culverts vulnerable to flooding and those are identified below. Loss of equipment function for the highway department is a vulnerability for the town but the risk is not due or predicted to be a result of a disaster, merely, the required maintenance expected of highway-related machinery. For this section of the plan, the planning team looked at prior history and worst-case scenarios. The primary vulnerability for the entire planning area remains transportation-related infrastructure damage due to flooding.

Of the profiled hazards, the following vulnerability rating (high, moderate, low) is given below. This vulnerability rating is based on the disaster case history for the town and when the greatest financial impact was seen due to the disaster. The specific vulnerability to the population as a whole or any specific sub-population (e.g., elderly) is subjective because there is no historical data to rank vulnerability to health and safety of residents, workers or travelers.

Severe winter/ice storm: Moderate

Summary: While all structures are vulnerable to major snow loads, there is little evidence to support concern over structure failure due to snow loads on roofs, ice on gutters, etc. Town snow removal equipment is vulnerable to damage with greater use, especially during emergency situations as well as road damage from plowing. Populations caught outdoors, commuting or

working outside during a severe winter storm are more vulnerable to cold-related injury and/or snow related accidents but winter comes every year and residents and the town are accustomed to making intelligent decisions regarding safety and protection of infrastructure. Special populations (e.g. aging, disabled, etc.) are more vulnerable in terms of mitigating structure loads, hazardous travel and relocating to safety.

Extreme Cold: Moderate

Summary: Recent evidence shows that greater extremes in temperature and overall weather fluctuation are occurring with increased frequency. A long-duration cold snap can cause significant damage to structures due to bursting pipes and the residential health and safety considerations include factors related to financial resources, fuel supply, sheltering, provisions and employment.

Flooding: High

Summary: The town is flooding and this is specific to transportation routes and infrastructure more-so than buildings and people in Brownington. However slight in terms of probability, a riverbank breach of significant magnitude could have catastrophic implications on homes, buildings, people and equipment. The magnitude of financial resources devoted to flood-related damage in the town equates to high vulnerability. Flooding impacts the planning area by inundation damage to structures, which are considered well-below the FEMA flood hazard elevation and roadway drainage structures. Most of the damage is to road surfaces, drainage structures (culverts, ditching) and driveways. Roadways are also an issue for municipal road crews in each jurisdiction when they become inundated and cut off traffic.

Pandemic: High

Summary: Not only is the COVID-19 current during the drafting of this plan but it will likely remain active, at very least, over the 2020-2021 flu season. While Vermont has remained relatively insulated from the worst-case scenarios already seen in other states in regard to infection rates, there have been significant financial impacts for the region and state. There are several important considerations for the town and villages to take on. Issues such as tax revenue reductions from failure to pay on a large scale to how a major storm event could compromise pandemic response (e.g., sheltering operations and resource allocation).

Table 4-1: Vulnerability Summary Table

Hazard	Vulnerability	Extent (Storm Data from most severe event)	Impact (economic/health and safety consequence)	Probability
Flood	<p>Culverts, bridges, road infrastructure.</p> <p>20 critical or public/residential infrastructure in SFHA/.2% FHA</p>	<p>The greatest 24-hour rainfall record for immediate region occurred in late October 31st, 2019 at 3''. The greatest level of precipitation in any month occurred in August 2011 at 11'' No detailed data was available for fluvial erosion damage in town in terms of numbers of acres lost during each event.</p>	<p>The 2011 flood events (DR-1995 at \$156,319 and DR-4022 at \$1,045,702 were the most destructive and costly for the town. Damage to the Center Road bridge (DR-4022) was the highest single damage site in town history (\$986,219 total repair cost) No extent data as available for this event</p>	High
Extreme Cold/ Snow/Ice Storm	<p>The entire planning area is vulnerable, including road infrastructure, town and privately-owned buildings, utility infrastructure</p>	<p>Snowfall has varied, from a few inches to over a foot or more. Heavy snow and wind may down trees and power lines. Snow/ice contributes to hazardous driving conditions.</p>	<p>For roof collapse: monetary damages will depend on each structure but, collapse of barn roof is often a total loss. This does not include the loss of livestock. Collapse of a house roof may be at a 50% loss. For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle and operator injury. Health impacts could vary significantly. Loss of energy or communication capabilities may occur and impede recovery.</p>	High

Pandemic	The entire planning area is vulnerable in both health and financial stability	COVID-19 has far-exceeded severity of 2009-2010 HINI Pandemic	2020 COVID-19 has resulted in the greatest infectious disease-related financial consequence for the planning area in history	High
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4.1 Critical Facilities

The Center for Disaster Management and Humanitarian Assistance defines critical facilities as: “Those structures critical to the operation of a community and the key installations of the economic sector.” The Brownington Base Map shows the geographic distribution of some critical facilities and utilities. Table 4-1 identifies critical facilities in Brownington, excluding critical facilities designated as hazardous materials storage sites, which are listed in Tables 2-1 and 2-2. All critical facilities in the town are outside the designated flood hazard areas and have no history of damage due to a disaster. In this regard, the town is resilient to critical facility damage during a natural disaster most likely to affect the region.

Table 4-1 Critical facilities in the Town of Brownington

Facility Type	Number of Facilities
Education Facility	1
Town Office	1
Emergency Shelters	2
Town Garage	1
Historic Buildings	6

4.2 Infrastructure

4.2.1 Town Highways

The road system in Brownington consists of a total of approximately 50 miles; the majority of these roadways are class 3 roads (58.6%) which consist of roads of sufficient surface, base, drainage and width to permit winter maintenance and use. The class 2 roads (22%) link to Orleans and carry a majority of the traffic east and west across Brownington and Route 5A which runs north and south and provides a link between Westmore and Charleston. There are several class 4 roads (3%) remaining in Brownington, these roads play an important role as recreational resources. The different road types have different hazard vulnerabilities. Unpaved

roads are more vulnerable to being washed out in a flood or heavy storm, while traffic incidents are more likely to occur on large, arterial roads.

Table 4-2 Town highway mileage by class, Town of Brownington

Class 1	Class 2	Class 3	Class 4	State Hwy	Fed Hwy	Interstate	Total 1, 2, 3, State Hwy
17.4%	22%	58.6%	3%	0	0	0	50 Miles

Source: data derived from VTrans TransRDS GIS data –Brownington Town Plan 2015

Functional Classification:

1. Arterials

- Interstate I-91: Brownington currently has no direct interstate access and will not seek such access for the foreseeable future
- Route 58: Evansville Road-road link to Orleans for the Town of Brownington and Route 5A
- Route 5A: Willoughby Lake Road-road link to Charleston to the north and Westmore to the south

2. Major Collectors

- Hinman Settler Road: Major north/south collector that funnels traffic into Barton and Derby, much of its length is gravel paved

3. Minor Collectors

- Old Stone House/School House Roads: East/west collector that funnels traffic to Route 5A and Hinman Settler Road, much of its length is gravel paved

4. Connectors

- Moulton Road: Connects Parker Road to Coventry, its entire length is gravel paved
- Frog Pond Road: connector running from the Hinman Settler Road to the Village of Orleans and hard surface paved for its entire length
- Center Road: Connector running from Brownington Center to the Village of Orleans and hard surface paved for its entire length
- Hunt Hill Road: Connector between School House Road and Evansville and Route 58

5. Town Roads (all class three roads)

- North to south, east to west-Moulton Rd., Old Cemetery Ln., Cleveland Rd., TH 17, West Rd., Baxter Ln., Birch Ln., Postman Ln., TH 9, Chapdelaine Rd., Glodgett Ln., Lafoe Ln., Dutton Brook LN., Wildwood Ln., Ticehurst Rd., Gaye Hill Rd., Chilafoux Rd., Pepin Rd., Candle Ln., Pond Ln., TH 32, Old Nadeau Ln., Davignon Ln., TH 35, Stevens Rd., Chase Rd., Ryan Rd., Kittredge Rd., Sawmill Ln., Poirier Ln., Whitting Ln., Whetstone Ln.

The town has identified priority locations as a portion of its Road Erosion Site Inventory (Appendix E).

4.2.2 Bridges, Culverts, and Dams

Bridges:

There are a variety of bridges, culverts and dams (beaver only) located in the town. The following bridges are contained in an inventory maintained by VCGI, VTrans and the NVDA and represent those of greatest concern for the town. This analysis does not take into account the fluvial geomorphology or the elevation of the bridge above the floodplain.

Table 4-4 Inventoried bridges in the Town of Brownington with identified risk

Bridge #	Bridge Status	Risk	Bridge Features	Scour Critical	Located in Floodplain
B3	Short	LOW	Center Rd, Brownington Center, crossing Dutton Brook	3 - Scour Critical	Yes
B6	Short	HIGH	Town HW 6 (pepin Rd, crossing Brownington Branch	no	Yes
B7	Short	HIGH	Town HW 30 (Schoolhouse Rd.), crossing Brownington Branch	no	no
B8	Short	LOW	Hunt Hill, near Rt 58	no	no
B9	Long	HIGH	Center Rd	Yes	Yes
B11	Short	HIGH	Town HW 48 (Parker Rd.) crossing Day Brook	No	No
B13	Short	HIGH	Town HW 16 (Cleaveland Road)	Yes	Yes
B18	Short	LOW	Poirer Lane (temp. str.)	no	no

The entire Bridge Inventory with maps for the town can be found on the state site: <https://vtculverts.org/bridges#list>

According to the risk ranking system developed and displayed on the site: vtculvert.org, the following Brownington bridge locations are considered high risk:

1. Cleveland Rd.
2. Parker Rd.
3. Pepin Rd.
4. School House Rd.

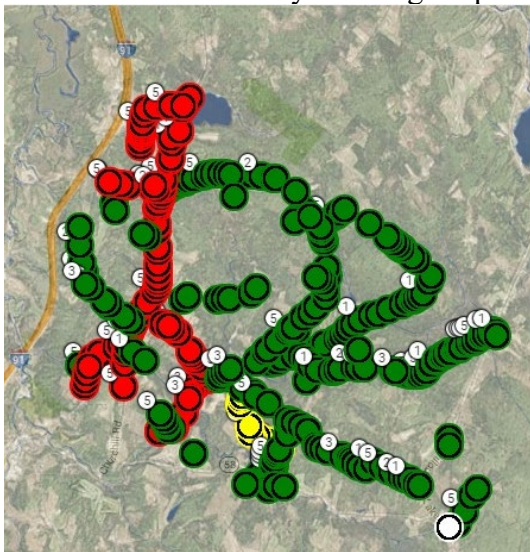
Culverts:

There are currently 364 culverts in the town and are classified in the VOBCIT system. The majority of the culverts are in GOOD condition (73%), 3% are rated as EXCELLENT. The remainder are FAIR (15%) or POOR (6%). 3% are rated as URGENT, CRITICAL, or

UNKNOWN. This inventory is updated by the Town. Those that are considered URGENT (meaning that they are failing or likely to fail in the future) can be found on Pepin Road, Lafoe Lane, Gaye Hill, and Ticehurst. VTCULVERTS.ORG also ranks culverts with an interactive map, the following roads contain culverts that are rated high risk (denoted with Red on the map):

1. Hinman Settler Rd.
2. Moulton Rd.
3. Parker Rd
4. Old stone house Rd.
5. Frog Pond Rd.
6. Chase rd. (Medium risk: yellow)

Table 2-4: Vulnerability Ranking Map for Brownington Culverts



Source: <https://www.vtculverts.org/structures>

The Town maintains a culvert inventory that assesses over data on length, overall condition, size and location. This data guides the town's culvert maintenance and replacement plan. All culverts removed from the Town roads become the Town's property. Usable culverts will be reused on Class 4 roads. Less useful culverts are sold on a first come first serve basis and others are sold as scrap metal. The entire Culvert Inventory with maps for the town can be found on the state site: <https://vtculverts.org/map>.

Dams:

There are no man-made dams in Brownington. There are beaver dams that could cause some flooding if they were to breach but because development is so dispersed, damage to property would be minor.

4.2.3 Water, Wastewater and Natural Gas Service Areas

The Town currently has no water, wastewater or natural gas service areas. Water and sewer systems are the sole responsibility of the property owner and they are required to meet state and federal regulatory standards.

4.2.4 Electric Power Transmission Lines and Telecommunications Land Lines

High-tension electric transmission lines run through the Town of Brownington along VT RT 58 and 5A. Landline phone service is widely available, however cell phone service is limited in town.

4.3 Estimating Potential Losses in Designated Hazard Areas

With 20 structures, including portions of towns and bridges within the 100-year floodplain, many of which are indicated within the river corridor maps. According to most current American Community Survey 5-Year averages, the median value of an owner-occupied housing unit in Brownington is \$143,300. With no repetitive loss properties, the town does not believe that even during a flooding event similar to those of 2011 that there would be substantial damage to buildings or residential housing that exceeded 1%. However, given the magnitude of damage to town bridges (Center Road and Pepin Road), the potential for costs exceeding one million dollars to repair exists because it has happened so recently. However, the repairs and upgraded resilience of these locations associated with these prior expenses greatly reduces the potential for a recurrence. The town has no repetitive loss properties and no new vulnerabilities arising since the last approved plan.

4.4 Land Use and Development Trends Related to Mitigation

The Town of Brownington is comprised of 18,148 acres, more than three-quarters of which is forested. Some pasturelands in Brownington may be open land but most is currently not active farm land and is being reclaimed by woods, making the majority of Brownington's land cover forested. The working landscape makes up the vast bulk of the land area of the Town of Brownington and gives the countryside its rural character. Preservation of this working landscape by maintaining forestry, agriculture and outdoor recreation as predominant land uses is the stated goal of the 2015 Town Plan. A recent study published by the Northern Communities Investment Corporation (NCIC) found that Brownington had the second largest amount of prime agricultural soils of all Orleans communities – more than 2,378 acres. When removing buildings and infrastructure (such as roads and paved areas) from the spatial analysis, Brownington still has 2,282 acres of prime agricultural soils. This total does not include soils of statewide importance, which may also present opportunities for agricultural activity. The town received the designation as a Village Center in February, 2017 and this can help Brownington achieve many of their land use goals by:

- **Making the Town more competitive for certain state grant programs:** Brownington can now benefit from historic preservation grants that help to stabilize or rehabilitate important assets in the Village, such as the Grange Hall, which is currently uninsured due to code compliance issues. Other state programs, such as Municipal Planning Grants, might be available to help the Town carry out village-specific initiatives that explore

ways to identify build-out capacity and promote density in Brownington Village which is out of the SFHA.

- **Tax credits.** The primary benefits of this program are state tax credits for rehabilitation of certain income producing properties built before 1983. If these tax credits are in addition to Federal tax credits for rehabilitation of historic properties, these tax credits can be substantial. While these credits are awarded on a competitive basis, they are not available to churches or government buildings, but non-profits can obtain the tax credits and sell the credits to a bank or insurance company, apply the proceeds to reduce debt load, or parlay the proceeds back to the project as collateral.

4.4.1. Proposed Land Use

While the town does not participate in the NFIP, it is committed to reducing flood risk and vulnerability and increasing the location of new residential and commercial uses in its designated village districts.

4.4.2 Future Development and Housing

Despite the advantages of attracting new businesses and housing, the town does not foresee major development occurring in the next five-year planning cycle. Other than individual real-estate transactions, there is little anticipated business development projected. With local shopping centers long-established and conveniently located in near-by Derby and Newport coupled with a stable population size and major business being farming, the town does not foresee substantial development occurring. Of note, however, the recent influx of Amish families buying property and building homes has increased since 2016. This is seen as advantageous to the town in terms of tax base on new property. The notion that the Amish community is not required to pay property tax is not the case.

The entire population of Brownington is housed, with 880 living in owner occupied dwellings and 108 in renter occupied dwellings. The average family size is 2.8 and the average household size is 2.4. There are a total of 509 households in Brownington with 110 vacant units for seasonal or rental use. According to 2010 Census figures there are 399 occupied housing units in the Town of Brownington of which 357 (89.4%) are owner occupied and 42 (10.5%) are renter occupied. It is dramatically more expensive to rent in Brownington compared to owning a home or renting elsewhere in the county. Gross rent as a percentage of household income was nearly 73% compared to 55% for the county (*American Community Survey Selected Household Characteristics, 2009-2013*). By contrast, mobile home properties account for about 15% of Brownington's grand list. Not all of these properties are necessarily primary residences, but it does appear that mobile home properties are the most prevalent and likely form of affordable housing stock in Brownington. Vermont mobile homes are at an increased risk of damage or destruction during a disaster and losing these properties at 15% could have a significant impact on the town.

Residential Development Patterns

Brownington has no zoning. However, there has been a steady increase in the Amish community and this equates to purchases of pre-existing structures and building new. This development does pose increased risk for the town.

Housing Goals and Objectives

Brownington is dominated by owner occupied dwellings and will continue to be so for the foreseeable future. The Planning Commission will continue to investigate and draft a recommendation of a subdivision bylaw that would insure village densities increasing to the carrying capacity of the land and thereby lower land costs associated with housing. The Town should encourage retirees to build in Brownington and investigate a possible reduction in property taxes for the elderly (*2015 Brownington Town Plan*).

SECTION 5: MITIGATION STRATEGY

The greatest advancement in mitigation planning the town has achieved is from the direct experiences in responding to, and recovering from, the major disasters that have impacted the town and villages in the last decade. These disasters, have, to a large extent, redefined how the entire state views and approaches mitigation. The work of state agencies, including those devoted to transportation, planning and emergency management have also changed the way towns go about their day-to-day operations and planning, both in emergency situations and out. It is because of this that the town views this update as the new standard in their mitigation planning efforts. This plan update allows for a continuation of the systematic documentation of mitigation efforts in the next planning cycle. We feel that the implementation matrix captures specific progress in certain areas but more importantly, gives the town a guide from which all future action and updates can be based on.

5.1 Brownington Town Goals and Policies that support Hazard Mitigation

5.1.1 Purpose and Goals

5.1.1.1 Community Goals

- a. Continue supporting state standards with local, POS water/sewer sources.
- b. Increase capacity to maintain resources for residents impacted by pandemic

5.1.1.2 Capital Improvement Goals

- a. Provide services and facilities deemed necessary for the orderly and rational development of the Town.

5.1.1.3 Public Participation Goals

- a. Continue to solicit input regarding planning issues from town residents and from other entities which can help to offer solutions and insight into the problems the Town

faces both now and in the future via formal meetings and advertised opportunities for input.

b. Utilize LEPC meetings to increase awareness, enhance planning and engage in exercises that address needs in the community.

5.1.1.4 Regulatory Devices Goals

a. The town is confident that state regulations will serve the town best and adopts to not have zoning at this time.

b. Maintain and continue a Capital Expense Budget and Program for the purpose of ensuring that Brownington's rate of growth does not outstrip the Town's ability to pay for the associated necessary services such as roads, schools, police (Orleans County and State), and fire protection, solid waste, etc. The town's capital expense budget is for EMS services, roads and maintaining town office and garage. School budget is administered separately by school board. There is not a local police force but a mutual aid agreement that includes 19 departments. Solid waste is handled by local haulers.

c. Develop and maintain a "No Adverse Impact" (NAI) approach to flood hazard management by institutionalizing the best practices set forth by the ASFPM.

d. Utilize best practices in flood-plain management for farm-related development in town.

5.1.2 Land Use

5.1.2.1 Flood Hazard Overlay District

a. Work to develop a Flood Hazard Area Overlay District to include all designated flood hazard areas. The purpose of the Flood Hazard Area Overlay District is to (1) protect public health, safety, and welfare by preventing or minimizing hazards to life and property due to flooding, and (2) to ensure that private property owners within designated flood hazard areas are eligible for flood insurance under the National Flood Insurance Program (NFIP). The town has elected not to be part of the NFIP but is dedicated to not encouraging new development in the floodplain. The town has no mobile home parks but has a substantial number of mobile homes (15% of grand list) and very few residences at risk of flooding with no repetitive loss properties (*Source: Repetitive Losses / BCX Claims Federal Emergency Management Agency: VERMONT*)

5.1.3 Natural Resources

5.1.3.1 Natural Resources Goals

a. Ensure that the existing health ordinance is enforced to maintain protection of both surface and groundwater supplies.

b. The Selectboard can work with the NVDA to continue the process of identifying the Town's land conservation priorities, and to the degree possible, link them to broader regional conservation work.

c. The Selectboard can also be an active participant in the local management plans for Brownington's Natural Areas. In line with the VTrans mission statement regarding climate change, the town remains committed to:

- Ensure that there are viable alternative routes around vulnerable infrastructure such as bridges and roadways
- Make safety a critical component in the development, implementation, operation and maintenance of the transportation system
- Develop contingency plans for a wide-variety of climate impacts to be implemented as data/information becomes available
- Utilize information technology to inform stakeholders during times of emergency
- Educate the public and other stakeholders on the threats posed by climate change and fluvial erosion hazards
- Increase inspection of infrastructure if warranted by climate change indicators
- Apply a decision-making framework to incorporate cost-benefit analyses into adaptive plans and policy
- Work to protect essential ecosystem functions that mitigate the risks associated with climate change
- Educate individuals within the agency to use best-practices during recovery periods to avoid ecological damage that may further exacerbate risk
- Recognize the interconnected nature of our built environment with ecological processes
- Protect the state's investment in its transportation system and adapting transportation infrastructure to the future impacts of climate change

e. In line with DEC's best practices regarding fluvial erosion, the town will work to:

- Slowing, Spreading, and Infiltrating Runoff (The State Surface Water Management Strategy is found at <http://www.watershedmanagement.vt.gov/swms.html> and <http://www.watershedmanagement.vt.gov/stormwater.htm>)
- Avoiding and Removing Encroachments.
http://www.watershedmanagement.vt.gov/rivers/htm/rv_floodhazard.htm
http://www.watershedmanagement.vt.gov/rivers/docs/rv_RiverCorridorEasementGuide.pdf
- River and Riparian Management: DEC has prepared a compendium of *Standard River Management Principles and Practices* to support more effective flood recovery implementation; improve the practice of river management; and codify best river management practices in Vermont. The document compiles the most current river management practices based on the best available science and engineering methods to create consistent practice and language for risk reduction while

maintaining river and floodplain function. Best practices are established to address common flood damages, including:

- Erosion of banks adjacent to houses and infrastructure
- Erosion of road embankments
- Channel movement across the river corridor
- River bed down-cutting that destabilizes banks, undermines structure foundations, exposes utility crossings, and vertically disconnects rivers from adjacent floodplains
- Bridge and culvert failure

Source:

http://www.watershedmanagement.vt.gov/permits/htm/pm_streamcrossing.html

5.1.3.2 Policies

- a. Through both town and state-level management, work to:
 - Encourage and maintain naturally vegetated shorelines, buffers and setbacks for all rivers, ponds and streams.
 - Advocate for higher density or cluster development in existing and designated settlement areas and low density development in the remaining areas.
 - Reduce flood hazard and repetitive road and driveway washout through continued updates and adherence to the Town Capital Budget and Road Plan.
 - Identify and manage pollution, flooding and fluvial erosion hazards along rivers and streams as they arise.

5.1.4 Transportation Plan

5.1.4.1 Transportation Goals

In adjunct to town-specific planning, the town is committed to continually subscribing to all current state standards related to:

- a. Maintaining safe operating conditions on the present system of town roads through design to keep traffic at appropriate speeds and timely maintenance, including consideration of additional paving (though only on portions of roads prone to damage) should state funding become available.
- b. Protection of existing town roads from flood damage and uncontrolled storm water runoff.
- c. Preserving the capacity of town roads and maintain adequate traffic flows and safety.
- d. Support the road maintenance crew through Town-provided training sessions.
- e. Ensuring that owners and managers of recreational areas provide and maintain adequate and safe parking facilities.

f. Continuing long term access opportunities to gravel and sand deposits for future road maintenance use (the town has secured supply of good sand and gravel).

5.1.5 Utilities and Facilities Plan

5.1.5.1 Utilities and Facilities Goals

- a. Maintain current relationships with the Orleans County Sheriff Department, and Orleans Fire/EMS Department for police and emergency medical services, respectively.
- b. Lack of crime does not support necessity for additional actions or planning at this time.
- c. Identify effective locations for tanker truck access to water in portions of town that currently do not have adequate supplies. The Orleans Fire Department and NVDA shall be responsible for this task.
- d. Promote high-speed internet access throughout town to assist and encourage local businesses to reside in Brownington. Continue participation in the Northeast Kingdom Communication Union District as means to achieving internet services.
- e. Ensure adequate provision of water sources for fire suppression by requiring dry hydrants, fire ponds or other measures as conditions on town land use permits where appropriate. The Planning Commission will work with developers and property owners on this task.

5.1.6 Educational Facilities

5.1.6.1 Educational Goals

- a. The School Board should work with the Selectboard and the Orleans Fire Department to ensure that the necessary equipment exists at the Elementary School for its use as an emergency shelter.
- b. Increase emergency planning cohesion between school and town EOPs through mutual participation and presentation at scheduled LEPC meetings and town and/or school meetings.

5.2 Existing Town of Brownington Actions that Support Hazard Mitigation

The town has done an excellent job at monitoring and addressing transportation issues, engaging in a documented and systematic approach to mitigation actions. The Selectboard has successfully pursued funding to address needs. Using Better Roads, Structures Grants and HMGP funding streams, the town has been able to enhance its transportation resilience and overall preparedness. Road improvement projects remain the primary focus for the town and the areas identified were selected based on the condition of culverts and ditches and primarily focused on runoff issues particularly as the incidence of heavy storms has increased. In many cases, culverts properly sized for normal rain events are overwhelmed by the severe ones. The town will seek local, state

and federal grants to address the sites. Brownington will earmark the funds necessary to complete one major problem each year for the next 5 years and will keep its culvert inventory current to improve its institutional memory. All new development must now complete a curb cut and residents can buy culverts for their own property and the town will install.

The town has also adopted municipal road and bridge standards (4/2/15) that meet or exceed the 2019 standards and has an approved and adopted Local Emergency Management Plan annually and Town Plan (2015). Related to flood resilience goals and strategies, the 2015 Town Plan states:

5.2.1. Flood Resilience Goals:

- Mitigate Brownington’s flood hazards in the most cost-effective manner possible
- Minimize the risk exposure and associated expense to Brownington tax payers
- Ensure the Town and its facilities are prepared to meet the demands of the next flood
- Ensure the Town can receive the maximum outside assistance in the event of the next Federally declared disaster

5.2.2. Flood Resilience Strategies:

- Identify and protect Brownington’s natural flood protection assets, including floodplains, river corridors, other lands adjacent to streams, wetlands, and upland forested cover
- Adopt flood hazard regulations that at a minimum, protect property from known risks
- Review and evaluate statewide river corridor information, when it becomes available.
- Consider adopting regulations that will protect erosion prone areas for additional development and encroachment
- Maintain and regularly update the Local Emergency Management Plan.
- Continue to meet the VTrans Road and Bridge standards. Participate in regional Road Foreman trainings and Transportation Advisory Committee meetings to stay abreast of flood resilience measures for the Town’s roads and bridges
- Continue to update the Town’s transportation infrastructure information in the Vermont
- Online Bridge and Culvert Inventory Tool
- Replace undersized and failing culverts
- Update the Local Hazard Mitigation Plan
- Equip the town’s emergency shelter (the school) with a generator

Table 5-1 Existing municipal actions that support hazard mitigation, Town of Brownington

Type of Existing Protection	Description /Details/Comments	Issues or Concerns
Emergency Response		
Police Services	Vermont State Police	None at this time
Fire Services	Orleans VFD	Water access for fire department is problematic; some roads are difficult to access.
Fire Department Personnel	20 active members	Need for new volunteers remains
Fire Department Mutual Aid Agreements	Northeast International Mutual Aid (19 participants)	None at this time
EMS Services	Orleans	Staffing longevity and community awareness of scope of services
Other Municipal Services		
Highway Services	Town Highway Department	The effective operation of the road system is dependent on the adequacy of road equipment and supporting facilities. The general condition of Road Department equipment and facilities is good
Highway personnel	2 FTE field personnel with on-call squad	MOU's completed with residents to avoid future conflict and liability over culvert and ditching work
Water / Sewer Department	None	None at this time
Planning and Zoning personnel		None at this time
Residential Building Code / Inspection	No	None at this time
Emergency Plans		
Local Emergency Management Plan (LEMP)	2020	Assure sheltering plans and contact information is up to date and vulnerable populations addressed.
School Emergency/Evacuation Plan(s)	2020	None at this time
Shelter, Primary	Brownington Central School	Work with ARC with Sheltering Initiative to obtain training and supplies. Include volunteer staff in planning communication and schedule drills to test efficacy.
Replacement Power, backup generator	Pending	Despite attempts for FEMA funding, a grant to acquire and install remains a goal
Shelter, Secondary:	Brownington Village Church	Assure continued communication lines are open and contacts are correct (See LEOP comments)
Replacement Power, backup generator	None	Assure maintenance program
Municipal Plans		
Town / Municipal Comprehensive Plan	2015	Update in process
Hazard Specific Zoning (slope, wetland, conservation, industrial, etc.)	No zoning/utilize most current state regs	None at this time
Highway Access (curb cut) Policy	Application process, review by Highway Dept. Foreman with final approval by Selectboard	None at this time
Participation in National Flood Insurance Program (NFIP) and Floodplain/Flood Hazard Area Ordinance	No, the town elects not to Participate.	Residential homes or businesses in the floodplain is not an outstanding concern for the town and the barrier to obtaining mortgages would serve has a deleterious consequence to participating. SFHA mapping update is needed.
Culvert and bridge Inventory	2020	https://vtculverts.org/map https://vtculverts.org/bridges#list

5.3 Town of Brownington All-Hazards Mitigation Goals

The following goals were developed by the planning team, vetted during a warned community meeting and approved during the development of this plan:

- Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.
- Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
- Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan into the multi-jurisdictional municipal comprehensive plan as described in 24 VSA, Section 4403(5). This mechanism will be developed by the Planning Commission, Selectboard and NVDA and integrate the strategies into the existing town plan as annexes until the next formal update occurs, where a section devoted to mitigation planning will be integrated into the plan.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan, particularly the recommended mitigation actions, into the town operating and capital plans & programs as they relate to public facilities and infrastructure within political and budgetary feasibility. The Planning Commission will review the plan and use language/actions from it to inform the integration and update process. Town Meeting Day will serve as the formal time that mitigation strategy budgetary considerations will be approved and incorporated into the town budgets.

5.4 Mitigation Actions

5.4.1 Current Capabilities and Need for Mitigation Actions

In following FEMA guidance, the following mitigation action categories form the basis of the town's future mitigation actions. For each mitigation action to follow, an indication of group will be given with the abbreviations listed below:

Mitigation Action Groups:

(P) Prevention: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to

reduce hazard losses. Examples include capital improvement programs, open space preservation, and storm water management regulations.

(PP) Property Protection: Actions that involve the modification of existing buildings or infrastructure to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, flood proofing, storm shutters, and shatter-resistant glass.

(PEA) Public Education & Awareness: Actions to inform and educate citizens, elected officials, and property owners about potential risks from hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

(NRP) Natural Resource Protection: Actions that, in addition to minimizing hazard losses also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

(SP) Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include storm water controls (e.g., culverts), floodwalls, seawalls, retaining walls, and safe rooms.

5.4.1. Current Capabilities, Progress and Need for Mitigation Actions

The Town Plan's goals and policies that support hazard mitigation and the existing mitigation actions demonstrate the variety of policies and actions forming the foundation of this All-Hazards Mitigation Plan Update. Generally, the Town considers its existing capabilities are adequate to address the identified priority hazards in this update. As with most towns in the state, mitigating flood-prone areas is a continuous effort that sees increased attention following a major event. The town remains aware and diligent in keeping up with mitigation actions for all municipal systems. There exists a collaborative spirit that not only is valued but serves to enhance efficiency of action what needs to be done. The Town regards its current hazard mitigation efforts carried out by the road departments as adequate to address winter storm impacts to local roads, however temporary road closure due to winter storms may isolate parts of town. Winter storms are often the cause of the power loss and telecommunications failure. Tree trimming and vegetation management coupled with maintaining adequate repair vehicles and personnel are the primary means of mitigation. However, the town can incorporate the use of public information to support community resilience during a power outage. As part of the strategies defined in this plan, the town will develop a plan for mass communication and, if telecommunication lines are down, a method for alerting residents of the alternate means of information dissemination and/or protocol (e.g., shelter logistics). Major infrastructure that has seen repeated damage due to flooding is a concern for the town and remaining active in identifying priorities, working with State Transportation and Natural Resource Agencies as means to increasing infrastructure resilience is a priority.

Progress in Mitigation Efforts

The resulting mitigation actions taken in response to the events of 2011 have served to protect the town during subsequent flooding events. The table below provides status updates on the mitigation actions specific to infrastructure projects listed in the last approved plan.

Table 5-2: Summary of Infrastructure Project Status:

Action #1: Evaluate capabilities of existing road and storm water management infrastructure.
Continue and improve highway, culvert and bridge maintenance programs

2016 Identified Projects:

Site #1: Center Road: Shoulder Slope

Status: Grants have been obtained and project will go to bid in summer of 2021 to mitigate road sliding into river

Site #3: Hunt Hill Road: Starting at end of bridge #8 and going north: Culvert replacement

Status: Complete

Site #4: School House Road (1.5m up from Town Clerk's office): Culvert and ditch

Status: Complete

Site #5: Kittredge Hill Road at Rte 58: Paving

Status: Complete

Site #6: School House Rd (2.25m from Town Clerk's office): Road re-surface and ditching

Status: Ditching complete, resurfacing remains

In addition to the specific projects mentioned above, the town continues an operational protocol that succeeds at maintaining quality of assessment, planning, and address of identified problems.

Action #2: Maintain and improve capabilities of existing and potential public shelters

Aside from normal building maintenance and updates to the local emergency operations plan related to contact information and locations, no further action taken.

Action #3: Enhance cold weather resiliency of the town by maintaining and improving current Programs for residents

No action taken aside from standard sources of information regarding protecting pipes from freezing and financial assistance through state and federal programs.

Action #4: Review and modify evacuation and sheltering plans based on the results of drills and Exercises or procedures implemented in an actual incident

The school and fire department maintain a regular schedule of drills related to evacuation and fire. However, sheltering plans was not addressed or modified in the planning period. The town has applied for a FEMA grant for the school as emergency shelter four times and continue to be denied because of the cost and the number of residents in our town. The shelter has been approved by the Red Cross.

Action #5: Ensure town and school emergency plans are fully coordinated

School EOPs are owned by the school. The need for town involvement is limited and no further action has been taken. Coordination related to planning past the incorporation of school related information in the local emergency operations plan has not been considered necessary.

Action #6: Raise public awareness of hazards, hazard mitigation and disaster preparedness

Of most importance is the role of the town during the COVID-19 pandemic as it relates to local, state and Federal guidance, assistance, and protective measures. The economic impact of the pandemic was felt strongly in addition to the health risk of the virus.

Action #7: Complete fluvial geomorphology (in coordination with state recommendations and Protocol) assessment and develop strategies in response to any identified risk

No action taken based on resources and capacity. However, the state-led road erosion assessment has started for communities in the county and while distinct from river geomorphology, a necessary and functional mitigation action.

5.4.2 Specific Mitigation Actions

The following actions define the mitigation measures to be taken by the town in the next five years:

Action #1: Improve road infrastructure and municipal systems protection programs
Action #2: Improve resilience to severe winter storms
Action #3: Reduce impact of extreme cold durations
Action #4: Raise public awareness of hazards and hazard mitigation actions
Action #5: Continue fluvial geomorphology assessments in collaboration with DEC and develop strategies and regulatory actions in response to identified risk
Action #6: Reduce risk and impact of a pandemic event

Below, each of the six actions listed above are explained below:

Action #1: Improve road infrastructure and municipal systems protection programs

Group: SP, NRP, PP

Lead Responsible Entity: Town of Brownington Road Foreman

Potential Partner Entities: Vermont Agency of Natural Resources; Vermont Agency of Transportation; NVDA, Agency of Commerce and Community Development

Timeframe: 2021-2026

Funding Requirements and Sources: FEMA or other hazard mitigation grants; FHWA grants; VAOT grants; Municipal Operating and Capital budgets only if sufficient.

Progress since 2016: The Road Foreman continually monitors road and storm water management capabilities. All bridges and culverts have been electronically accounted for and the town is diligent in maintaining a comprehensive road plan that serves to guide action. The Town of Brownington Road Inventory and Capital Budget Plan (2015-2020) specifies actions, areas of road erosion, estimated costs of repair and future needs with supporting mapping.

Specific Identified Tasks:

Infrastructure Assessment for Storm water Vulnerability – Funding and staff resources permitting, assess the vulnerability and operational capability of municipal-owned roads, culverts and other storm water management infrastructure to predicted storm water and snowmelt in areas with a documented history of recurring problems. The infrastructure will be evaluated regularly prior to replacement or upgrades of the existing infrastructure. Separate analyses of all infrastructure in each municipality is not intended or warranted.

Infrastructure Assessment for Fluvial Erosion/Landslide Vulnerability – Funding and staff resources permitting, assess the operational capability and vulnerability of municipal-owned roads, culverts, bridges and other infrastructure to fluvial erosion of varying severity as determined by Strategy #1 above.

Culvert Upgrades - Upgrade culverts and ditching along various roads to mitigate against repeated damages from storm water or spring snowmelt.

Continued Monitoring of Vulnerable Infrastructure - Monitor various bridges and culvert locations that have erosion and scouring concerns.

Road Improvements - Within political and financial restraints, consider re-engineering certain sections of roads to lower overall maintenance costs, improving snow plowing speeds and improve overall capability of roads to handle current and projected traffic volumes. Specific projects include:

1. **Center Road:** Portions of the road are sliding into the river. Grants obtained and will go out to bid summer 2021.
2. **Pepin Road Bridge:** Old granite block headers need to be replaced to maintain integrity of structure and resilience to flood events.
3. **Chilafoux Rd:** Four culverts needed with ditching work (current ditch too deep because site has not been stoned).
4. **Parker Rd #1:** Two-foot culvert upgrade needed. Private farm entry point and damaging road from in/out. Grant obtained to mitigate obtained.
5. **Parker Rd #2:** Two culverts let go during Halloween storm of 2019. Current steel edge culverts need to be replaced with solid plastic.

Rationale / Cost-Benefit Review: Conducting vulnerability assessments facilitates a targeted and effective approach to road and storm water management infrastructure. This will prove useful in the development and implementation of municipal capital and operating plans as well as the development and implementation of grant-funded mitigation projects. Some areas suffer low-level but consistent damage during heavy rains and snowmelt. Mitigating against these problems would reduce short- and long-term maintenance costs and improve the flow of traffic for personal and commercial purposes during flooding events.

Action #2: Maintain and improve resilience to severe winter storms

Group: SP, PP, PEA.

Primary Responsible Entities: Town of Brownington; NVDA Emergency Planning services, American Red Cross, POS Shelter staff.

Potential Partner Entities: LEPC#10; Orleans Fire Chief, ARC’s Sheltering Initiative Program

Timeframe: January 2021 – April 2026

Funding Requirements and Sources: DEMHS or FEMA hazard mitigation funding; existing programs, contingent on available resources and funding.

Brownington Elementary School has been identified as the primary emergency shelter. The school does not have an emergency generator. However, HMGP grant approved for generator installation and award awaiting Hazard Mitigation approval. The monies have not been approved yet because proposed cost too high. Brownington Village Church is the secondary shelter.

Specific Identified Tasks:

- 1) Maintain Existing Shelter Capability: Maintain and improve capabilities of existing shelters. Notification procedures and shelter staffing is a priority for the town and intends to move forward on planning and public involvement. More formalized training is required and the ARC’s “Shelter Initiative Program” can be used at no cost to the town to enhance both shelter management knowledge and sheltering supply cache.
- 2) Reduce risk of power failure due to ice storms: Enhance collaboration between town and private electric company as means of increasing efficiency of mitigation efforts and restoration when systems are down. Maintain function of garage generator.
- 3) Notification: Develop a notification/communication plan that conveys essential sheltering information using school phone system and back-up methodology (email, text, etc.)
- 4) Residential Programs: Provide guidance and communication to residents on the structural and mechanical actions that can occur to reduce risk to severe winter storms (e.g. weatherproofing, anchoring, alternative heating sources, tree trimming, financial programs, etc.). Develop awareness on enhanced vulnerability of mobile home parks to storm events related to percentage of grand list value.
- 5) Monitor roads for safe and effective plowing: Efficient snow removal is the foundation to winter storm (snow) events, assuring roads are plowable before winter remains an important facet of highway department functions. Increase communication with rail as deemed necessary to assure safe train travel during heavy snow/ice events.
- 6) Increase awareness of ICS structure and recommended practices: The town can mitigate the effects of a severe winter by understanding how a large-scale storm is managed when the State EOC is operational. Additional awareness of local-level roles and responsibilities during statewide event is a mitigation action.

Rationale / Cost-Benefit Review:

This mitigation action serves to reduce the economic impact and risk to both human and animal (livestock and pet) health and safety during severe winter storm events by reducing risk and enhancing the mechanisms of winter storm mitigation in the long term. More formalized policy formation in both staffing and notification procedures, especially pertaining to vulnerable populations where transportation and special needs are a concern could potentially significantly reduce the physical, psychological and social impacts of a disaster.

Action #3: Reduce impact of extreme cold durations

Group: PEA, PP, SP

Risk or Hazard Addressed: Risk to infrastructure, livestock and residents

Primary Responsible Entities: Town of Brownington, Orleans EMS and NVDA.

Potential Partner Entities: Vermont EMS, LEPC

Timeframe: 2021 – 2026

Funding Requirements and Sources: Financial factors may produce barriers to change. Strategic planning and understanding of the total scope of needs and potential for change is logical first step.

- 1) Economic Resilience: Establish program for assistance in paying heating bills during crisis situations. Develop and sustain a program that serves to connect resource organizations with residents in need of support services.
- 2) Maintain Existing Shelter Capability: Maintain and improve capabilities of existing shelters. Notification procedures and shelter staffing is a priority for the city and intends to move forward on planning and public involvement. More formalized training is required and the ARC's "Shelter Initiative Program" can be used at no cost to the town to enhance both shelter management knowledge and sheltering supply cache.
- 3) Assess Vulnerable Population— Develop an awareness of the most at-risk community members during an evacuation and/or sheltering event. Focusing on those that lack resources or capability to reach facilities when in need and create plans, including outreach protocol on how to address this potential hurdle.
- 4) Notification and Education – Investigate and develop a notification/communication plan that conveys essential sheltering information. Educating citizens regarding the dangers of extreme cold and the steps they can take to protect themselves when extreme temperatures occur by sustaining a process that serves to disseminate educational resources for homeowners and builders on how to protect pipes, including locating water pipes on the inside of building insulation or keeping them out of attics, crawl spaces, and vulnerable outside walls. Inform homeowners that letting a faucet drip during extreme cold weather can prevent the buildup of excessive pressure in the pipeline and avoid bursting through a yearly public service campaign.

Rationale / Cost-Benefit Review:

With an increase in extreme weather, including cold, there is a need to protect property and the population. Given the magnitude of population dependence on social services, indicating economic and other social vulnerabilities, effective outreach, education and collaboration with resources supports this mitigation action category.

Action #4: Raise public awareness of hazards and hazard mitigation actions

Group: PEA

Risk or Hazard Addressed: Risk to property, residents

Primary Responsible Entities: Town of Brownington, Orleans Fire Chief, NVDA, LEPC and ARC

Timeframe: 2021-2026

- 1) Hazard Resilience for Property Owners- Develop and maintain education materials to inform property owners on how to protect their homes and businesses through accepted hazard resilience actions (e.g. securing their structures from high winds, elevating their

electrical equipment/furnaces in basements, protecting from lightning strikes by grounding electrical outlets, etc.).

- 2) HMGP Awareness: Attend informational sessions on the HMGP funding opportunities for acquisition, elevation and flood-proofing projects. Work with CVRPC to develop an information brochure for residents.
- 3) School Programs: Assure the school is structurally ready to handle natural hazard risks to the greatest extent possible. Continue school programs to raise student awareness of hazards, safety, preparedness and prevention. Explore establishing the school emergency notification system as the primary methodology for all emergency notification procedures and build in the contact information accordingly.
- 4) Family Programs – Continue family programs, such as car safety seat and bike safety programs, to raise family awareness of hazards, safety, preparedness and prevention.
- 5) Fire Prevention Programs – Continue National Fire Prevention Week and other programs to raise public awareness of fire hazards, safety, preparedness and prevention.
- 6) Other hazard awareness programs – Develop public awareness programs, based on all-hazards needs. This includes high heat and drought mitigation efforts. Programs to address mobile home park mitigation opportunities, pandemic hazards, preparedness and mitigation may be appropriate as directed by the state department of health and its jurisdictional offices of local health.

Rationale / Cost-Benefit Review: Improved public awareness could potentially significantly reduce the loss of life and property damage through ongoing, formal, ongoing, public information campaigns that address property protection actions (flood proofing, elevation, anchoring mobile homes/propane tanks, electric and water system elevation, electric grounding, etc.) Improved awareness would also build understanding and public support for municipal mitigation actions to reduce potential infrastructure and liability costs.

Action #5: Continue fluvial geomorphology assessment and develop strategies in response to identified risks in addition to investigating increased mapping of the SFHA

Primary Responsible Entities: NVDA, Agency of Natural Resources (VT ANR) (for assessments and mapping); Town of Brownington Selectboard (for ordinance changes and other actions).

Potential Partner Entities: Nonprofits, other Town of Brownington officials, and other appropriate entities.

Timeframe: 2021 – 2026

Funding Requirements and Sources: Through EMPG funding, NVDA can assist in enhanced mapping of the floodplain within the town. Continuation of assessments and strategy development is contingent upon individual municipalities and/or regional and local organizations, securing funding in partnership with ANR. The level of municipal participation is contingent upon the level of participation asked of staff and that such work would not hinder the ability of municipal staff to carry out their day-to-day municipal duties.

Specific Identified Tasks

Fluvial Geomorphic Assessments - Funding permitting, conduct Phase I and Phase II fluvial geomorphic assessments on streams and waterways in Brownington. If using PDM funding, individual municipalities may select only a subset of streams upon which to perform these assessments and therefore may choose to assess only those sections of streams wherein the

history of flood and erosion damage, the history of channel management, and the proximity of existing or potential development or public infrastructure to the active channel makes an assessment a priority. Justification should be provided for streams, watersheds, or stream reaches not selected for fluvial assessment. Fluvial assessments shall be conducted as guided by the VT ANR Fluvial Geomorphic Assessment Protocols.

Fluvial Erosion Hazard Mapping - Within a year of completed geomorphic assessments for a waterway, funding permitting, a GIS provider (NVDA) should rate the fluvial erosion hazard for each assessed reach, and develop a fluvial erosion hazard map for the waterway, using the GIS extension known as SGAT (or Stream Geomorphic Assessment Tool) for assessed stream reaches. As assessments are completed, a map of all assessed waterways in the town should be created. This data will undergo town review and QA/QC by VT ANR before a final map is drawn.

River Corridor Management Plans – River Corridor Management Plans (RCMP) are encouraged for waterways where Phase I and Phase II assessments have been completed. Creating such a plan requires additional fieldwork and work with local landowners to identify acceptable reach-based management options that enable stream systems to reach equilibrium conditions. Management measures may include stream corridor buffer planting, culvert replacement and roadway improvements, berm removal, and corridor easements. Under Act 110, the Agency of Natural Resources will be identifying best management practices for shorelands and river corridors, and will be providing financial incentives, such as grants and pass-through funding. While the town relies on state regulations for zoning and other regulations, incorporating a RCMP into the Town Plan will only serve to increase the town’s awareness in this crucial facet of mitigation planning.

Fluvial Erosion Hazard Mitigation Implementation - Within five years of completing the final fluvial erosion hazard map, the town will draft strategies to avoid or mitigate losses from the identified fluvial erosion hazards. These strategies may include the adoption and implementation of programs, mechanisms or regulations to prevent endangerment of persons and property in riparian corridor areas from fluvial adjustment processes. Efforts could range from a relatively simple, public information campaign about the map to the adoption of a municipal ordinance or by-law that restricts development in such hazard areas.

Rationale / Cost-Benefit Review:

Continuing this project will require a sustained succession of grants, state appropriations and other funding to complete assessments in Brownington. Successful completion will provide municipal and regional benefits. The municipality’s fluvial erosion areas would be adequately and electronically mapped. This will enable the municipality to make residents and businesses aware of fluvial erosion hazards and potentially lead to municipally directed programs, mechanisms and regulations that further mitigate against this hazard, protecting existing structures and infrastructure. Identifying fluvial erosion hazard areas could also help the municipality restrict future development in hazardous areas, if that should be an advantage to the town in the future. More accurate knowledge of fluvial geomorphology will enable the community to have a better understanding of hazard areas and what mitigation measures might most effectively address those concerns. Flooding is the most common and most significant hazard that can trigger a Federal disaster declaration in Brownington. Along with an update to the flood hazard area maps, identifying the fluvial erosion hazard areas provides improved

opportunities for the community to mitigate potential losses and gauge future development initiatives.

Action #6: Reduce risk and impact of a pandemic event

Group: PEA, PP, SP

Risk or Hazard Addressed: Risk to infrastructure, environment and residents

Lead Responsible Entities: Town of Brownington, ACCD, VDH

Timeframe: 2021 – 2026

Potential Partner Entities: VEM, FEMA

Funding Requirements and Sources: Pandemic planning funding is secondary to financial stability funding in response to potential economic consequences not known to be a serious consequence of infection mitigation efforts. State and Federal funding are primary sources with limited but important local opportunities.

Specific Identified Tasks:

- 1) Work with facility leads on understanding risk factors and what can be done to mitigate and enhance training and skills for response
- 2) Enhance awareness and planning for COVID-19-related mandates, communication, isolation and quarantine logistics for residents, municipal operations and maintaining economic stability
- 3) Maintain process for funding acquisition related to COVID-19
- 4) Develop and maintain continuity of operations plans for critical positions

5.4.3 Prioritization of Mitigation Strategies

Descriptions of specific projects, where available, are listed in Section 5.4.2 and in Table 5-3 below. Because of the difficulties in quantifying benefits and costs, it was necessary to utilize a simple “Action Evaluation and Prioritization Matrix” in order to effect a simple prioritization of the mitigation actions identified by the jurisdiction. The following list identifies the questions (criteria) considered in the matrix so as to establish an order of priority. Each of the following criteria was rated according to a numeric score of “1” (indicating poor), “2” (indicating below average or unknown), “3” (indicating good), “4” (indicating above average), or “5” (excellent).

- Does the action respond to a significant (i.e. likely or high risk) hazard?
- What is the likelihood of securing funding for the action?
- Does the action protect threatened infrastructure?
- Can the action be implemented quickly?
- Is the action socially and politically acceptable?
- Is the action technically feasible?
- Is the action administratively realistic given capabilities of responsible parties?
- Does the action offer reasonable benefit compared to its cost of implementation?
- Is the action environmentally sound and/or improve ecological functions?

Table 5-2 Brownington action evaluation and prioritization matrix

Rank	Mitigation Action	Responds to high hazard	Funding potential	Protection value	Time to implement	Social and Political acceptance ¹	Technical feasibility	Admin feasibility	Benefit to Cost	Environmental advantage	TOTAL
2	Improve road infrastructure and municipal systems protection programs	5	4	5	2	5	4	4	5	4	38
3	Improve resilience to severe winter storms	2	5	5	4	5	5	4	5	2	37
4	Reduce impact of extreme cold durations	3	2	4	2	3	2	2	3	3	24
5	Reduce risk and impact of a pandemic event	5	4	5	4	5	3	3	5	1	35
1	Raise public awareness of hazards, hazard mitigation and disaster preparedness	4	5	5	5	5	5	5	5	3	43
6	Continue fluvial geomorphology (in coordination with state recommendations and protocol) assessments and develop strategies in response to any identified risk	3	2	4	2	2	2	2	3	3	23

Scoring: 1=Poor 2=Below Average or unknown 3=Average 4=Above Average 5=Excellent

The ranking of these criteria is largely based on best available information and best judgment, as many projects are not fully scoped out at this time. The highest possible score is 45. It is anticipated that the town will undertake their own analysis in order to determine whether or not the benefits justify the cost of the project.

5.5 Implementation and Monitoring of Mitigation Strategies

¹ All mitigation actions outlined in this plan are, and will continue to be, consistently assessed for feasibility related to the social, political, and financial factors that are inherent to town operations.

5.5.1. Public Involvement following Plan Approval

After formal adoption, which will occur at warned, documented meetings for each respective jurisdiction, the town and villages will continue to maintain web-presence of the mitigation plan with an opportunity for community input available on its website. Additionally, the town will hold an annual public meeting after performing the annual progress report for the mitigation plan to discuss achievements and the following year's implementation plan. The update will occur at the April Selectboard meeting concurrently with the update of the Local Emergency Management Plan (LEMP). At town meeting, the town will present mitigation information and provide the public an opportunity to increase understanding and involvement with planning efforts. The town will also notify its neighboring municipalities of the availability of information for review and any significant risks and/or mitigation actions that have an impact on surrounding towns.

5.5.2. Project Lead and Monitoring Process

The town's Selectboard chair is the project lead and will work in conjunction with the Selectboard, town clerk, residents and NVDA to complete the yearly progress report included in the plan. The town will create a mitigation action collection system that will be used as the source of future updates following the annual evaluation that will occur in conjunction with the progress report using the Plan Implementation Matrix provided below. The Town Clerk will assure that all road improvement projects are tracked in collaboration with the Road Foreman. While mitigation actions are, by default, often addressed at monthly Selectboard meetings. The town will schedule one meeting annually to formally assess the plan after the annual progress report has been completed. Once the plan is approved by FEMA, the calendar will begin for annual review.

5.5.3 Plan Evaluation and Update Process

The town's Selectboard chair will lead the plan evaluation process as part of the annual progress report. Prior to town meeting and in preparation for the annual town report, a mitigation section will be included that provides an executive summary for the public that addresses the following topics:

- Status of recommended mitigation actions for the five-year planning period
- Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk
- Identification of a lead person to take ownership of, and champion the Plan if different from Selectboard Chair
- An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.)
- Discussion of how changing conditions and opportunities could impact community resilience in the long term
- Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience

By engaging in the annual evaluation, the town will have a viable method for capturing the facets of efficacy and areas needing revision and improvement in its mitigation plan. The town is committed to “institutionalizing” mitigation into its normal operating procedures and with approval of this plan, embarks on the formal incorporation of mitigation actions and discussion, maintaining an awareness that involves not only the Selectboard, Town Clerk and Road Foreman but also the community at large, including the organizations represented by the current planning team. Along these lines, the town will maintain a contact list of the current planning team and make revisions as required, including the team on the evaluation process each year. Through this consistent attention resulting from the evaluation process, progress reports and communication in the annual town report, the town will achieve the consistency required to enhance resilience through planning, assessment and actions devoted to mitigation.

5.5.4. Plan Update Process

The Plan update will be led by the Selectboard Chair and Town Clerk. Depending on funding availability, the town may elect to acquire the assistance of NVDA and/or a consultant to update the plan following a declared disaster and/or the next five-year planning cycle. To assure that the Plan does not expire, the town will begin the update process within no less than six months of the current Plan’s expiration date. Following a disaster and during the recovery phase, the town will use the experience to assess the current Plan’s ability to address the impact of the most recent disaster and edit the plan accordingly. Using the annual progress reports and evaluation narratives as a guide, along with perceived changes in risk or vulnerabilities supported by data and/or observation, strategies will be captured in accordance with FEMA guidelines, which include reconvening the planning team during the update process. The town will establish a “Mitigation File” that documents all evaluations and progress reports, along with actions, especially related to infrastructure improvement projects. While the progress reports are designed to capture the specific actions the town has accomplished related to implementation, keeping a narrative list with dates on all actions relatable to mitigation (e.g. school drills, LEMP updates, Fire Safety Awareness, meetings, etc.), will provide the town the bulk of information required in the update process.

5.5.5. *Implementation Matrix for Annual Review of Progress*

The following table is intended to aid municipal officials in implementing the mitigation actions for Brownington, and to facilitate the annual monitoring of the plan.

Table 5-3 Brownington All-Hazards Mitigation Plan Implementation Matrix

Action	Responsible Entity	Timeline	Specific Identified Tasks	Annual Progress
Improve road infrastructure and municipal systems protection programs	Town Road Foreman and associated municipal systems managers	Spring 2022 and each subsequent spring	Infrastructure Assessment for Storm Water Vulnerability	
	Town Road Foreman	Spring 2022 and as-needed related to weather patterns	Assessment for Fluvial Erosion, Landslide Vulnerability	
	Town Road Foreman	As needed during entire planning period	Culvert Upgrades	
	Town Road Foreman and associated municipal systems managers	Ongoing each fall and spring of planning period	Continued Monitoring of Vulnerable Infrastructure	
	Town Road Foreman	Spring 2021- Fall 2026 (each project will be selected based on capability and level of need within the planning period)	1. Center Road: Portions of the road are sliding into the river. Grants obtained and will go out to bid summer 2021 2. Pepin Road Bridge: Old granite block headers need	

			<p>to be replaced to maintain integrity of structure and resilience to flood events</p> <p>3. Chilafoux Rd: Four culverts needed with ditching work (current ditch too deep because site has not been stoned).</p> <p>4. Parker Rd #1: Two-foot culvert upgrade needed. Private farm entry point and damaging road from in/out.</p> <p>5. Parker Rd #2: Current steel edge culverts need to be replaced with solid plastic</p>	
Action	Responsible Entity	Timeline	Specific Identified Tasks	Annual Progress
Maintain and improve resilience to severe winter storms	Town Selectboard and Road Foreman	Fall 2021 and each subsequent fall	Maintain Existing Shelter Capability	
	Town Selectboard and Road Foreman	Fall 2021 and each subsequent fall	Reduce risk of power failure due to ice storms	
	Town Selectboard	Winter 2022-	Notification	

	and Road Foreman	Summer 2022		
	Town Selectboard and Orleans Fire Chief	Winter 2021- Spring 2022	Residential Programs	
	Town Road Foreman	Fall 2021 and each subsequent Fall in planning period	Monitor roads for safe and effective plowing	
	Town Selectboard and Road Foreman, Orleans Fire Chief	Fall 2022- Winter 2022	Increase awareness of ICS structure and recommended practices	
Action	Responsible Entity	Timeline	Specific Identified Tasks	Annual Progress
Reduce impact of extreme cold durations	Town, NVDA, School, local/regional assistance organizations.	Winter 2021 and ongoing each fall	Economic Resilience	
	Town EMD and Selectboard	Fall 2021 and ongoing as preparation for winter	Maintain Existing Shelter Capability	
	Selectboard, NVDA, School, local/regional assistance organizations.	Fall 2021 and ongoing as preparation for winter	Notification and Education	
	Orleans Fire Chief, Planning Commission,	Fall 2022- Fall 2023	Assess Vulnerable Population	
Action	Responsible Entity	Timeline	Specific Identified	Annual Progress

			Tasks	
Raise public awareness of hazards and hazard mitigation actions	Orleans Fire Chief, LEPC, NVDA	Winter 2021- Spring 2022	Hazard Resilience for Property Owners	
	Selectboard	As needed for residents and town	HMGP Awareness	
	Schools and Selectboard	Fall 2021- Fall 2026	School Programs	
	Planning Commission, Clerks	Fall 2021 and ongoing as needed	Family Programs	
	Orleans Fire Chief, LEPC	Winter 2021 and on-going as needed	Fire Prevention Programs	
	Orleans Fire Chief, LEPC, NVDA	Summer 2022 on on-going as needed	Other Hazard Awareness Programs	
Action	Responsible Entity	Timeline	Specific Identified Tasks	Annual Progress
Continue fluvial geomorphology assessments in collaboration with DEC and develop strategies and regulatory actions in response to identified risks	Department of Environmental Conservation, NVDA, Agency of Natural Resources (VT ANR), Selectboard	Spring 2023- Fall 2024	Fluvial Geomorphic Assessments	
	Department of Environmental Conservation, NVDA, Agency of Natural Resources	Spring 2024- Fall 2024	Fluvial Erosion Hazard Mapping	

	(VT ANR), NVDA			
	Department of Environmental Conservation, NVDA, Agency of Natural Resources (VT ANR)	Spring 2023- Fall 2023	River Corridor Management Plans	
	Department of Environmental Conservation, NVDA, Agency of Natural Resources (VT ANR)	Spring 2023- Fall 2023	Fluvial Erosion Hazard Mitigation Implementation	
Action	Responsible Entity	Timeline	Specific Identified Tasks	Annual Progress
Reduce risk and impact of a pandemic event	Selectboard, Planning Commission ACCD, VDH, NVDA	Fall 2021- Spring 2022	Work with facility leads on understanding risk factors and what can be done to mitigate and enhance training and skills for response	
	Selectboard, Planning Commission ACCD, VDH, NVDA	Fall 2021- Spring 2022	Enhance awareness and planning for COVID-19-related mandates, communication, isolation and quarantine logistics for residents,	

			municipal operations and maintaining economic stability	
	Selectboard, Planning Commission ACCD, VDH, NVDA	Spring 2022- Spring 2023	Develop and maintain continuity of operations plans for critical positions	

Appendix A: Notices of Planning Process

1. Community meetings:

April:

BROWNINGTON SELECT BOARD MEETING

Remote @ 8:00 am

Thursday, April 22nd, 2021

g. Roadside Mowing quotes

A quote was received from Justin Brian Sanville for \$4,500.00
Patenaude Bush Hogging sent a quote that did not make it in time for the meeting but had verbally committed for the same amount as 2020 which was approximately \$5,400.00.
Chris made a motion to hire Patenaude. Bill seconded. Chris mentioned that there were additional funds budgeted to add another 10 miles of roadside to be double passed. Sanville's machine cannot do a double pass. The motion carried.

h. Office Mowing & Landscaping quotes

Wayne Libby submitted a quote for \$599.00 to mow the lawn at the town office.
Moe's Cedar Hedge Trimming submitted a quote to mow the lawn at the town office for \$400.00 and do the landscaping for \$900.00.
Bill made a motion to hire Moe's Cedar Hedge Trimming to mow the office lawn and do the landscaping. Bev seconded. Mr. Libby's quote does not include the landscaping. The motion carried.

i. LHMP Update/Paul Luciano OPH Consultant Services

Paul Luciano stated that this being the kick-off meeting of the Local hazard Mitigation Plan, that the next step would be to get a community survey out to the residents. He suggested social media to alert the public. The Town does not have a social media account. Bev suggested a notice in the paper to let the community know that the survey will be available at the Town office. Paul sent emails out to individuals in the town to ask them if they will be part of the planning team. Paul also told Clayton Butler that he would be reaching out to him to find out the 5- year road plan and go over the highway goals from the previous plan and see if they were met.

j. ARPA Funding to Municipalities update

At this time the federal government has yet to release any solid information on how the funds can be spent.

k. NEK Broadband-Appoint Brownington Representative(s)

Bill made a motion to make Calvin Page the representative and Bill Davis the alternate. Chris seconded. Both are currently the reps for the town. The motion carried.

10. MAIL

VLCT Legislative Reports; NVDA COVID updates; Orleans County Sheriff's Dept. March report; VLCT upcoming trainings; ANR Muni Day 2021; NVDA April News; Rural Fire Protection Task Force granting for dry hydrant information. Bill will reach out to Fire Chief EJ Rowell and inquire about any possible locations to put a dry hydrant in Brownington because the one by the Evansville bridge and the one in the center by the church are no longer there because of work that was done making them unable to be places there.
No action was taken on any other mail.

11. SELECT BOARD ORDERS/WARRANTS FOR BILLS/PAYROLL

Chris made a motion to accept payroll for week ending 03/20/2021 CK# 9473-9480 in the amount of \$3,168.89. Bill seconded. Hearing no discussion, the motion carried.

May:

Remote
Thursday, April 22nd, 2021
AGENDA

1. **CALL THE MEETING TO ORDER**
2. **ADDITIONS TO THE AGENDA**
3. **APPROVAL OF MINUTES FROM** 03/17/2021; 03/24/2021 Special Meeting; 04/10/2021 Special Meeting
4. **SPECIAL BUSINESS/REQUESTS FROM CITIZENS**
5. **REPORT FROM ELECTED OFFICIALS**
6. **TREASURERS REPORT**
7. **ROAD FOREMAN REPORT**
8. **OLD BUSINESS**
9. **NEW BUSINESS**
 - a. Center Road Project Update and signing of the Grant agreement for the additional funds awarded
 - b. Excess Weight Permit- Kelley-View Farms; Irving Oil; Wind River Environmental; Willoughby Timber
 - c. Cannabis Committee
 - d. Application for an approved location for a salvage yard - Benjamin
 - e. Sweeping Quote
 - f. Green Up Day updates
 - g. Roadside Mowing quotes
 - h. Office Mowing & Landscaping quotes
 - i. LHMP Update/Paul Luciano OPH Consultant Services
 - j. ARPA Funding to Municipalities update
 - k. NEK Broadband-Appoint Brownington Representative(s)
10. **MAIL**
11. **SELECT BOARD ORDERS/WARRANTS FOR BILLS/PAYROLL**
12. **ADJOURN**


Minutes:

1. Planning process updates: updated hazards, planning team review of draft sections I and II and results of meeting with road foreman on projects for next planning cycle with confirmation of community survey notice. No comments received.

June:

NOTICE

Brownington Regular Select Board Meeting
Wednesday, June 2nd, 2021
8:00 a.m. @ Town Clerk's Office & remote access
Beverly White, Chairperson

 Regular Selectboard Meeting 06/02/2021
Wed, Jun 2, 2021 8:00 AM - 11:00 AM (EDT)

Please join my meeting from your computer, tablet or smartphone.
<https://www.gotomeet.me/brownington/brownington-regular-selectboard-meeting-06022021>

You can also dial in using your phone.
United States: +1 (571) 317-3122

Access Code: 706-901-829

New to GoToMeeting? Get the app now and be ready when your first meeting starts:
<https://global.gotomeeting.com/install/706901829>

BROWNINGTON SELECT BOARD MEETING
8:00 am @ Town Clerk's Office with remote access
Wednesday, June 2nd, 2021
AGENDA

1. CALL THE MEETING TO ORDER
2. ADDITIONS TO THE AGENDA
3. APPROVAL OF MINUTES FROM 05/03/2021
4. SPECIAL BUSINESS/REQUESTS FROM CITIZENS
5. REPORT FROM ELECTED OFFICIALS
6. TREASURERS REPORT
7. ROAD FOREMAN REPORT
8. OLD BUSINESS
9. NEW BUSINESS
 - a. Center Road Project Update/Ken ~~White~~ (Dubois & King /MPG)
 - b. Cannable Committee
 - c. LIDAP
 - Review of updated mitigation actions:
 - Action #1: ~~Improve~~ infrastructure and municipal systems protection programs;
 - Action #2: Improve resilience to severe winter storms
 - Action #3: Reduce impact of extreme cold durations
 - Action #4: Raise public awareness of hazards and hazard mitigation actions
 - Action #5: Continue fiscal geomorphology assessments in collaboration with DEC and develop strategies and regulatory actions in response to identified risk.
 - Action 6: Reduce risk and impact of pandemic
 - d. ARPA Funding to Municipalities update
 - e. Regular Selectboard Meetings July 7 & July 27
 - f. Senior Roads Grant Agreement
 - g. Curb Cut - Johnson
 - h. Pine View Lane - ~~Home~~ name
 - i. Special Event permits - Old Stone House /Molly ~~White~~ Director
 - j. Local Hazards Mitigation Plan Grant Agreement
10. MAIL
11. SELECT BOARD ORDERS/WARRANTS FOR BILLS/PAYROLL
12. ADJOURN

Increased law enforcement could quell problems

(Continued from page twenty.)

Leigh Curtis, vice-president of Borderline Ridge Riders, a club associated with the Vermont All-Terrain Sportsman's Association (VASA), also addressed Mr. Punt's concerns. He said signs have been ordered that read "Sensitive Area — Obey Speed Limit" and he asked concerned Coventry residents to "just give us a chance." He noted, however, that he posted signs last year to regulate the traffic on Cooks Road, and they were stolen three times.

Mr. Curtis also said he offered to provide a couple of loads of gravel for repair of Cooks Road. As well as addressing Mr. Punt's concerns, Mr. Curtis apologized that information the planners requested from the ATV club in advance

of the Thursday public meeting, was not provided. It included a current trail map and club rules and policies. He said he will drop the information off at the town clerk's office ~~within a few days~~.

He also reported that the Borderline Ridge Riders have petitioned the state to allow a small section of Route 14 to be used as a connector route. Last year the state denied the request, but Mr. Curtis is hopeful it will be approved this year. The Coventry Select Board will need to do paperwork to complete the request.

Although many expressed concerns about some ATV issues in Coventry, many others said they ride ATVs themselves and feel any current problems can be ironed out.

Ms. Sylvester said she feels the Borderline

Ridge Riders need to educate their members not to be rude and to respect private property. It is also hoped that increased law enforcement in the ~~community will quell any problems~~.

"We need to fine tune," the ATV ordinance, Ms. Sylvester said. "We need to find middle ground."

Mr. Roudreau plans to continue working on the ordinance changes, incorporating input that was received at the public hearing.

Several people thanked the planning commission for its work to improve the ATV experience in Coventry. The planners were credited for listening carefully to all the issues and working hard to find compromises.

NOTICES

NOTICE
TOWN OF ALBANY
SELECT BOARD
MEETING CHANGE
MEETING CHANGE
The regular scheduled
Select Board Meeting
For May 4, 2021 has changed.
The meeting will be held
on May 3, 2021.
Meetings start at 7:00 P.M.
SELECT BOARD, TOWN OF ALBANY

TOWN OF BROWNINGTON
GREEN UP DAY
SATURDAY, MAY 1ST, 2021
Green up bags are available by request at the Brownington Town Clerk's Office and the Brownington Central School.
We would like to see families pick up trash in the vicinity of their homes.
Do NOT pick up needles or hazardous waste, report it to the coordinator at the Town Garage.
Bags can be dropped off at the **Brownington Town Garage** from 8 a.m. - 3 p.m. or you can leave them along the road for pickup. Eight tires per household will be accepted. Please bring them to the **Town Garage**.
Please do NOT bring household garbage...this event is to beautify the town highways!!
Children dropping off green bags at the Brownington Town Garage will receive a coupon for a free ice cream at Tim & Doug's (vehicle supplies last).
Let's make it a family affair!!!!

NOTICE
THE TOWN OF BROWNINGTON IS IN PROCESS
OF UPDATING THE
LOCAL HAZARD MITIGATION PLAN.
Mitigation planning works to protect a community from natural hazard vulnerabilities and is a mandatory requirement before any FEMA funding can be awarded to a town to repair infrastructure or acquire critical equipment.
By maintaining an approved plan, the town can earn a greater percentage of state funding during recovery from a disaster and be better prepared to handle a future event. Your input is crucial to the planning process and the information you provide will help produce a plan that will serve the town for years to come.
Please contact the town clerk's office to request a community outreach survey.
822 Schoolhouse Rd.
Brownington, VT 05660
(802) 754-8401
Email: browningtonc@comcast.net

BIDS WANTED
Lake Region Union High School Board of Directors is accepting bids for the paving of Lake Region High School maintenance garage & rear access drive areas.
Project commencement: Project may begin no sooner than Monday, June 21, 2021.
Project completion: Project must be completed on or before Friday, July 30, 2021.
Bids due: No later than Friday, May 14, 2021 by 3:00 p.m.
To retrieve required documents, arrange a site visit and to answer any questions regarding the instructions and process specifications of the project, please contact:
BJ Judd at Lake Region Union High School,
802-754-2500, ext. 221.

RuralEdge
A Community Development Corporation
RuralEdge is seeking
Flooring Contractors to bid
at properties in Caledonia, Orleans and Essex Counties. This will be an annual bid.
Scope of work packets can be emailed or mailed to you by calling 802-535-3555 or by emailing Chad McCormick (chadm@ruraledge.org) or Dave Drew (daved@ruraledge.org).
All bids must be sealed and delivered to the Lyndonville office at 48 Elm Street, Lyndonville, VT (mailing address is P.O. Box 86, Lyndonville, VT 05851) no later than end of business hours on May 14, 2021. Minority, women owned, and disadvantaged business enterprises are encouraged to apply!

STATE OF VERMONT
SUPERIOR COURT Civil Division
Orleans Unit Docket No. 285-11-18 Osov

BAYVIEW LOAN SERVICING, LLC
Plaintiff,
v.
CARLOTTA CORCORAN
VERMONT STATE EMPLOYEES CREDIT UNION
OCCUPANT residing at 4659 Route 14, Iraaburg, VT 05845
Defendants.

NOTICE OF SALE
According to the terms and conditions of the Judgment and Decree of Foreclosure by Judicial Sale (the "Order") in the matter of Bayview Loan Servicing, LLC v. Carlotta Corcoran, et al., Vermont Superior Court, Orleans Unit, Civil Division, 285-11-18 Osov, foreclosing one mortgage given by Carlotta Corcoran, to Mortgage Electronic Registration Systems, Inc., as nominee for Ally Bank, dated January 19, 2013 and recorded in Book 70, Page 445 of the Town of Iraaburg Land Records, presently held by the Plaintiff, Bayview Loan Servicing, LLC via Assignment of Mortgage Agreement April 03, 2018 respectively, the real estate with an address of 4659 Route 14, Iraaburg, VT 05845 will be sold at public auction at 11:00 a.m. on May 25, 2021 at the location of the Property.

Property Description. The Property to be sold is all and the same land and premises described in the Mortgage, and further described as follows:
A certain piece of land in the Town of Iraaburg, County of Orleans, and State of Vermont, described as follows, viz:

Being all and the same land and premises conveyed to Cindy S. Sanville, Robert O. Brown and Susan M. Brown, by Warranty Deed of Conrad M. Grims and Virginia A. Grims, dated November 20, 2003 and recorded in Book 51, Pages 144-145 of the Iraaburg Land Records and being more particularly described therein as follows:

"Being all and the same land and premises conveyed to Conrad M. Grims, Jr. and Virginia A. Grims by Warranty Deed of Edwin C. Damrau and Melinda S. Damrau dated June 26, 1973 and recorded in Book 27, Page 153 of the Town of Iraaburg Land Records.

"The Grantors do further covenant and agree that they, their heirs or assigns, shall not erect or caused (sic) to erect any fence along the westerly boundary of the land and premises hereby conveyed"

Also this conveyance is made subject to and with the of any easement and rights of way as may appear of record, provided,

however, that this paragraph shall not restate any such interest or encumbrance previously extinguished by the Marketable Record Title Act as set forth in Title 27 Vermont Statutes Annotated Sections 601-606 and any amendments thereto."

Reference is hereby made to the above-mentioned deeds, to the references and descriptions contained therein, and to the Iraaburg Land Records for a more complete description of the within conveyed premises.

Being the same parcel conveyed to Carlotta Corcoran from Cindy S. Sanville, Robert O. Brown and Susan M. Brown, by virtue of a deed dated 6/30/2005, recorded 7/8/2005, in Deed Book 54, Page 621, County of Orleans, State of Vermont.

Assessor's Parcel No: OV114002N

Terms of Sale. The Property shall be sold "AS IS WHERE IS", to the highest bidder for cash or wire funds only. The sale of the Property is subject to confirmation by the Vermont Superior Court, Civil Division, Orleans Unit. The Property is sold subject to unpaid taxes, municipal assessments, and superior liens, if any.

The public sale may be adjourned one or more times for a total time not exceeding 30 days, without further court order, and without publication or service of a new notice of sale, by announcement of the new sale date to those present at each adjournment or by posting notice of the adjournment in a conspicuous place at the location of the sale.

Mortgage Property Deposit. \$10,000.00 to be paid in cash or by certified check by the purchaser at the time of auction, with the balance due at closing. The balance of the purchase price for the Property shall be due and payable within the latter of 10 days from the date of confirmation of said sale by the Vermont Superior Court, Civil Division, Orleans Unit, or 45 days from the date of public auction. If the balance of the purchase price is not paid within the period set forth herein, the deposit shall be forfeited and shall be retained by the Plaintiff herein as agreed liquidation damages and the Property may be offered to the next highest bidder still interested in the Property.

The mortgagor is entitled to redeem the Property at any time prior to the sale by paying the full amount due under the mortgage, including the costs and expenses of the sale.

Other terms to be announced at the sale or inquire at Schiller, Knapp, Lefkowitz & Hertzog, LLP at 518-755-9029.

Dated: April 19, 2021

Daniel N. Young, Esq.
Partner,
Attorney for the Plaintiff
Schiller, Knapp, Lefkowitz & Hertzog, LLP
P.O. Box 872, 5527 Main Street
Watersfield, VT 056673
(518) 755-9029

Appendix B: Community Survey Results

2021 Brownington Hazard Mitigation Community Outreach Form

Introduction: Hello, the town is in process of updating their Local Hazard Mitigation Plan. Mitigation planning works to protect a community from natural hazard vulnerabilities and is a mandatory requirement before any FEMA funding can be awarded to a town to repair infrastructure or acquire critical equipment. By maintaining an approved plan, the town can earn a greater percentage of state funding during recovery from a disaster and be better prepared to handle a future event. Your input is crucial to the planning process and the information you provide will help produce a plan that will serve the town for years to come. Please take the time to share your thoughts on the questions below. Thank you!

Please return form to: Town of Brownington by May 28th, 2021:

- Mail: 622 Schoolhouse Rd., Orleans, VT 05860
- In-person to Town Clerk/drop box available
- Email: browningtonvt@comcast.net

Community Survey:

1. Have you been impacted by a natural disaster, including COVID-19? Yes or No? If yes, please explain: Not for a few years

2. What are your general concerns about emergency events in the area?

In winter, and losing electric power

Heavy rains that wash out roads

3. What do you think the community should plan to accomplish to be better prepared for the next emergency event?

Have our emergency shelter and install a generator for it to be of any use at all

4. What other thoughts or concerns do you have about emergencies, natural hazards and emergency response in the town?

(use back of page if needed)

2021 Brownington Hazard Mitigation Community Outreach Form

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- Mail: 622 Schoolhouse Rd., Orleans, VT 05860
- In-person to Town Clerk/drop box available
- Email: browningtonvt@comcast.net

Community Survey:

1. Have you been impacted by a natural disaster, including COVID-19? Yes or No? If yes, please explain: _____

2. What are your general concerns about emergency events in the area?

High winds knocking trees across road

3. What do you think the community should plan to accomplish to be better prepared for the next emergency event?

CUT TREES BACK AWAY FROM ROAD
SOME HOME OWNERS OR TREE HUGGERS
NEED TO BACK OFF AND LET THE
ROAD CREW CUT TREES THAT ARE NEEDED

4. What other thoughts or concerns do you have about emergencies, natural hazards and emergency response in the town?

HEAVY RAIN, NEED GRANTS TO CHANGE
CULVERTS + DITCH ROADS

(use back of page if needed)

2021 Brownington Hazard Mitigation Community Outreach Form

Introduction: Hello, the town is in process of updating their Local Hazard Mitigation Plan. Mitigation planning works to protect a community from natural hazard vulnerabilities and is a mandatory requirement before any FEMA funding can be awarded to a town to repair infrastructure or acquire critical equipment. By maintaining an approved plan, the town can earn a greater percentage of state funding during recovery from a disaster and be better prepared to handle a future event. Your input is crucial to the planning process and the information you provide will help produce a plan that will serve the town for years to come. Please take the time to share your thoughts on the questions below. Thank you!

Please return form to: Town of Brownington by May 28th, 2021:
• Mail: 622 Schoolhouse Rd., Orleans, VT 05860
• In-person to Town Clerk/drop box available
• Email: browningtonvt@comcast.net

Community Survey:

1. Have you been impacted by a natural disaster, including COVID-19? Yes or No? If yes, please explain: Its hard to conduct town meetings and provide a safe space for all when we don't have adequate space.
2. What are your general concerns about emergency events in the area? heavy rains or bad weather may wash out most of our town highway.
3. What do you think the community should plan to accomplish to be better prepared for the next emergency event? Have a community building for protection for our town people.
4. What other thoughts or concerns do you have about emergencies, natural hazards and emergency response in the town?
(use back of page if needed)

2021 Brownington Hazard Mitigation Community Outreach Form

Introduction: Hello, the town is in process of updating their Local Hazard Mitigation Plan. Mitigation planning works to protect a community from natural hazard vulnerabilities and is a mandatory requirement before any FEMA funding can be awarded to a town to repair infrastructure or acquire critical equipment. By maintaining an approved plan, the town can earn a greater percentage of state funding during recovery from a disaster and be better prepared to handle a future event. Your input is crucial to the planning process and the information you provide will help produce a plan that will serve the town for years to come. Please take the time to share your thoughts on the questions below. Thank you!

Please return form to: Town of Brownington by May 28th, 2021:
• Mail: 622 Schoolhouse Rd., Orleans, VT 05860
• In-person to Town Clerk/drop box available
• Email: browningtonvt@comcast.net

Community Survey:

1. Have you been impacted by a natural disaster, including COVID-19? Yes or No? If yes, please explain: Isolation from Covid 19.
2. What are your general concerns about emergency events in the area? Wind lightning at our house
flooding in the center + along Aboloughy Riv.
3. What do you think the community should plan to accomplish to be better prepared for the next emergency event? Have generators available especially for the school + town office.
4. What other thoughts or concerns do you have about emergencies, natural hazards and emergency response in the town? Communication.
(use back of page if needed)

2021 Brownington Hazard Mitigation Community Outreach Form

Introduction: Hello, the town is in process of updating their Local Hazard Mitigation Plan. Mitigation planning works to protect a community from natural hazard vulnerabilities and is a mandatory requirement before any FEMA funding can be awarded to a town to repair infrastructure or acquire critical equipment. By maintaining an approved plan, the town can earn a greater percentage of state funding during recovery from a disaster and be better prepared to handle a future event. Your input is crucial to the planning process and the information you provide will help produce a plan that will serve the town for years to come. Please take the time to share your thoughts on the questions below. Thank you!

Please return form to: Town of Brownington by May 28th, 2021:
• Mail: 622 Schoolhouse Rd., Orleans, VT 05860
• In-person to Town Clerk/drop box available
• Email: browningtontc@comcast.net

Community Survey:

1. Have you been impacted by a natural disaster, including COVID-19? Yes or No? If yes, please explain: NO

2. What are your general concerns about emergency events in the area?

You need a plan for housing displaced people, a generator so communications are not disrupted, ability to feed people if needed, and clean water.

3. What do you think the community should plan to accomplish to be better prepared for the next emergency event?

There should be a written plan to address a variety of possible disasters: natural disasters: flooding, hurricanes, etc. and accidents such as explosions and fires.

4. What other thoughts or concerns do you have about emergencies, natural hazards and emergency response in the town?

(use back of page if needed)



FEMA

January 3, 2022

Stephanie A. Smith, State Hazard Mitigation Officer
Vermont Emergency Management
45 State Drive
Waterbury, Vermont 05671-1300

Dear Ms. Smith:

As outlined in the FEMA-State Agreement for FEMA-DR-4474, your office has been delegated the authority to review and approve local mitigation plans under the Program Administration by States Pilot Program. Our Agency has been notified that your office completed its review of the Town of Brownington All-Hazards Mitigation Plan Update and approved it effective **December 23, 2021** through **December 22, 2026** in accordance with the planning requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, the National Flood Insurance Act of 1968, as amended, and Title 44 Code of Federal Regulations (CFR) Part 201.

With this plan approval, the jurisdiction is eligible to apply to Vermont Emergency Management for mitigation grants administered by FEMA. Requests for funding will be evaluated according to the eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in this community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

The plan must be updated and resubmitted to the FEMA Region I Mitigation Division for approval every five years to remain eligible for FEMA mitigation grant funding.

Thank you for your continued commitment and dedication to risk reduction demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please contact Jay Neiderbach at (617) 832-4926 or Josiah.Neiderbach@fema.dhs.gov.

Sincerely,

PAUL F
FORD

Digitally signed by PAUL
F FORD
Date: 2022.01.03
14:26:27 -05'00'

Paul F. Ford
Acting Regional Administrator
DHS, FEMA Region I

PFF:jn

cc: Ben Rose, Recovery and Mitigation Section Chief, VEM