

# Town of Monkton, Vermont



## Single Jurisdiction All-Hazards Mitigation Plan

Final Plan Adopted:

FEMA Approval Date:

# Monkton, Vermont Single Jurisdiction All-Hazards Mitigation Plan

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## 1. Planning Process

### 1.1 Current Plan Development Process

The Town of Monkton Selectboard passed a motion confirming their intent to work through the process of writing an All-Hazards Mitigation Plan at a meeting of the Town Selectboard on 11/7/2013. At the confirmation of funding availability, the Selectboard Chair further showed their support of the plan by gathering the following residents of Monkton into a mitigation planning committee:

Stephen Pilcher – Monkton Selectboard Chair  
Robert Howard – Assistant Chief, Monkton Volunteer Fire Department  
Robin Hopps – Monkton Town Health Officer  
Bailee Layn/Gordon – Monkton Town Service Officer  
Lee Mahoney – Monkton Planning Commission

The committee met 10/22/2015 to complete a hazards inventory and risk assessment matrix and to flesh out locations where hazards are known to the community. Following the 10/22/2015 meeting, a draft Town of Monkton, VT Hazard Mitigation Plan was created by staff at the Addison County Regional Planning Commission (ACRPC) and circulated to committee members. The committee met again on 12/01/2015 to identify potential mitigation projects associated with the hazards identified. At that meeting a copy of the draft hazard mitigation plan was provided for the town office along with a comment sheet so residents visiting the office could review and make comments. Committee meetings were held in the Monkton town offices and were open to the public. No specific notice was given to the public other than inclusion on the town office events calendar.

Input on the draft plan was requested from town residents during open meetings of the town Planning Commission and the Town Selectboard where copies of the draft plan were available for review. The town also made the plan available on its website [www.monktonvt.com](http://www.monktonvt.com) to reach a broader distribution.

The draft plan was forwarded to Vermont's State Hazard Mitigation Officer on 2/22/2016 for comments and preliminary approval. The SHMO provided comments for improvement in their response on 6/30/2016. The recommended edits were made and the edited draft was returned to the SHMO on 8/15/2016. This draft was sent to the clerks of surrounding towns on 8/23/2016 requesting that they pass along and request inputs from their various departments. Reviewers were directed to send comments to Tim Bouton at ACRPC via e-mail or phone call. No responses to this request were received. Preliminary approval by the SHMO was provided and the draft plan received selectboard approval on 1/18/2017 before being sent to FEMA reviewers. Comments were received back from FEMA reviewers on 3/9/2017.

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on 3/9/2017. Upon completion of the recommended edits, the plan was returned to FEMA for Approval Pending Adoption (APA) status. Upon receipt of the FEMA APA, the resulting document was adopted by the Monkton Selectboard on XXXXXX. The final adopted plan was then forwarded to FEMA Region I for approval which was received on \_\_/\_\_/\_\_\_\_.

### 1.2 Opportunities for public comment **44CFR 201.6(b)(1) and 44 CFR 201.6(c)(1)**

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

- A planning committee was appointed from volunteers and town officers at an open meeting of the Town Selectboard.
- The plan was made available on the Town website [www.monktonvt.com](http://www.monktonvt.com) for public comment while in draft form. (No comments received)
- A copy of the draft plan was made available for public comment at the Town Office on 11/30/2015 with a comment sheet. (No comments received)
- Meetings of both the Town Selectboard and the Town Planning Commission were open for public comment throughout the planning and draft phases of this plan. (No comments received)

### 1.3 Opportunities for additional comments **44CFR 201.6(b)(2)**

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

- A copy of the draft plan was posted on the ACRPC website [www.acrpc.org](http://www.acrpc.org) for regional review and notice was given during the January 2016 ACRPC full commission meeting as to its availability. No comments received.
- The January 2016 ACRPC newsletter included an announcement that a draft plan was available for public review and comment. That draft was posted in the ACRPC office for review and comment. No comments received.
- A copy of the draft plan was provided to the State Hazard Mitigation Office for comments which were received on 2/22/2016
- The bordering towns of New Haven, Starksboro, Bristol, Ferrisburgh, Charlotte and Hinesburg were notified of the posting on 8/23/2016 and comments were requested. No comments received.
- A copy of the draft plan was posted on the ACRPC website [www.acrpc.org](http://www.acrpc.org) for regional review and notice was given during monthly meetings of ACRPC requesting input.
- An updated copy was sent to DEMHS for submission to FEMA.
- FEMA Region 1 staff was sent a draft for comment on 1/18/2017
- Comments were received on 3/8/2017, recommended edits were applied and plan was returned to FEMA on 3/9/2017 for APA approval.

### 1.4 Extent of review **44 CFR 201.6(b)(3)**

Throughout the plan update process all sections of the plan were reviewed for accuracy. Recently completed studies and newly developed data were included in the document. Information from the following documents and sources were incorporated into this plan either as data or to inform the committee's prioritization process:

- 2016 Basic Emergency Operations Plan (previously identified high hazard and vulnerable sites)
- 2014 Monkton Town Plan (support for the committee's prioritization process and section 2 narrative)
- 2016 Addison County Regional Plan (transportation section used to identify high accident locations)
- 2013 State of VT Hazard Mitigation Plan (provided a listing of statewide hazard concerns)

- 2012 Report of the State Fire Marshall (provided data to inform structure and wild fire risks)
- [www.fema.gov](http://www.fema.gov) (provided official data on declared disasters)
- The Vermont Weather Book by David Ludlum (provided historic accounts of disasters for Section 4.3)
- National Climatic Data Center website (provided information for Section 4.3)
- FEMA Snow Load Safety Guide (informed Section 4.3)
- FEMA FIRMS dated 1/1/1985 (incorporated into maps and section 4.3)
- VT Center for Geographic Information data layers (incorporated into map products)
- LEPC #8 Tier II reports (reviewed for Section 4.3)
- Town of Monkton Grand List for 2015 (utilized to determine value of identified properties)
- [www.healthvermont.gov](http://www.healthvermont.gov) (incorporated transmissible disease information into section 4.3)
- State of Vermont dam inventory database (incorporated into section 4.3)
- Monkton Annual Town Reports 1980-2015 (informed FEMA reimbursements in table #1)



## 2. Community Background

The Town of Monkton, Vermont comprises roughly 37 square miles or 23,000 acres of land in the Lake Champlain Valley. It is ranked as Vermont's 173rd largest town in area. Like much of the eastern Champlain Valley, the town's landscape is generally rolling hills, with some fine forestlands and areas of excellent, productive agricultural soils. Monkton contains large areas of ecologically significant wetlands and a single named stream; Pond Brook, which flows north from Lake Winona in Bristol and eventually meets up with the Lewis Creek in Hinesburg

The Town of Monkton contains no State or Federally numbered Highways though two town highways (Bristol Road/Silver Street, and Monkton Road) see considerable commuter traffic. As a corridor between rural Addison County and the more populated Chittenden County to the north, the Town of Monkton receives an inordinate amount of traffic in relation to its population. Monkton has two generally recognized village centers. Monkton Boro, located at the junction of Hollow Road, Boro Hill Road and Monkton Road is the original town center and housed the first town hall. When the original town hall fell into disrepair in 1859, a new building was constructed in Monkton Ridge a junction of 5 town roads overlooking Cedar Lake. This area houses the Town Hall, the Monkton General Store, the Russell Library and the Monkton Friends Meeting House as well as a small cluster of houses. The Monkton Central School is located strategically between the "Boro" and the "Ridge" and serves approximately 150 elementary students up to the 6<sup>th</sup> grade. Beginning in 7<sup>th</sup> grade, students attend the Mount Abraham Union High School in nearby Bristol. Monkton has seen a steady increase in population from a low in 1950 of about 520 to its current level of 1980 residents.

In Monkton, most homes are single-family wood structures. While much of Vermont's population is housed in pre 1950s housing, the Town of Monkton has seen a rapid increase in housing with an average of over 10 new homes built each year in the past two decades. Of the 798 housing units in Monkton, approximately 92% are single family homes 2% multi-family and 4% seasonal camps. Of the single family homes, nearly 9% are mobile homes, generally more susceptible to disaster than permanent structures. Of the 904 employed Monkton residents, 4% worked in town; 15% worked in Burlington; 12% in South Burlington, 7% in Bristol and 7% in Middlebury. The rate of new home construction has, in recent years, begun to stabilize following the growth patterns in the last 2-3 decades where residents from the more urban Chittenden County to the north, flocked to northern Addison County and a more rural lifestyle. Most of the town is still a mix of wetland, forest and active farmland and several large properties have been set aside in permanent conservation easements. The majority of the undeveloped land in town is enrolled in the Current Use program in which owners pay property taxes commensurate with the value of products generated from the land. The program exchanges this tax relief for a temporary easement which helps keep much of the land in Monkton undeveloped.

Electrical power is provided throughout Monkton by Green Mountain Power. The Vermont Electric Power Company (VELCO), a private corporation owned by the power companies in the state, owns most of the bulk power transmission system in Vermont, including a 115 kV electric transmission line that runs through Monkton on a south-north route between New Haven and Burlington.

The majority of town residents, rely on drilled wells for their drinking water. A map of wellheads is available in the Town Clerk's Office. Some groundwater wells produce water containing

nuisance substances such as iron, manganese, hardness minerals, hydrogen sulfide gas and sulfate reducing or iron fixing bacteria. Well yields vary from plentiful to extremely low and highly problematic.

Other residents rely on a mix of groundwater and surface water in wells that are relatively shallow dug wells or springs. Such wells are susceptible to natural contamination and pollutants such as leaking petroleum or industrial tanks, road salt, failing septic systems and agricultural chemicals.

The Addison County Sheriff's Department provides Civil Process for the entire county. The Vermont State Police provide service for motor vehicle regulation and criminal law enforcement. Monkton also funds a sheriff patrol contract which amounted to over \$11,000 in net proceeds during 2012.

There is a dedicated group of volunteers in the Monkton Volunteer Fire Department with equipment housed in the Firehouse on States Prison Hollow Road east of Monkton Ridge. In addition to fire equipment, the fire station also serves as the Monkton Post Office and town emergency shelter. The annual budget, including fire station maintenance, for 2012 was set at about \$82,000 and the portion to be covered by town funds (\$55,000) remained unchanged. In addition to the annual budget, an appropriation of \$120,000 was voted in 2013 to construct a new addition. In 2012 they responded to 36 calls, the majority of which were for automobile accidents.

The Bristol Rescue Squad (BRS), a local non-profit organization responds to calls in Monkton. BRS bills for its services, receives additional funding from towns serviced, and accepts donations. In 2012 BRS was allocated \$3,700 by the town.

There are no medical facilities in Monkton, but many doctors, nurses and dentists are available a short distance north or south of town. Addison County Home Health and Hospice can make home visits, and the Community Health Services of Addison County has an Open Door Clinic in Middlebury.

The Town has identified the town Selectboard Chair as its Emergency Manager and uses a Local Emergency Operations Plan (LEOP) to coordinate response to larger incidents. The LEOP identifies the Town Office and Fire Station as emergency operations centers and the Fire Station and school as community shelters. The LEOP also identifies high hazard areas and vulnerable sites primarily based on Flooding, HAZMAT and likely transportation incidents.

Monkton has its own Highway Department with a full-time Road Foreman and 1 additional employee. The department is responsible for summer maintenance, winter snow removal and maintenance, and reconstruction of town highway infrastructure. Monkton has a maintenance facility and various pieces of road maintenance and construction equipment which are factored into a capital equipment replacement fund.

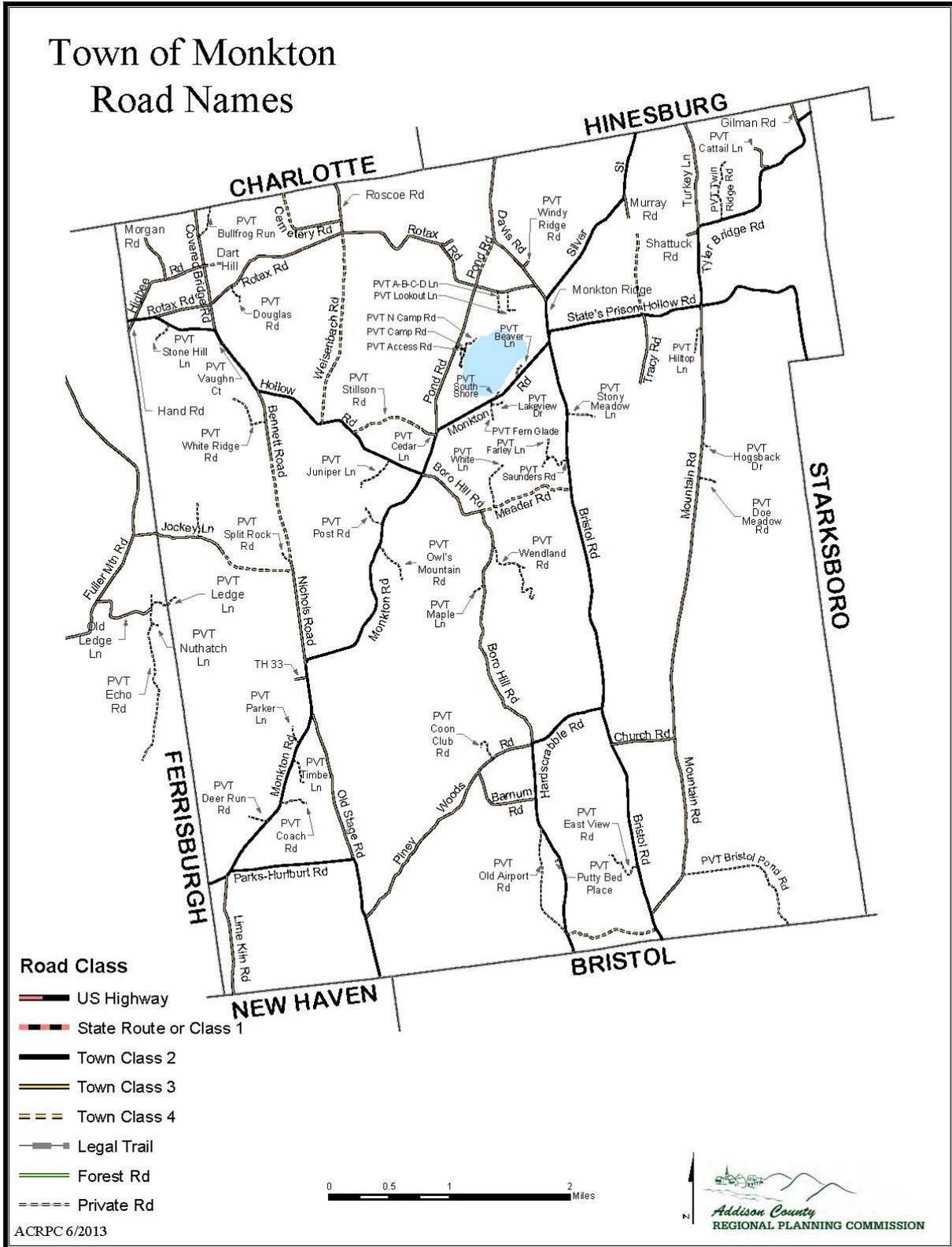
Highway expenditures are the largest item within the town (non-school) budget. The budget hovers at approximately \$800,000, of which, almost 60% is raised through taxes. About half of the budget pays for winter maintenance with small portions going toward bridge and highway construction.

The Town has been a participating member of the National Flood Insurance Program since 1979 and as such, has adopted zoning by-laws designating Flood Hazard Areas including associated

regulations for administering those areas. The Monkton Zoning Administrator is tasked with administering the NFIP program in Monkton which includes reviewing each application to determine whether a proposed development should be governed by the flood hazard bylaws. Those applications which the program administrator finds are proposed within the mapped floodplain fall under the floodplain bylaws and are sent to the ZBA for evaluation and approval or rejection based on the requirements of the bylaws. The most current floodplain maps were adopted 11/1/1985 and are available on paper copy only. Fortunately, much of the mapped floodplain is associated with large areas of wetlands rather than floodplain. The availability of alternate sites and the adoption of flood hazard regulations have thus far discouraged development along these low lying areas due to difficulties in disposing of septage and the costs of complying with floodplain regulations. There are no “repetitive loss” or “severe repetitive loss” properties in the Town of Monkton.

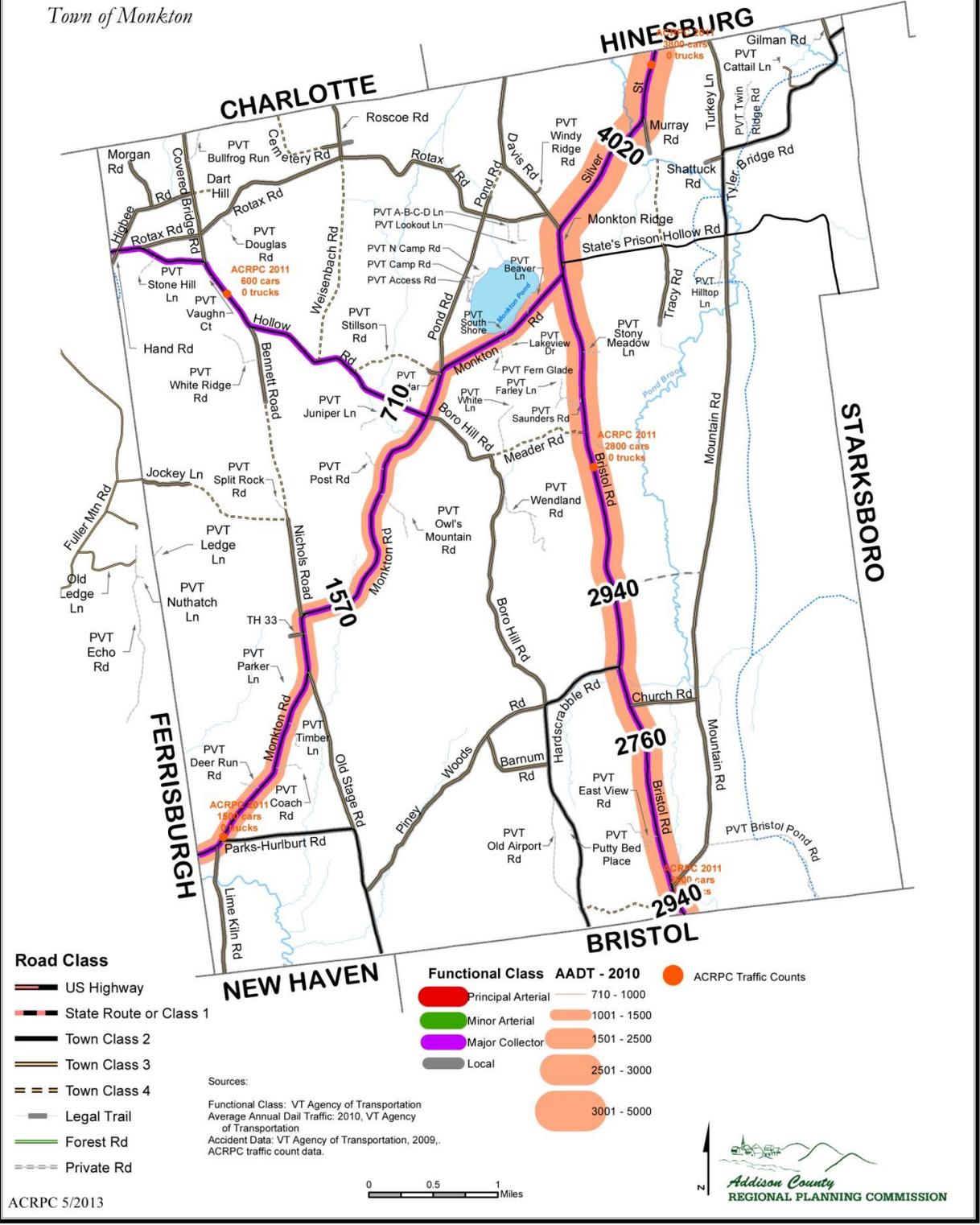
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2.1 Local Maps



# Road Names and Transportation Volume

Town of Monkton

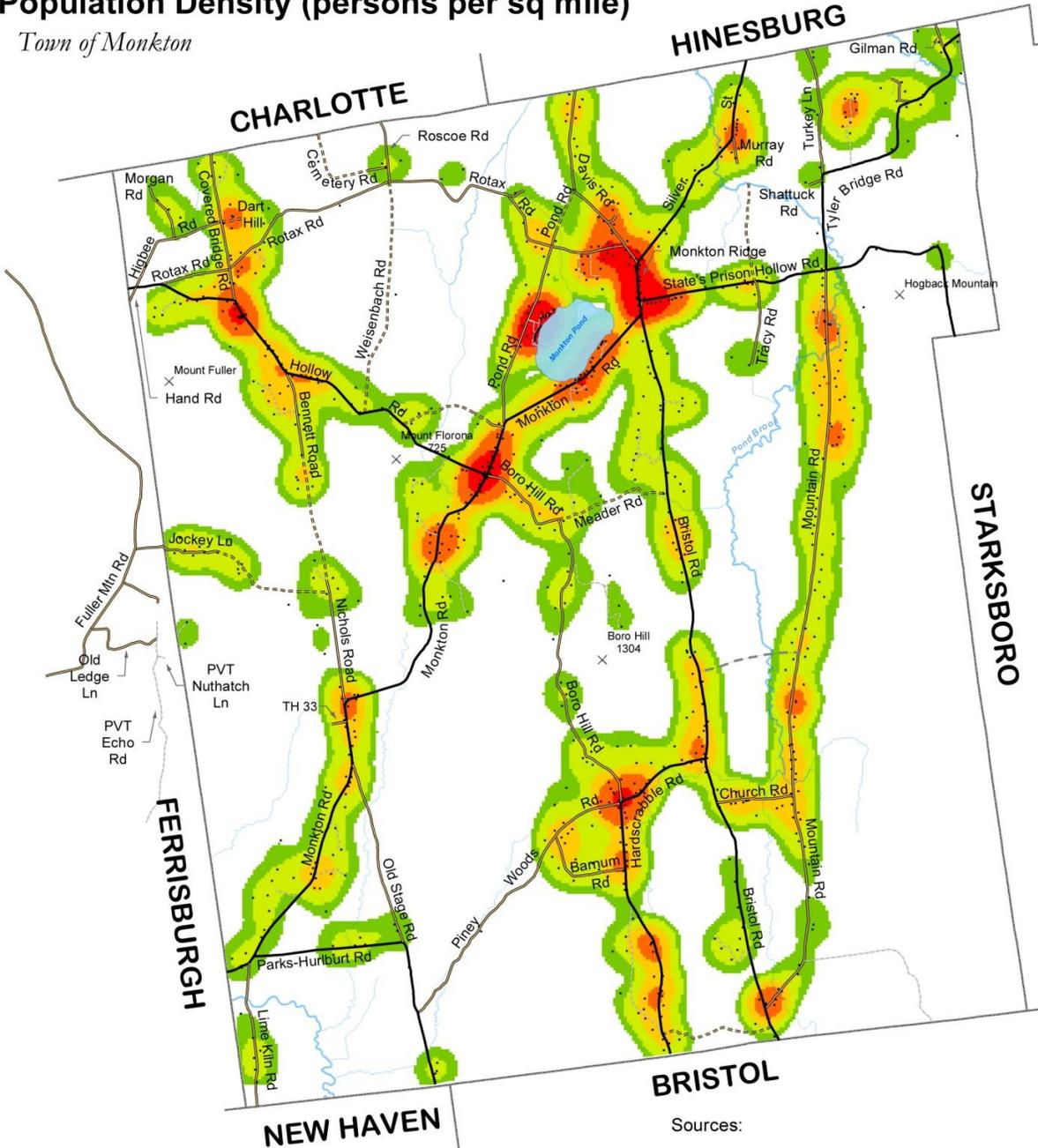


ACRPC 5/2013

# Population Density (persons per sq mile)

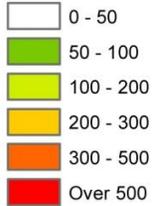
Town of Monkton

Map 2



▪ Residential Structures (2010)

### Persons per Square Mile



Sources:

Each single family residence is multiplied by the Monkton median household size, 2.67 persons in 2010. (includes homes, mobile homes, other residential and seasonal dwellings)

Each multi-family residence is multiplied by 3 times the median household size, or 8.01 persons.

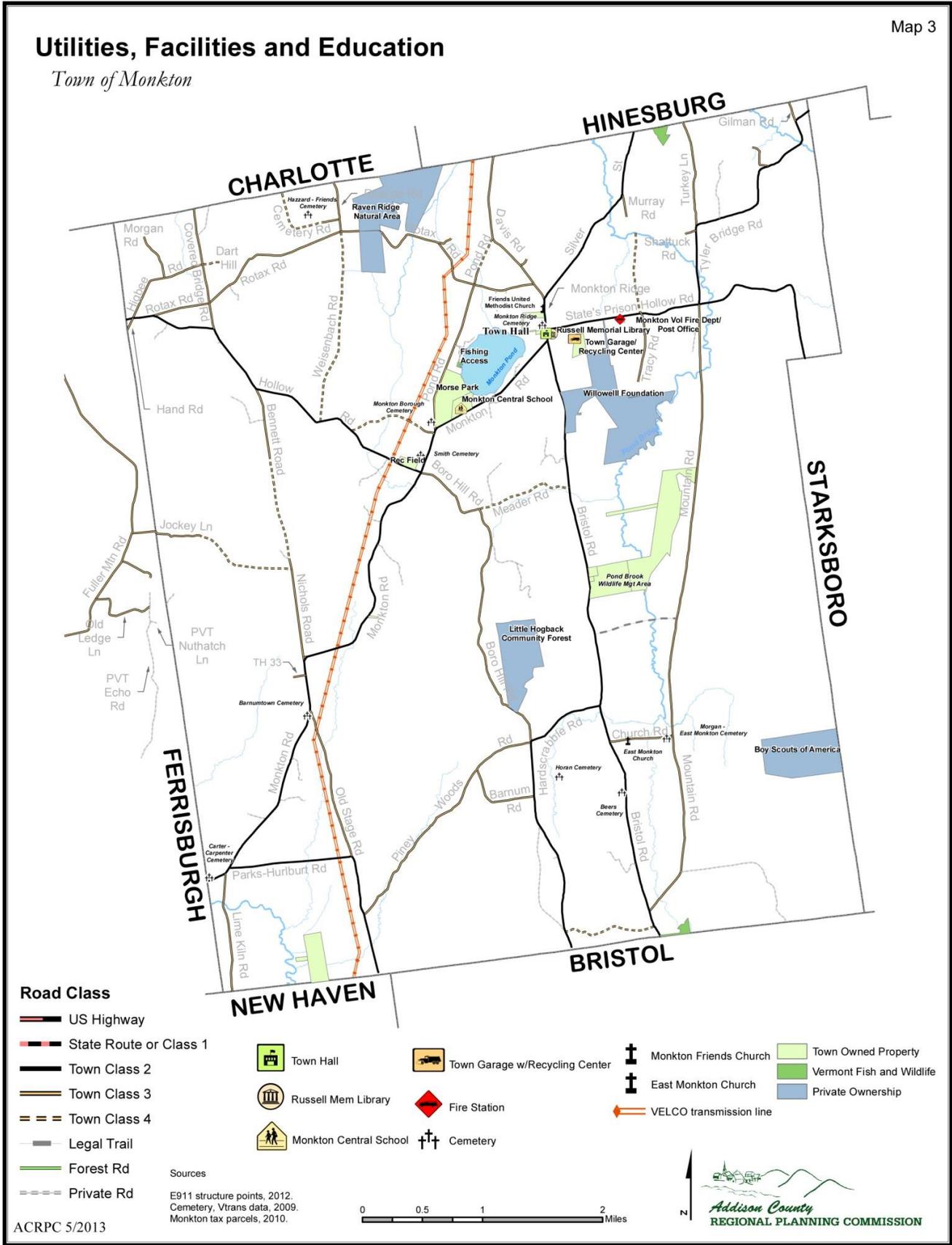
Density interpolated over a 1/4 mile radius.



ACRPC 5/2013

# Utilities, Facilities and Education

Town of Monkton



### **3. Existing Adopted Plans which support Hazard Mitigation**

The following plans pre-date this plan and are used to illustrate how the community, the Addison region and the State of Vermont have incorporated mitigation into standard planning mechanisms. As the Monkton Selectboard, Planning Commission and Emergency Manager continuously work on annual or 5 year updates of these plans, the Town of Monkton All Hazards Mitigation Plan will inform and be incorporated into those planning processes.

#### ***3.1 Monkton 2016 Local Emergency Operations Plan (High Hazard Sites identified)***

- *Flooding along Pond Brook-Church Rd., Mountain Road*
- *Flooding on Hollow Road*
- *Snow/Ice issues – Meader Hill, Monkton Rd., Silver St., States Prison Hollow Rd., Boro Rd., Monkton Boro*
- *Gas Spill- Monkton Ridge*

#### ***3.2 Monkton 2014 Town Plan Statements that support Hazard Mitigation***

*Housing in Monkton will be safe. We will achieve this by:*

- *Encouraging better building practices and maintenance to prevent loss or degradation of existing housing.*
- *Supporting Fire Department efforts for chimney and wood burning safety.*

*Monkton will provide the needed services to create a safe, healthy, community in which to live, work, and play. We will achieve this by:*

- *Consulting with experts to understand the environmental, safety, aesthetic, and economic effects of (transmission of power and natural gas)*

*Our transportation system will; Provide a safe transportation network that protects water quality...; Decrease and slow traffic travelling on Monkton and Bristol Road... We will achieve this by:*

- *Following access management guidelines to minimize curb cuts and driveways along transportation routes.*

*The Natural Resources Wildlife habitat discussion speaks to fluvial erosion and 50 foot setback. The plan also speaks to the value of wetlands in reducing flood risk and establishes a flood hazard overlay district for lands that are “prone to flooding”.*

#### ***3.5 Addison County Regional Planning Commission Regional Plan (2011) Goals that support Hazard Mitigation***

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

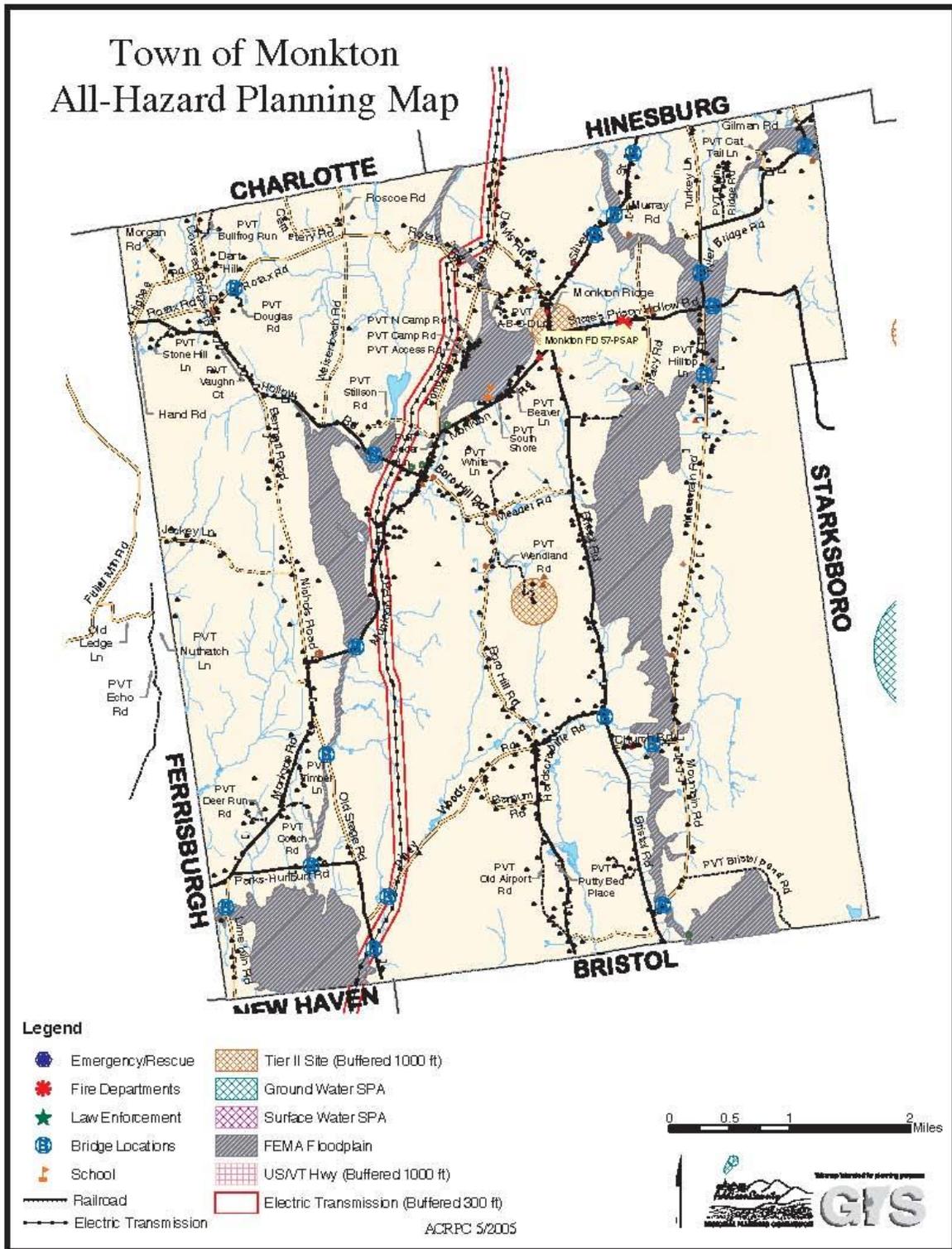
- *Encourage hazard mitigation planning as a part of the Municipal Planning Process.*
- *Encourage municipalities and landowners to consider VT Agency of Natural Resources riparian guidelines for habitat and flood protection.*

### **3.6 State of Vermont Hazard Mitigation Plan (2013) Hazard Mitigation Goals**

- *Ensure that current and proposed legislation and regulatory policies require effective hazard mitigation practices throughout the State.*
- *Ensure that grant-related funding processes allow for expedient and effective mitigation actions to take place at the municipal and State level.*
- *Provide timely and accurate technical assistance that supports hazard mitigation activities to regional and local jurisdictions as well as private sector partners.*
- *Identify state-level risks and vulnerabilities and protect or harden state infrastructure against hazards.*
- *Conduct hazard assessments, mapping and data collection projects to increase knowledge about both the hazards facing Vermont and the most effective mitigation actions for minimizing public exposure to hazards.*

DRAFT

4. Community Risk Assessment  
 4.1 Local All-Hazards Planning Map



## 4.2 Risk Prioritization Results

The Town of Monkton’s Hazard Mitigation Planning Committee reviewed the following hazards in its Hazard Inventory/Risk Assessment –Flash Flood, Inundation Flooding, Dam Failure, Ice Jam, Severe Snow, Ice Storm, High Winds, Lightning Strike, Hail, Tornado, Drought, Wildfire, Landslide/Subsidence, Earthquake, Infectious Disease, Insect-borne Illness, Invasive Species, Extreme Temperatures, HazMat Spill, Highway Accident, and Structure Fire, In review of these hazards, the committee identified 12 hazards which scored the highest vulnerability. In terms of overall vulnerability, the committee scored the following hazards as their highest: Ice Storm, Highway Accident, Structure Fire, Severe Snow, Wildfire, Earthquake, Extreme Temperatures, Ice Jam, High Winds, Tornado, Drought, and Invasive Species.

### **Hazard Inventory/Risk Assessment Parameters**

#### **Probability: Frequency of Occurrence**

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

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

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

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

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

#### **Property Damage: Severity of damages and disruption**

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

#### **Level of Committee Concern**

1= Low level of Concern	Not worth spending a lot of time with
2= Moderate Level of concern	Could happen, but mitigation costs are high and benefits are low
3= High Level of Concern	Worth exploring more, developing mitigation projects for
4= Extreme Concerns	Town is generally mitigating as much as they can, really need assistance.

#### **Vulnerability: Total score of Probability, Warning, Geographic Impact, and Property Damage**

1= Low Priority	≤ 8 total score, low cost –no cost mitigation projects only
2= Medium Priority	>8 and ≤10 total score
3= High Priority	>10 and ≤12 total score
4= Regional/State-wide Priority	>12 total score

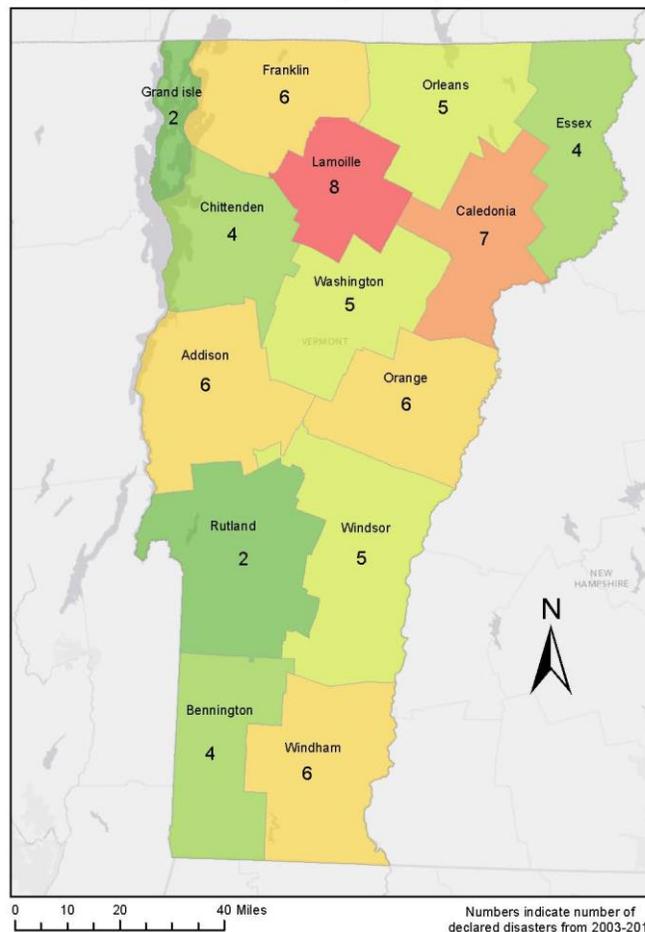
## Town of Monkton Risk Assessment 10/22/2015

Hazard	Damage Type	Probability	Warning	Geographic Impacts	Property Damage	Committee Concern	Vulnerability
Flash Flood	Water or Erosion	1	3	1	3	2	8 (1)
Inundation Flooding	Water	3	1	1	1	1	6 (1)
Dam Failure	Water or Erosion	1	4	1	2	1	8 (1)
Ice Jam	Water	3	4	1	1	1	9 (2)
Severe Snow	Closed Roads	3	1	4	2	2	10 (2)
Ice Storm	Power Outage or Fire	3	2	4	3	3	12 (3)
High Winds	Power Outage	3	2	2	2	1	9 (2)
Lightning Strike	Fire	3	2	3	3	3	7 (1)
Hail	Crop or property damage	2	3	1	1	1	7 (1)
Tornado	Power outage or structural damage	1	4	1	3	1	9 (2)
Drought	No drinking water/crop loss	2	1	4	2	1	9 (2)
Wildfire	Structure fire	3	4	1	2	1	10 (2)
Earthquake	Property damage	1	4	4	1	1	10 (2)
Infectious Disease	Health risk	2	1	4	1	1	8 (1)
Insect-borne Illness	Health risk	3	1	1	1	3	6 (1)
Invasive Species	Ecological damage	4	1	3	1	3	9 (1)
Extreme Temperature	Health risk/structure damage	3	1	4	2	3	10 (2)
HazMat Spill	Health risk/contamination	3	1	1	1	2	6 (1)
Highway Accident	Human injury	4	4	1	2	1	11 (3)
Structure Fire	Property damage injury	4	4	1	2	3	11 (3)

Table #1: Federally declared disasters affecting Addison County

Year	Date	Description	Dec. #	County Cost
1973	7/6/1973	Severe Storms, Flooding, Landslides	DR397	\$ Unavailable
1976	8/5/1976	Severe Storms, High Winds, Flooding	DR518	\$ Unavailable
1977	9/6/1977	Drought	EM3053	\$ Unavailable
1989	8/4-5/1989	Severe Storms, Flooding	DR840	\$ 31,033
1993	4/24-5/26/1993	Flooding, Heavy Rain, Snowfall	DR990	\$ 17,639
1996	1/19-2/2/1996	Storms, Flooding	DR1101	\$ 130,529
1998	1/6-16/1998	Ice Storms	DR1201	\$ 662,388
1998	7/17-8/17/1998	Severe Storms and Flooding	DR1228	\$2,146,484
2000	7/14-18/2000	Severe Storms and Flooding	DR1336	\$ 744,075
2001	3/5-7/2001	Snowstorm	EM3167	\$ Unavailable
2004	8/12-9/12/2004	Severe Storms and Flooding	DR1559	\$ 365,661
2008	6/14-17/2008	Severe Storms and Flooding	DR1778	\$ 486,850
2008	7/21-8/12/2008	Severe Storms and Flooding	DR1790	\$ 438,900
2011	4/23-5/9/2011	Severe Storms and Flooding	DR1995	\$ Unavailable
2011	8/26-9/2/2011	Hurricane Irene	EM3338	\$ Unavailable
2011	8/27-9/2/2011	Tropical Storm Irene	DR4022	\$ Unavailable
2012	5/29/2012	Severe Storm, Tornado and Flooding	DR4066	\$ Unavailable

Declared Disasters by County 2003-2013



#### 4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability 44CFR 201.6 (c)(2)(i), 44CFR 201.6(c)(2)(iii)

The following Hazard types have been identified, evaluated and listed in order of priority as identified by the Monkton Hazard Mitigation Committee as shown in their risk assessment. The Town of Monkton Risk Assessment is a visual representation of that evaluation process for the Town of Monkton. Other hazards identified in Vermont's hazard mitigation plan did not rise to the level of concern by the local planning committee. These hazards include fluvial erosion, hurricanes, tropical storms and thunderstorms. Tropical storms, hurricanes and thunderstorms include high winds as part of their make-up and are, therefore, by this reference, included in the evaluation of high winds. Similarly, they also can result in flooding which the committee determined was of a lower priority than those hazards profiled. In recorded history only one documented hurricane, (known as the New England Express of 1938) has ever impacted the State of Vermont. The generally gentle topography of the Town does not lend itself to high velocity flood events common to fluvial erosion events. The following hazard types are listed in their order of priority with highest perceived vulnerability described first.

- **Ice Storm** – (Risk Score 12)

**Location:** Severe ice storms are common throughout Vermont and can occur geographically in any part of Monkton. Located in the Champlain Valley, Monkton is at greater risk for more widespread Ice. Generally ice storms strike within a particular elevation band depending on temperatures with higher elevations experiencing snow and lower elevations experiencing rain. As a town with a gently rolling topography at the foothills of the Green Mountains, Monkton can easily fall into just such a band.

**Extent:** Because Ice storms are extremely temperature and elevation dependent, they are notoriously difficult to predict. When conditions conducive to ice build-up are predicted, the National Weather Service issues a Winter Storm Warning with emphasis on ice accumulation. The Monkton hazard mitigation committee identified the ice storm of 1998 as the worst they had seen with accumulations of up to  $\frac{3}{4}$  inch and loss of power for up to 2.5 weeks.

The Sperry-Piltz Ice Accumulation Index rates ice storms from 0 to 5 depending on amount of ice buildup and accompanying wind speeds. Storms of  $\frac{1}{4}$  inch and less with winds under 15mph rate a "0" and are termed "Nuisance" storms with ice buildup on windshields and an occasional downed tree branch. A "5" rating, on the other hand, can be the result of as little as  $\frac{1}{2}$  inch of ice with 35 mph winds or any accumulations over 1.5 inches. A category 5 ice storm would be labeled "Catastrophic" and would likely result in massive failures of both distribution and transmission lines. Indices at the scale of 1-3 range from scattered outages lasting hours to widespread outages lasting 1-5 days.



**The Sperry-Piltz Ice Accumulation Index, or “SPIA Index” – Copyright, February, 2009**

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised-October, 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
<b>0</b>	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
<b>1</b>	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
<b>2</b>	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
<b>3</b>	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
<b>4</b>	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
<b>5</b>	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

**Previous Occurrences:** The National Climatic Data Center reports that the Addison Region has experienced 2 major Ice Storm events over the past 25 years. The highest recorded damages were incurred during the 1998 Ice Storm which impacted most of the northeastern US and resulted in \$750,000 in damages to Addison County properties. The Town of Monkton was not spared from this storm and recorded over \$45,000 in damages from this storm. During the same 25 year period an estimated \$850,000 in total property damages were recorded in the region. The major impacts within the Town of Monkton are generally limited to residents impacted by loss of power and the occasional downed tree or branches in the road.

**Future Probability:** Warmer temperatures such as might be anticipated with climate change would result in less snow and a higher likelihood of ice in winter. Other predictions indicate that climate change will bring colder winters that might increase ice storms in early spring and late fall. In both cases, storms are predicted to increase in severity which would make category 0-1 storms less frequent and 2-5 storms a higher possibility.

**Vulnerability Summary:** The Town of Monkton is a rural community with no major highways. Power company policy is to repair the simplest fixes which impact the highest populations as the highest priority. The tree-lined rural roads so popular with tourists

add additional risk of ice laden trees falling on power lines and resulting in widespread power failures. The combination of these two circumstances points to a high risk of extended power failures due to ice storm throughout the Town of Monkton.

The community vulnerability rating for Ice Storm and accompanying widespread power outage is 3 and would be considered HIGH PRIORITY. Widespread power outages have been extensively mitigated by service providers in the past few years following the disastrous Ice Storm of 1998 effectively reducing the community's vulnerability. Many of these mitigation measures are now over 15 years old and may not provide the same protections as when they were instituted.

- **Highway Accidents** – (Risk Score 11)

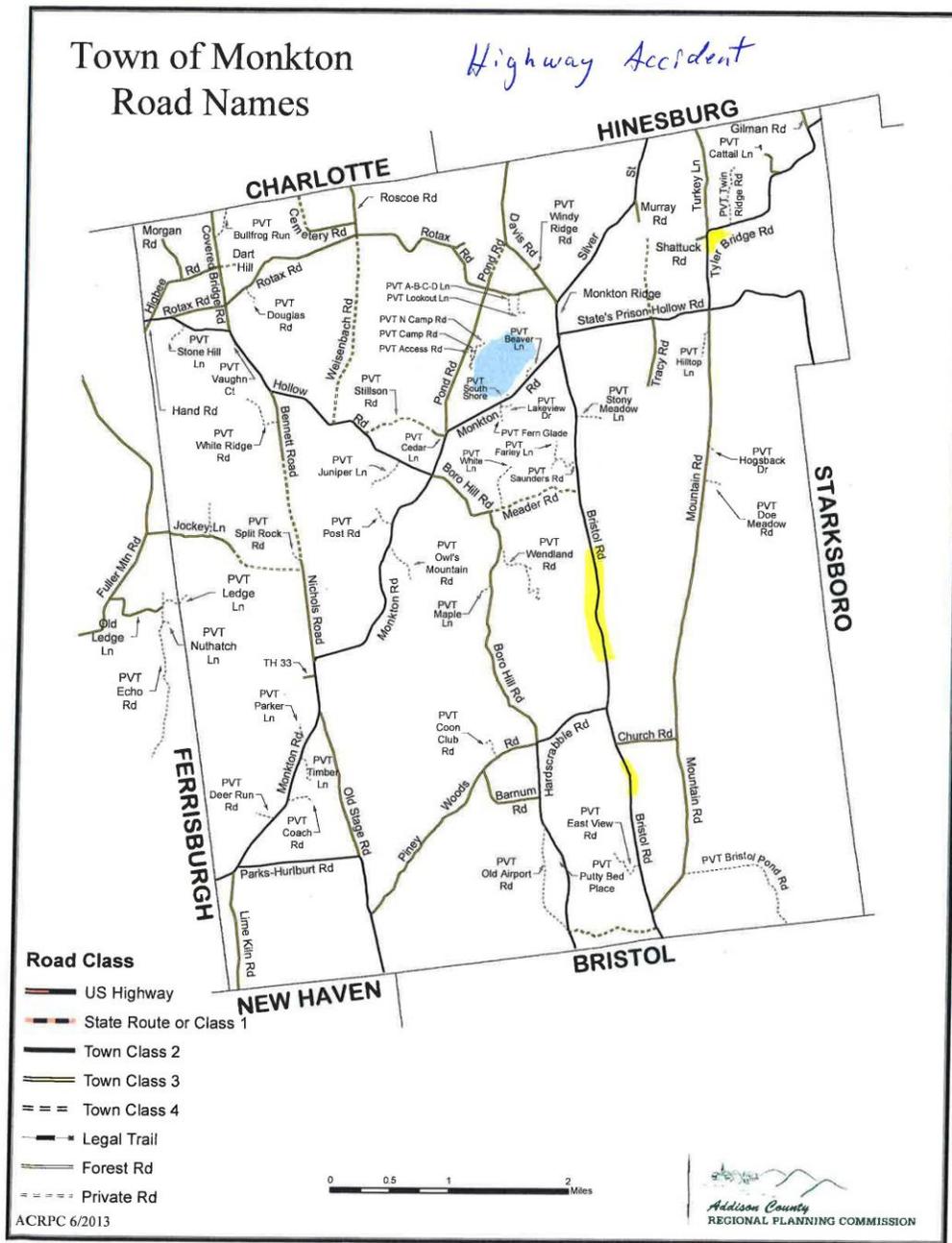
**Location:** As would be expected, local roads with the highest traffic volume also have the highest volume of accidents. Certain stretches along Monkton Road, Bristol Road and Silver Street are known high accident locations. The Monkton Hazard Mitigation Committee identified an area along Bristol Road, known locally as "Meader's Swamp" where dense trees create a cold spot which often harbors ice. Other locations identified by the committee are another stretch of Bristol Road south of "Meader's Swamp" and a sharp corner where Tyler Bridge Road intersects with Turkey Lane. Records compiled by the Vermont Department of Transportation show "Meader's Swamp", the Monkton Road/Bristol Road intersection, and a stretch of Monkton Road just south of the intersection with Boro Hill Road as High Crash Locations (HCL).

**Extent:** Town Highway accidents contribute to the highest volume of calls for the Monkton Volunteer Fire Department and nearby rescue squads. Multiple locations on every road in town are potential accident sites which could result in property damage, injury, or death. Committee members recollected three fatal accidents since 1994 and one accident which took first responders over 2 hours to extricate the survivors. When accidents involve vehicles carrying hazardous substances, the risks for injury to the nearby residents is magnified and is a consideration for every accident calling out the fire department.

**Previous Occurrences:** Accident data for the years 2006-2009 show a total of 55 accidents occurring within the town boundaries. The majority of these reported accidents (approximately 73%) are for accidents which are limited to property damage whether to vehicles alone or as a result of a vehicle leaving the highway and colliding with non-highway property. Unfortunately the remaining 27% have resulted in personal injury and one death.

Town of Monkton  
Road Names

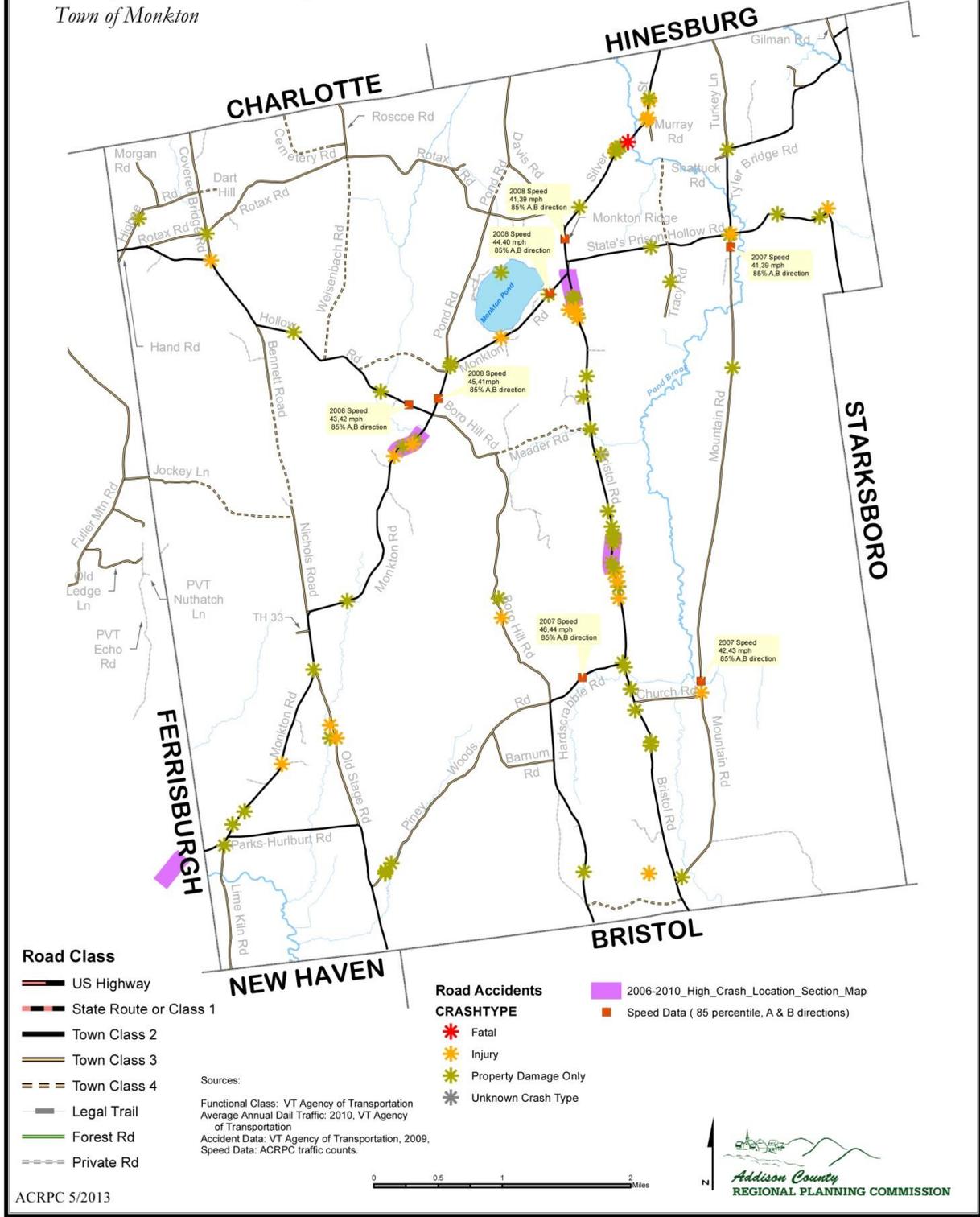
Highway Accident



Highway Accident Areas identified by the Monkton Hazard Mitigation Committee

# Transportation Safety Concerns

Town of Monkton



Map of reported accidents in Monkton between 2006 and 2009

**Future Probability:** As traffic continues to increase along town roads, and especially where the local road constitutes a “shortcut”, accidents are also likely to increase. Increased congestion along the Route #7 and Route 116 corridors in neighboring towns also drives an increase in traffic along many of Monkton’s roads. As local roads are slowly being paved throughout the region, one unintended consequence is higher speeds which also contribute to highway accidents. Higher traffic volumes combined with higher speeds would be expected to result in a higher number of accidents.

**Vulnerability Summary:** The Town of Monkton has several known high crash locations. These are targeted by the local road crew when driving conditions are predicted to deteriorate. In spite of the added attention, these locations continue to be high crash locations. Closing of either Route #7 or Route #116 (as happened in 1998 when a flood took out bridges in Bristol) will result in an inordinate amount of traffic being directed onto Monkton’s road system. Until major overhauls of sections of highway can be completed, Monkton will need to continue to rely on signage and enforcement of speed limits to keep the numbers of accidents in check.

With an overall vulnerability score of 2, Highway accidents must be considered a MODERATE priority. Due to the risk to life and property represented by this hazard the Town expends considerable resources attempting to make its roads as safe as possible within a restricted budget.

- **Fire (Structural)** – (Risk Score 11)

**Location:** There are wood frame structures susceptible to structure fire scattered throughout the Town of Monkton with the highest concentrations along Monkton Ridge and Monkton Boro. Mobile homes are especially at risk for a fire causing personal injury as they are often poorly built out of extremely flammable materials. Most wood framed structures were built before modern fire-resistant construction material and methods were developed. Fortunately, the rapid increase in population over the past few decades resulted in new houses which were built to a more fire resistant standard.

**Extent:** The community’s greatest risk for a multiple structure fire is along the western shore of Cedar Lake where summer camps on small lots often lie within 15-20 feet of each other. A fire starting in one of the southern camps, with a wind out of the south, could result in the destruction of multiple camps along the shore. Outside of that possibility, structure fires have been limited to single residences and only occasionally do these result in complete destruction of the structure.

**Previous Occurrences:** Reports from the fire department indicate that an average of 35 calls per year are responded to by the fire department. The majority of these are either false alarms or automobile accidents. The department reports that structure fires occur on average one per year.

**Future Probability:** Monkton has experienced rapid growth since 1990 in both population and residences. More residences generally result in more fires though modern building techniques and mandated alarms reduce the percentage damaged by fire. A spike in fuel prices could cause many residents to burn wood as a source of fuel which results in increased fire risk. Fortunately, a well trained fire department will keep those risks as low as possible.

**Vulnerability Summary:** Except in previously mentioned camp neighborhoods, new development has not had a huge impact on fire risk due to better spacing and improved construction methods. Unfortunately, risks to firefighters continue to escalate as newer construction materials often produce a dangerous combination of toxic gasses when burned. Increased utilization of smoke detectors reduces the risk to home owners of loss of life and property due to quick response times by the fire department and early warning to get out.

The community vulnerability rating for structure fire is 2 and would be considered a MODERATE priority. Moderate generally indicates that the mitigation expense is high with a low return. If Monkton were to be starting a fire department at this time, the costs may be too high to justify. Fortunately, the creation of a volunteer department many years ago mitigates many of the vulnerabilities at a low annual cost to the town.

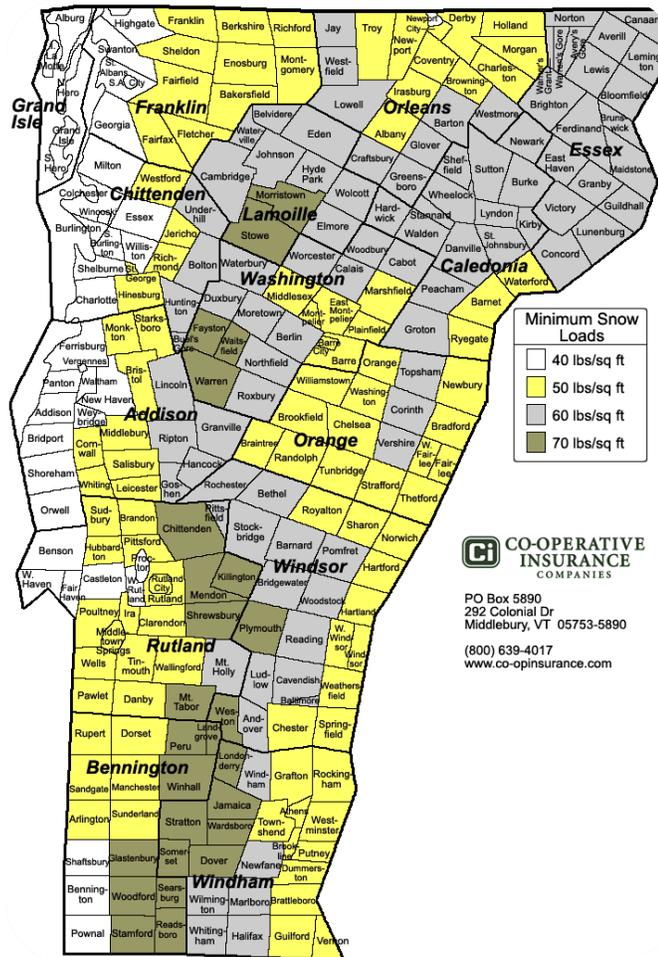
- **Severe Snow** – (Risk Score 10)

**Location:** Severe snow storms are a relatively common occurrence throughout Vermont and can strike anywhere in the Town of Monkton. Its location within the Champlain Valley has winds predictably coming either from the north or south. East or west winds tend to be broken up by the Adirondacks to the west or the Green Mountains to the east. While prevailing winds can come from the south, these do not usually bring the same blizzard conditions as can happen with a north wind.

**Extent:** When conditions are predicted, the National Weather Service issues warnings ranging from a Winter Storm Warning (heavy snowstorm predicted within 24 hours) to Blizzard Warning (sustained wind and snow with gusts up to 35 mph for at least 3 hours) to Heavy Snow Warning (accumulations of over 6 inches in a 24 hour period).

Construction standards for snow load (see map) indicate that structures in the Town of Monkton should be built to withstand loads of 50 pounds per square foot. Using an average weight for snow at 1 lb./sqft. this would indicate an average depth of snow of 50 inches on a square foot of roof surface before design standards would be exceeded and the structure runs the risk of collapse. Given this standard, a snowstorm or series of storms which result in 50 inches of snow on a well designed roof would likely cause a few collapsed roofs, especially on structures which are not built to these standards.

**Previous occurrences:** Large snow storms have dropped up to 30 inches of snow in parts of Monkton. Some residents still recall winters in the late sixties and early seventies where storms dropped enough snow that snowmobiles could cross over the tops of 4ft high fences. In March of 2001, the so-called “Town Meeting Day” snow event caused reduced ability for residents to travel to the voting booth due to hazardous conditions. In 2006, a series of storms dumped up to 30 inches on barn roofs and caused the collapse of at least one barn. With a different result, an early December storm in 2014 caused power outages for three days in some areas of Monkton. In that case, the damage was caused by trees falling on power lines due to the heavy water weight of the snow.



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## Minimum Snow Loads for Estimating Construction Design (Monkton = 50lb/sq ft)

**Future Probability:** The number and severity of winter storms have been increasing since the 1980's. If the current trend continues, it is likely there will be a continued increase in severe snow storms that will impact the Town of Monkton into the future. In addition, climate observers predict more storms with blizzard conditions than the historic average.

**Vulnerability Summary:** Infrastructure most at risk in the Town of Monkton tends to be east/west roads which are susceptible to drifting snow under the right conditions. The town is able to keep the roads open and treated for most storms and rarely has lost the ability to keep up with a snow storm due to the Town's high preparedness level and ongoing mitigation actions. Fortunately, the regular occurrence of winter storms also causes most residents to maintain a high level of preparedness.

As population growth and housing continue to expand, increasing dependency on local roads by the new homeowners requires changes in winter maintenance. The town has, thus far, been able to keep up with those increased demands on its services through additional hires and equipment purchases.

Without that preparedness level and with a community vulnerability score of 2, Severe Snow Storm would be considered a MODERATE priority based on the likely occurrence and the high portion of the community impacted.

**Wildfire** – (risk score 10)

**Location:** Generally, two different wildfire fuels can be found within the boundaries of the Town of Monkton. Forested areas of town are characterized by fuels found in the duff layer (leaves, fallen branches, etc.). The agricultural portions of Monkton generally have a fuel base of dried grasses and shrubs. The entire community is at risk of wildfire during dry periods. Forested areas and open fields are both most at risk each year in the spring following snow melt and before spring growth has started.

**Extent:** Springtime burning of open fields has been a longstanding historic practice thought to improve field fertility. Every few years, these get out of control due to either poor planning or unexpected winds. Generally, this type of wildfire is limited to a few acres and poses limited threats to structures lying close to the fuel source in the path of the fire. Fires in the forest tend to be smaller, usually limited to under an acre in size. These are generally mitigated by hardwood tree species and cover on the forest floor.

**Previous Occurrences:** No records of wildfire activity have been found for the Town of Monkton. However, the State Agency of Natural Resources keeps track of fires in the entire state. Most wildfires are never reported to State forestry officials and are therefore not shown in their annual reports. Based on the period between 2001 and 2010 those reported averaged just under 120 fires which burned a total of 215 acres.

**Vermont Wildfire Statistics**

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
# fires	189	100	101	86	221	118	81	115	95	88
# Acres	295	146	95	250	547	254	180	138	164	84
Ave. Size	1.56	1.46	.95	2.91	2.48	2.15	2.22	1.20	1.73	.95

**Addison County Wildfire Statistics**

Year	2006	2007	2008	2009	2010
# fires	2	4	6	10	1
# Acres	.5	9	10	4.5	1.2

Within the past 50 years, forests have been closed to recreation state-wide 3 times due to extreme fire conditions. While these incidents have not resulted in large-scale damage in the Town of Monkton, the conditions existed for widespread forest fires. In addition, an unusually dry spring will often result in a no-burn proclamation most recently seen in 2009.

**Future Probability:** The combinations of factors which lead to widespread wildfires usually coincide with extended drought conditions. Periodic droughts occur every 30-40 years in Vermont and based on observed patterns, would be next expected in the decade between 2020 and 2030. During this period, additional risk for wildfire would exist and an increase in wildfires would also be expected.

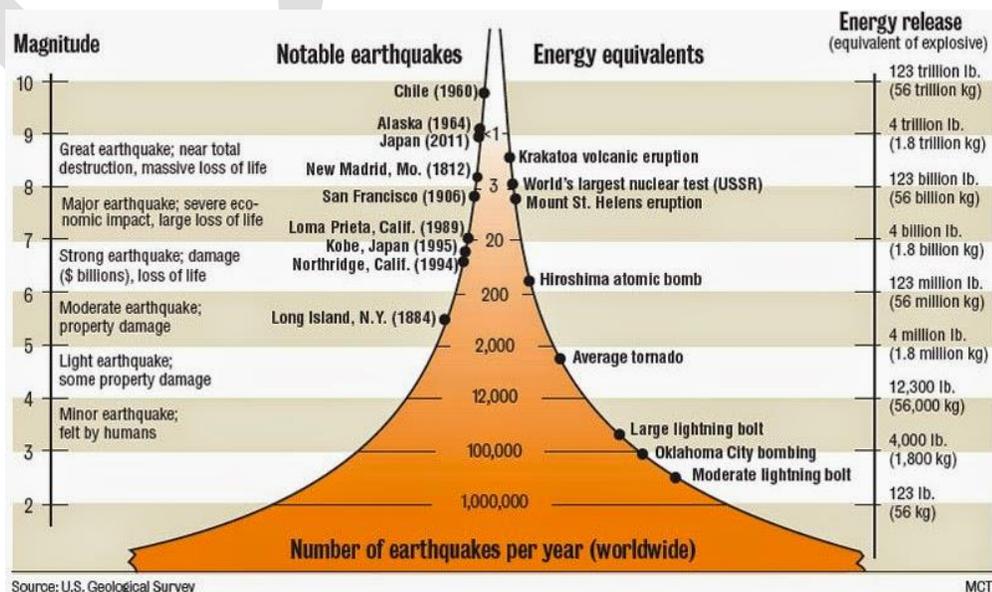
**Vulnerability Summary:** With a historically active agricultural base, much of the Town of Monkton is still cultivated. It is abandoned and formerly farmed areas which tend to attract new homes. Consequently, many of the newer structures, in town would fall within an urban/wildfire interface. This increased risk for forest fire due to proximity is moderated by the so-called “Teflon Forest” conditions of the Northeastern US. While moisture levels generally tend to be higher than in the fire-plagued western forests, scattered periods of drought can increase fire danger levels to *Extreme* particularly during spring and fall seasons when dry leaves cover much of the forest floor.

It is becoming increasingly important that residences and essential facilities be constructed with an eye toward wildfire resistance by establishing no-burn zones around structures and by providing suitable water supplies for fire fighting to more remote residences.

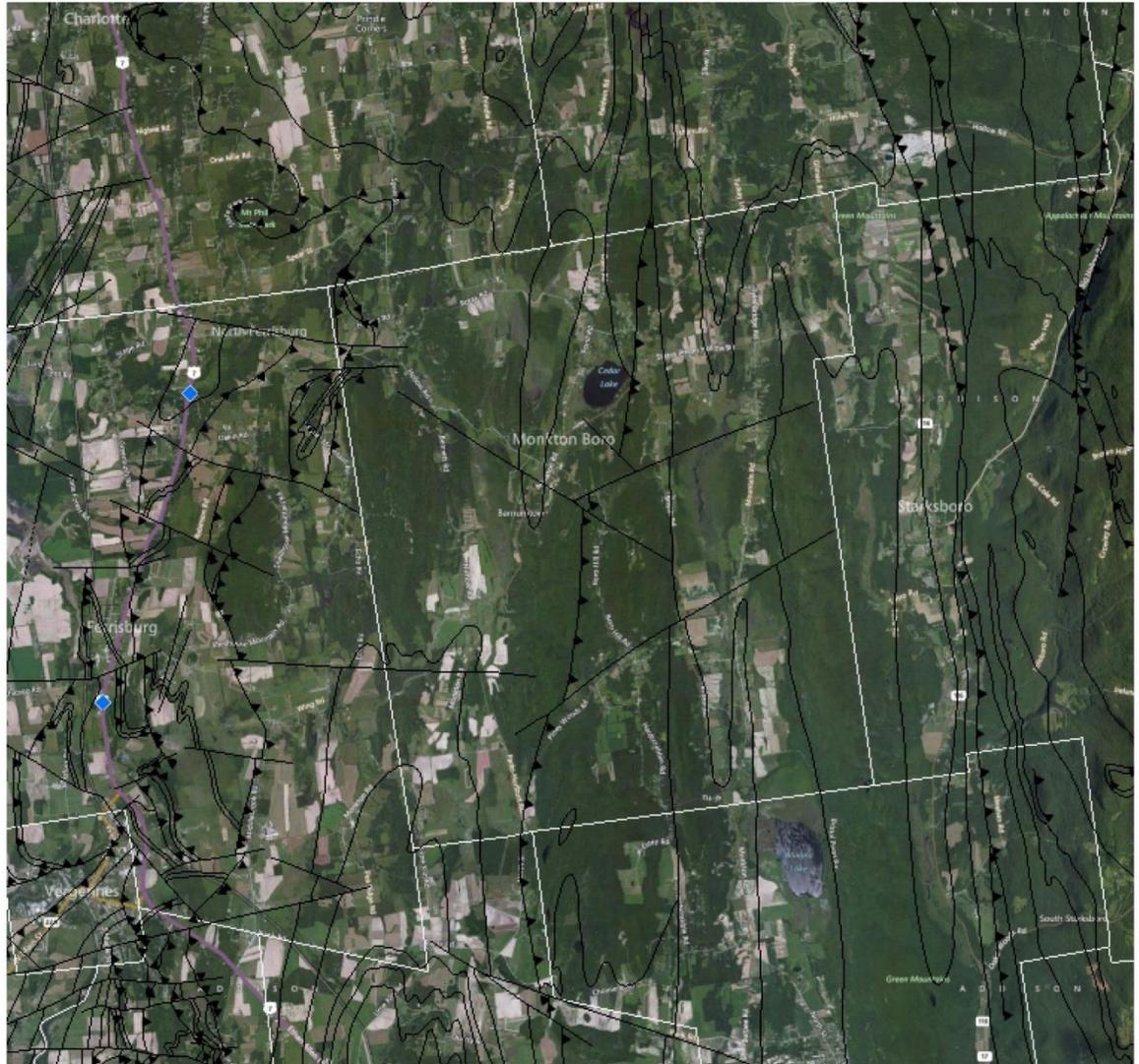
With a community vulnerability score of 2, wildfire is considered a MEDIUM PRIORITY based on a relatively high likelihood of occurrence and a low overall impact to the community.

**Earthquake** – (risk score 10)

**Location:** Surprising as it is to some, all of Vermont, including the Town of Monkton, is classified as an area with “moderate” seismic activity. This can be compared to the west coast of the U.S., which is classified as “very high” and the north-central states classified as 'very low.' Located in the Champlain Valley, Monkton is at higher risk for earthquake than some other areas of Vermont.



**Earthquake Energy Equivalents**



LEGEND	
	Bedrock Faults and Contacts
	<all other values>
	concealed contact
	contact
	dashed contact
	fault
	fault ?
	high angle fault

NOTES	
Map created using ANR GIS mapping technology.	
1: 101,113	
October 16, 2015	

5,137.0 0 2,568.00 5,137.0 Meters

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere 1" = 8426 Ft. 1cm = 1011 Meters  
© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

**Extent:** Based on information provided by the Vermont Geological Survey, Department of Environmental Conservation, Agency of Natural Resources, HAZUS outputs for the region are summarized as follows:

The Middlebury Once-in-500 year earthquake (5.7 magnitude) could cause significant damage in Addison County. The Goodnow, NY Once-in-500 year earthquake (6.6 magnitude) could cause shaking just above the lower limit for building damage. The Montreal, Quebec (6.8 magnitude) and the Tamworth, NH (6.2 magnitude) Once-in-500 year earthquakes probably would not cause damage in Addison County. Only the loss data from the Middlebury and Goodnow events are shown below:

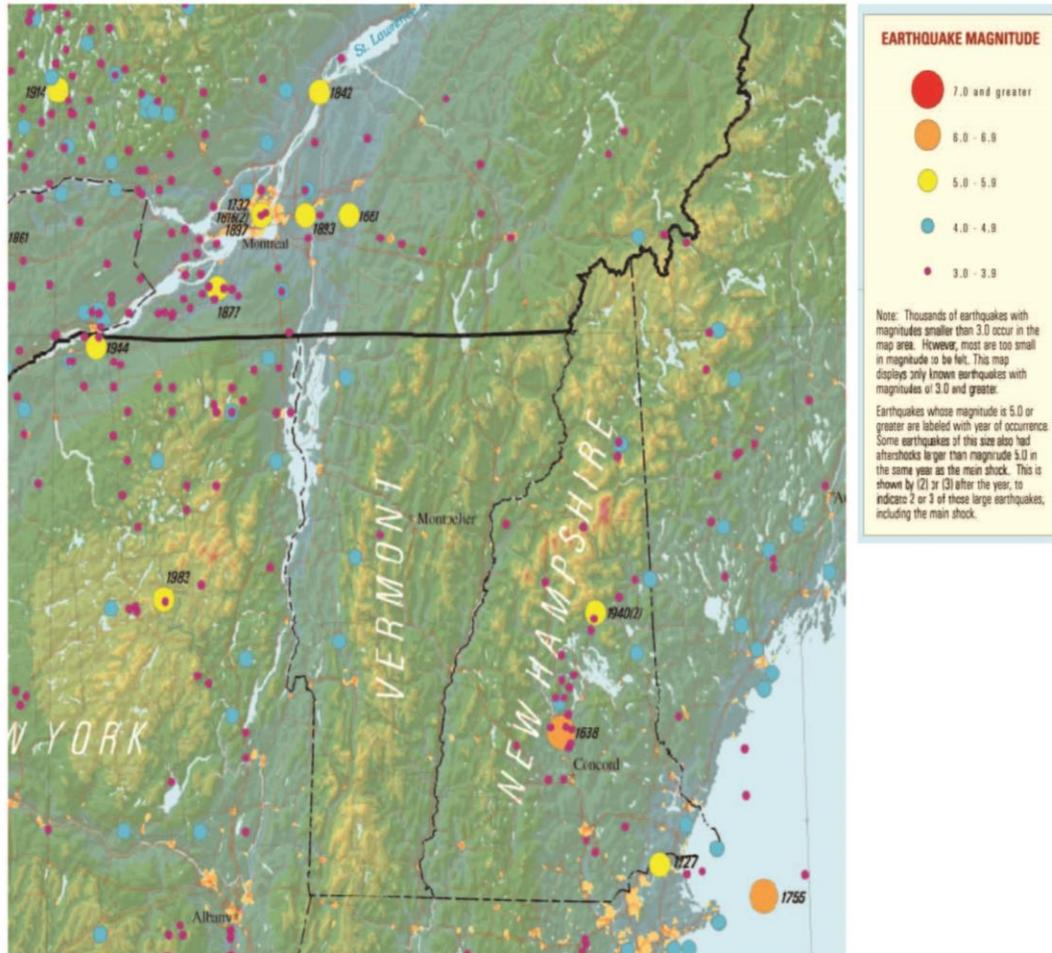
#### Middlebury Scenario:

- Building damage – HAZUS estimates that over 1600 buildings will receive at least moderate damage. This is a little more than 13% of the total number of buildings in the county. (13% of buildings in Monkton would be 104). HAZUS also estimates that all essential facilities in the region (hospital, schools, police stations and fire stations) will receive at least moderate damage. 7 families would be predicted to be displaced from their homes and will need temporary shelter in Monkton.
- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 9,000 households in the region are expected to be without electrical power for up to three days.
- Casualties – Minimal casualties are also expected with less than twenty-five requiring medical attention and less than three needing hospitalization in the region.
- Economic loss – Direct building losses are estimated at > \$83 million and business interruption losses are expected to be as much as \$105 million. HAZUS estimates that although there was minimal damage to the transportation system the loss would still be close to \$15 million. Approximately \$4.4 million would be needed to repair damaged communications systems.

#### Goodnow Scenario:

- Building damage – HAZUS estimates that over 600 buildings will receive at least moderate damage. This is a little more than 5% of the total number of buildings in the county. (5% of buildings in Monkton would be 40) HAZUS also estimate that all essential facilities in the region (hospital, schools, police stations and fire stations) will receive at least moderate damage. 2 families are predicted to be displaced from their homes and will need temporary shelter.
- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 4000 households are expected to be without electrical power for up to three days in the region.
- Casualties – Minimal casualties are also expected with less than six requiring medical attention and only one needing hospitalization.
- Economic loss – Direct building losses are estimated at > \$17 million and business interruption losses are expected to be as much as \$24 million. HAZUS estimates

that although there was minimal damage to the transportation system the loss would still be close to \$3.6 million. Approximately \$0.9 million would be needed to repair damaged communications systems.



### Regional Historical Earthquake Records

**Previous Occurrences:** Sixty-three known or possible earthquakes have been centered in Vermont since 1843 (Ebel, et al 1995). The two strongest recorded quakes measured in Vermont were of a magnitude 4.1 on the Richter scale. One was centered in Swanton and occurred on July 6, 1943, and the second occurred in 1962 in nearby Middlebury. The Swanton quake caused little damage, but the Middlebury quake did result in broken windows, cracked plaster and falling objects (VEM, 1995).

Earthquakes centered outside the state have also occasionally been felt in Vermont. Twin quakes of 5.5 occurred in New Hampshire in 1940. In 1988, an earthquake with a magnitude 6.2 on the Richter scale took place in Saguenay, Quebec and caused shaking in the northern two thirds of Vermont (Ebel, et al 1995).

In May 2001 and again in the summer of 2010, earthquakes in the 5.0-5.5 range have been felt in town with epicenters in New York and Quebec respectively.

**Future Probability:** The USGS database shows there is a 2.26% probability of an earthquake measuring 5.0 or above within 31 miles of the Town of Monkton in the next 50 years.

**Vulnerability Summary:** The Monkton Hazard Mitigation Committee scored Earthquake hazard a risk score of 10 resulting in a vulnerability score of 2. Residents of the community do not generally consider earthquake to be a high enough risk to require preparing for one. This results in little or no preparedness should an earthquake occur. With a community vulnerability score of 2, earthquakes would be considered MEDIUM PRIORITY based on a low probability of a significant event in any given year but with a high overall impact to infrastructure should a significant event occur.

**Extreme Temperatures** (risk score 10)

**Location:**

Extreme high temperatures are defined as any time when temperatures hover more than 10 °F above the average temperature in the region and last for several weeks. Extended heat such as this is often accompanied by high humidity as well which compounds the hazard (see Heat Index Table). Extreme low temperatures in the northern US are similarly identified as temperatures at or below 0 °F for an extended period of time. Cold temperatures coupled with wind create a “windchill” effect causing the temperature to feel colder than it actually is. (see Windchill Chart)The definition for heat would be met at a base temperature of 91 °F in the heat of the summer in most of the Champlain Valley. Most rural Vermonters, however, would take notice when temperatures exceed 95 °F or drop below -30 °F. Any location in the Town of Monkton could be subject to these extremes. Most commonly, areas exposed to full sun during the day without the availability of shade from trees are most susceptible to heat and low lying areas away from ground water sources are most at risk for extreme cold.

**NOAA's National Weather Service**

**Heat Index**

Temperature (°F)

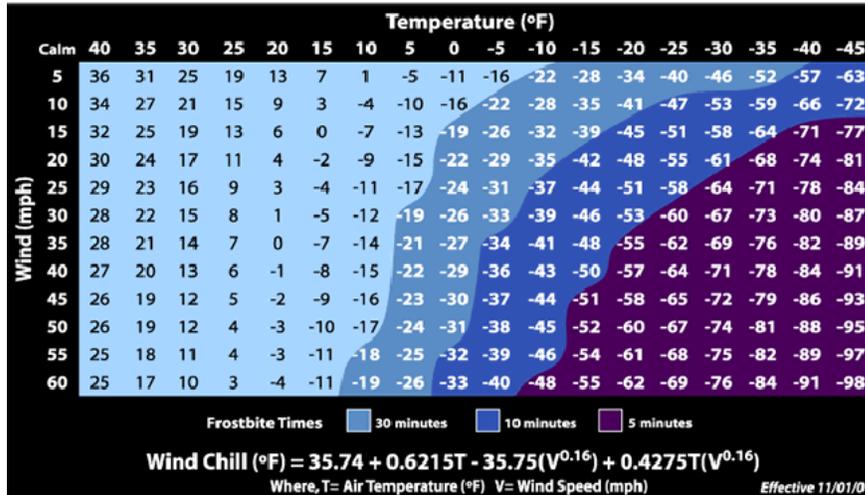
	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

**Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity**

- Caution
- Extreme Caution
- Danger
- Extreme Danger



# NWS Windchill Chart



### Extent:

Extreme heat and cold are primarily of concern for the poor and elderly. These population demographics are most likely to suffer due to lack of heating fuel during an extremely cold winter and lack of air conditioning capacity in summer heat. Because the elderly and very young are physically less capable of moderating their own body temperatures, most temperature related deaths occur in these populations. Monkton has been fortunate in recent memory to have recorded no life loss due to extreme temperatures. This can be partially attributed to the inherent benefits of rural communities and close family ties which result in neighbors assisting their neighbors in times of crisis.

### Previous Occurrences:

The National Weather Service reports occurrences of extreme heat and cold in Burlington, Vermont which is the closest recording station to the Town of Monkton. Lying 20 miles to the south on a more rural setting, it is likely that temperatures in Monkton do not reach the same highs yet are also likely exceed the extreme lows. Committee members recounted temperatures of -30° during the winter of 2014-2015 and 102° has been recorded within recent memory.

At Burlington, the most severe streak of hot weather was recorded from July 5-10 in 1993. During this period, temperatures exceeded 90°F for all 6 days. An extended cold snap in mid-February of 1979 resulted in 12 straight days with temperatures recording 0°F or below at the Burlington airport. Other, shorter, stretches of below zero weather occur during almost every winter and when coupled with a strong wind, even a temperature of 20° can feel like zero or below.

### Future Probability:

Any “normal” year has heat waves and cold snaps but these occurrences are predicted to increase in the coming decades. If global climate change predictions are accurate, the overall temperature is expected to increase by as much as 8° by 2100 but other changes could result in more severe weather of all temperatures.

### Vulnerability Summary:

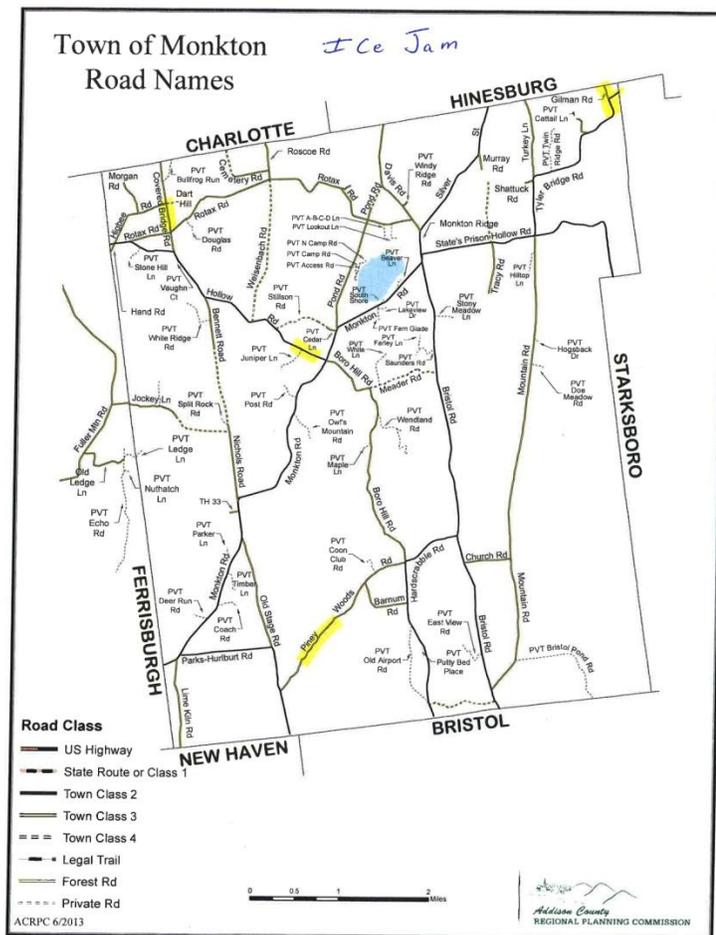
The Monkton Hazard Mitigation Committee scored Extreme Temperature hazards a risk score of 10, resulting in a vulnerability score of 2. A combination of widespread impacts and high probability determined the majority of the risk score. With a community vulnerability score of 2, extreme temperatures would be considered MEDIUM PRIORITY based on high probability and impact moderated by the amount of advance warning and limited property damages should significant events occur.

### Ice Jam – (risk score 9)

#### Location:

Within the Town of Monkton, the hazard mitigation committee members identified four locations where ice jams could and have caused problems. Covered Bridge Road, Tyler Bridge Road, Hollow Road and Piney Woods Road are all susceptible to flooding caused by Ice backing up in the winter. (See Ice Jam Map)

### Highway Accident Areas identified by the Monkton Hazard Mitigation Committee



### Extent:

Ice jams such as have been seen in Montpelier where the downtown area has flooded 3-5 feet in a bad year do not occur in the Town of Monkton. Ice forms in culverts which, in turn, cause spring runoff to flood over the tops of roads. Low lying and wooded stretches of town highways can be closed for a few days until warm weather also melts

the plugged culverts. On rare occasions, cold temperatures immediately follow these warmer conditions and ice forms upon the road surface up to several inches thick. Where ditches exist that receive the added water, these can be damaged due to the increased stress of higher-than-planned flows.

**Previous Occurrences:**

Conditions right for severe ice jams tend to be the same as cause flooding on Monkton's roads. The Cold Regions Research and Engineering Laboratory (CRREL) a branch of the US Army Corps of Engineers (USACE) keeps a database of ice jam flooding. The worst year on record for ice jam flooding occurred in 1992 with the flooding in Montpelier. Of the 22 incidents identified in the State hazard mitigation plan between 1993 and 2013, none have occurred in Addison County or within 30 miles of Monkton. Committee members can remember that jams have occurred but were unable to identify dates.

**Future Probability:**

The severe shifts in temperatures and severe storms predicted for coming winters will likely result in more and greater damages state-wide due to ice jams. The rapid shifts from cold to warm are precisely the conditions which cause extreme damages.

**Vulnerability Summary:**

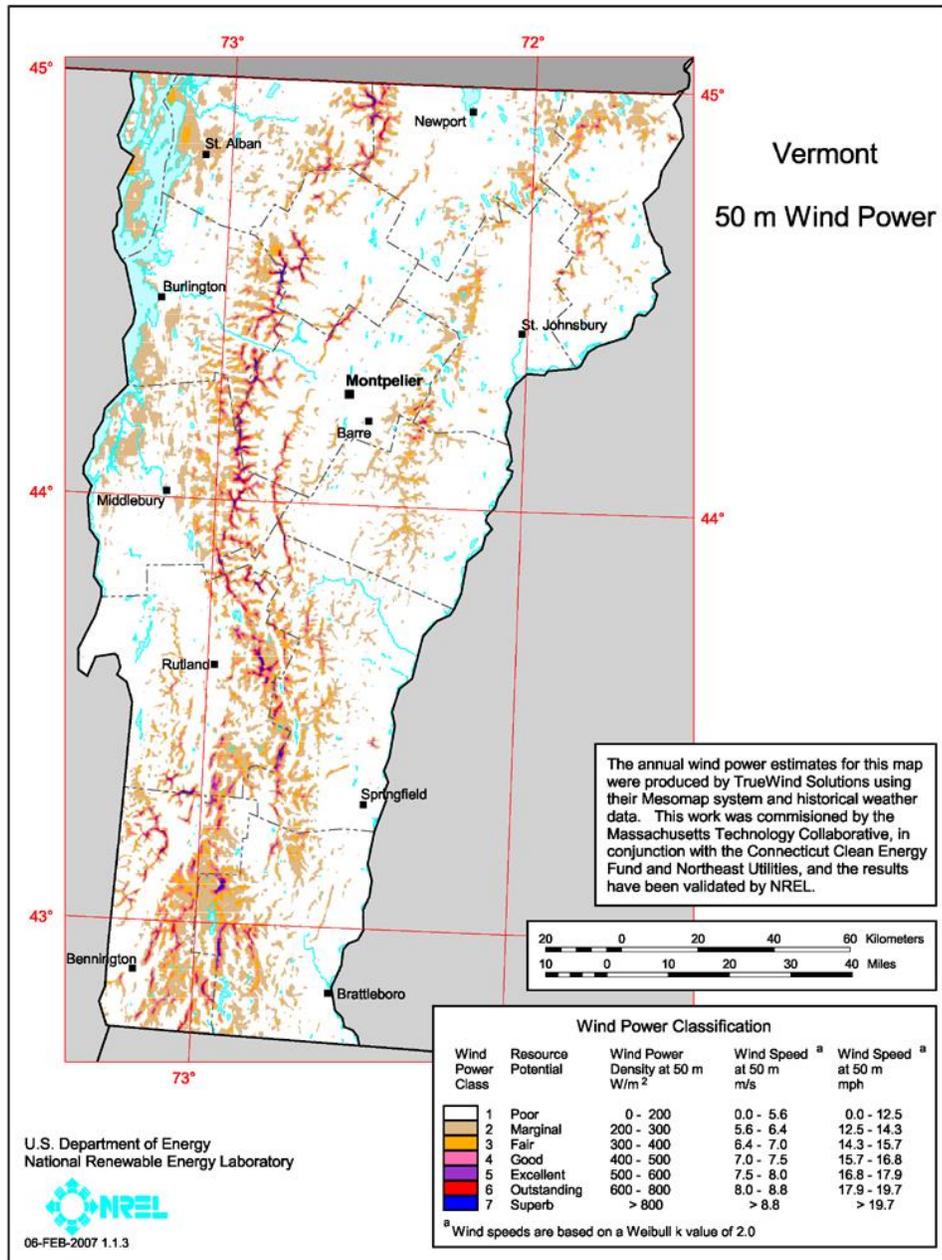
The Monkton Hazard Mitigation Committee scored Ice Jam hazards a risk score of 9, resulting in a vulnerability score of 2. High Probability and lack of warning resulted in a score unexpected by the committee. Fortunately these factors are strongly moderated by the limited geographic and property impacts.

With a community vulnerability score of 2, Ice Jams would be considered a MEDIUM PRIORITY were it not for the limited impacts to the townspeople and their infrastructure. The committee showed almost no concern for this hazard.

**High Winds/Tornado** – (risk score 9)

**Location:**

High winds can be experienced almost anywhere in the Town of Monkton but are generally recognized in a corridor running north/south parallel to Mountain Road. Especially noted by the committee is a small area at the south end of that corridor where winds off Lake Winona in nearby Bristol have caused damages in the past. (See committee map). An evaluation of the entire State of Vermont identifies only limited suitability for generation of wind power in the Town of Monkton and then only of marginal value. (see Vermont 50m wind power map)



**Extent:**

High winds have resulted in roof damages and downed trees along the identified corridor. One committee member was able to recount how the roof of her parent’s barn was partially blown off during one particularly strong event. Elsewhere in the region, roofs have collapsed, trees have been uprooted and outdoor furniture has been lost. High winds in excess of 50mph cause noticeable damage but those which exceed 60mph are most noticeable.

## Beaufort Wind Scale

0-1	0	Calm	Calm; Smoke rises straight up
1-3	1	Light Air	Wind motion causes smoke to drift slowly
4-7	2	Slight Breeze	Leaves rustle, wind is felt on exposed skin
8-12	3	Gentle Breeze	Leaves and small twigs in constant motion
13-18	4	Moderate Breeze	Small branches move; dust and loose paper raised
19-24	5	Fresh Breeze	Small trees sway;
25-31	6	Strong Breeze	Large branches sway; overhead wires “whistle”
32-38	7	Near Gale	Whole trees in motion; walking into wind takes effort
39-46	8	Gale	Twigs break off trees; cars veer on the road
47-54	9	Severe Gale	Branches break; Light structural damages
55-63	10	Whole Gale	Trees blown over; considerable structural damage
64-73	11	Storm	Widespread structural damages
74+	12	Hurricane	Considerable and widespread damage to structures

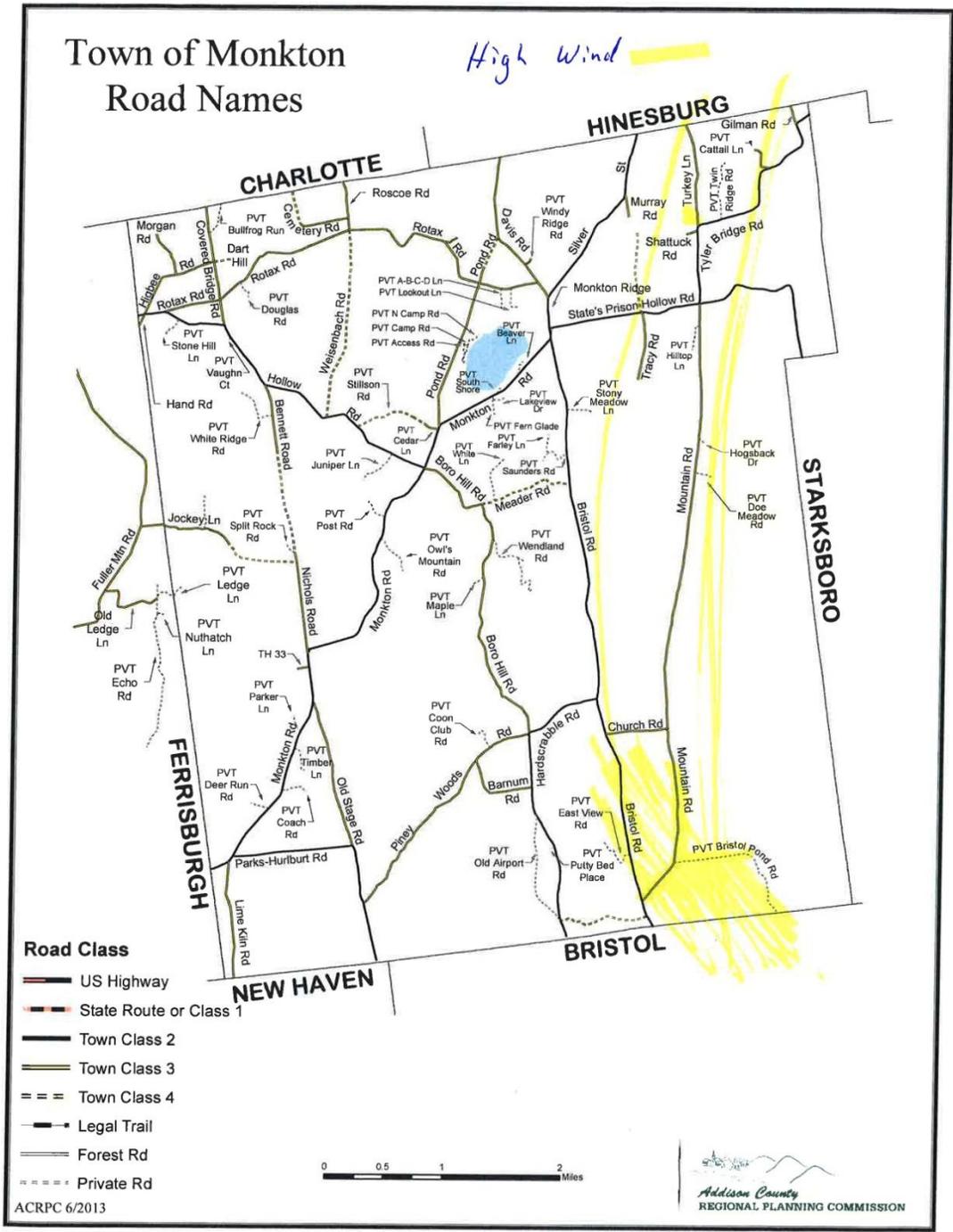
Fortunately, much of the Town of Monkton is sheltered by hills which tend to break up major wind events felt in more open areas.

### Previous Occurrences:

NCDC records indicate The Addison Region has experienced 34 High Wind events and 35 Strong Wind events over the past 25 years resulting in \$1,451,000 in cumulative property damage and \$25,000 in crop damages. The committee was able to recount one storm in 2005, where gusts of 75mph were recorded on home monitoring equipment. The Addison Independent archives record the damages associated with the “Great Windstorm of November 1950”. That storm saw the remnants of a late season hurricane, blow through the Addison region between the Town of Pittsford in Rutland County and the City of Vergennes just east of Monkton. “Hundreds of trees were uprooted, miles of fences ruined, seven out of every ten houses suffered roof damage...Barns were blown down, 1,000 head of cattle are dead, families are temporarily homeless.” This storm

resulted in over \$1million in damages in 1950 dollars, an amount equal to over \$10 million in 2016 dollars.

**Locations of High Winds identified by the Monkton Hazard Mitigation Committee**



**Future Probability:**  
 Over the past 15-20 years there has been an observable increase in the severity and frequency of storms in Monkton. Extremes in warming and cooling which we have seen

in recent years lead to high winds as convective forces meet cooling forces. It is probable that in the future, we will not see a lessening in winds or wind producing storms. Certainly, if climatologists predictions are true, this trend is expected to continue into the future. Since, by nature, severe storms are accompanied by high winds, damages due to wind are expected to increase as well.

**Vulnerability Summary:**

Residents of the Town of Monkton are expected to see an increase in so-called “Freak” storms which are often accompanied by high winds. Because these storms were formerly unusual occurrences, most people in town are unprepared for high winds. Exceptionally high winds found in cyclonic storms would likely result in damage to roofs in town and result in the collapse of some structures. Located at a high point on Monkton Ridge, the town offices and library are most susceptible to a high wind arising out of the West.

With a community vulnerability score of 2, high winds would be considered a MODERATE PRIORITY based on a moderate overall impact to the community with a relatively common period of occurrence.

**Tornado** – (risk score 9)

**Location:**

Tornados in Vermont are considered very rare, however, 40 tornadoes have been recorded in the State since 1953 ranging from F1 to F2 on the Fujita Scale. The Town of Monkton is fortunate to have an undulating landscape which generally does not support tornadic activity. As in the case of high winds, the eastern side of town north of Lake Winona could possibly support a tornado.

**Extent:**

The worst case tornado event would uproot trees, tear roofing from structures and collapse old or poorly constructed buildings. The loss of power and land line phone service would also be likely due to downed power lines caused by the falling trees. Tornados which have struck in Vermont have been limited to F1 or F2 on the Fugita Scale. (See Fugita Chart)

**Tornado Fujita Scale**

<u>F Number</u>	<u>Wind</u>	<u>Damage</u>
<b>f 0</b>	45 - 78	little damage
<b>f 1</b>	79 - 117	minor damage
<b>f 2</b>	118 - 161	roof gone
<b>f 3</b>	162 - 209	walls collapse
<b>f 4</b>	210 - 261	blown down
<b>f 5</b>	262 - 317	blown away

**Previous Occurrences:**

The most significant tornado of record in the state was the “Lake Champlain Tornado” which cut a 275 mile track starting at Lake Ontario in New York State, travelling through the Adirondacks and ending in the Champlain Valley in 1845. The 40 storms recorded in

Vermont since 1953 killed 9 people and caused over \$8.4 million dollars in estimated property damage. Addison County experienced two of those storms. In June of 1965, a twister touched down resulting in \$37,000 in damage and one death. Another in 1983 struck the northern portion of the county and resulted in crop losses exceeding \$500,000. More recently, on May 27, 2014 a tornado was reported to have touched down in Cornwall and neighboring Bridport. No records of tornado activity were found for the Town of Monkton.

**Future Probability:**

As with high winds in general, an increase in tornados is expected in Vermont over the next few decades. Extremes in warming and cooling which we have seen in recent years lead to high winds as convective forces meet cooling forces. When those forces are severe enough tornados will form.

**Vulnerability Summary:**

Most structures in the Town of Monkton have been built in consideration of the hazards present at the time of construction. These hazards are expected to increase over the coming decades which leaves most construction in town vulnerable to high winds and tornados. Also at risk are power and above-ground telephone lines which would likely be impacted by downed trees should a severe storm strike.

With a community vulnerability score of 2, a Tornado is a **MEDIUM PRIORITY** based on the current rarity of incidents and limited geographic impacts combined with the severe degree of damage that would be expected.

**Drought** – (risk score 9)

**Location:** Drought, due to lack of rain resulting in a receding water table is generally a regional issue due to its widespread nature. Any location within the town could experience drought and/or lowered water table. Residents with shallower dug wells would experience limited drinking water supplies earliest

**Extent:** Four types of drought are identified in the State of Vermont’s Hazard Mitigation Plan: meteorological, agricultural, hydrological and socioeconomic. Local knowledge indicates dry spells are periodic in nature and would be considered moderate to severe every 10 years on the average. Within the Town of Monkton the most obvious risks associated with drought include drying up of shallow wells (Hydrological) and reduced productivity of agricultural crops (Agricultural). Agricultural lands bordering Lewis Creek, and the Pond Brook would suffer least from a drought due to the ability to pump water from those sources.

**Palmer Drought Index Table**

≥ 4	3. -3.99	2-2.99	1-1.99	.5-.99	.49 -.49	-.5 -.99	-1 -1.99	-2 -2.99	-3 -3.99	≤-4
Extremely Wet	Very Wet	Moderately Wet	Slightly Wet	Incipient Wet Spell	Near Normal	Incipient Dry Spell	Mild Drought	Moderate Drought	Severe Drought	Extreme Drought

**Previous Occurrences:** Within the past 25 years NCDC reported no severe drought events. However, an extended drought period in the region occurred during the 1960s

when much of Vermont experienced severe drought in 1964 and extreme drought in 1965 and 1966. The years following this drought period saw the development of several community-owned water systems in communities along Lake Champlain. Future drought conditions could result in new calls for a public water supply in communities like Monkton. Most recently, a dry period in 2000 saw a few residents in the Addison region without water for several weeks until finally relieved by fall rains.

**Future Probability:** Historical records show periods of moderate to severe drought impact Vermont every 30 -40 years with the last occurring during the 1990s. Were this pattern to continue, a moderate to severe drought would be expected sometime in the decade between 2020 and 2030.

**Vulnerability Summary:** Residents depending on shallow wells always run the risk of them drying up in years of drought. When these wells do dry up, residents tend to depend on a neighbor's water supply or another nearby water source. Following occurrences such as that, an increase in well drilling can often be observed in the Addison region. The limiting factor in drilling a deep well is usually the cost of the drilling itself. Direct costs of drought conditions tend to be borne by individual residents and therefore are difficult to track accurately.

With a community vulnerability score of 2, drought would be considered MODERATE PRIORITY based on a moderate overall impact to the community with a relatively common period of occurrence.

**Invasive Species** – (risk score 9)

**Location:**

Hazardous invasive species range from vegetative (Poison Parsnip, Purple Loosestrife) to insect-borne viruses (West Nile and EEE) and include everything in between. The majority of vegetative invasives are found along roadsides where they are first introduced. Some insects bearing disease are found in close proximity to wetlands while others are common in fields and wooded areas.

**Extent:**

Depending on the hazard, the impacts to residents are as widespread as are the hazards themselves. In a worst case scenario, Poison Parsnip would become so prevalent that residents could not take advantage of the town's recreational opportunities for fear of blisters and scarring. These impacts would be most damaging to the health of children. Purple Loosestrife, while not necessarily a health risk, could compete with local wetland plants to the effect of also impacting the floodwater attenuation characteristics. Invasive Emerald Ash Borer and Asian Long-Horned Beetle are dangerous to Ash and Maple trees. The loss of these tree species would have a major impact on the timber and maple industries in Vermont. Lastly, Mosquitoes carrying Eastern Equine Encephalitis (EEE) and West Nile Virus and Deer Ticks carrying Lyme Disease have the potential to cause widespread fatalities when not treated in a timely manner. Actual costs in terms of lives and or economic impacts are difficult to estimate for invasives which are expected to arrive but have not been widely spread.

**Previous Occurrences:**

The most notable invasive in most of New England was the introduction of “Dutch Elm Disease” carried by the native elm bark beetle. The spread of this disease severely impacted the entire region by killing elm trees. The loss of these trees which were liberally planted as shade trees in many village greens and along roadsides had an extreme impact both aesthetically and due to the loss of shade, in the overall use of electricity in summer months.

The invasive Gypsy Moth and Hemlock Woolly Adelgid have lead to another issue formerly uncommon in much of the east. An invasion of either of these species has the potential to kill the host trees which, in turn provide a ready source of fuel for wildfire. This has occurred in isolated areas elsewhere in the country but is fortunately not a common occurrence in the Town of Monkton or the State of Vermont.

**Future Probability:**

A warming climate and the availability of inexpensive travel have vastly increased the likelihood of the spread of unwanted species in the past two decades. Open borders and lack of adequate surveillance of incoming cargoes continues to increase the likelihood of additional hazardous species entering the ecological microclimate found in Vermont.

**Vulnerability Summary:**

The State of Vermont has historically felt incapable of having an effect on unwanted invasives. Eradication costs whether monetary or political generally have seemed to be too high and reactive rather than proactive actions have often been taken. This leaves the Town of Monkton essentially at the whim of the State. A single community has little power on their own to have an effect either. Monkton is especially vulnerable to hazards related to wetland plant and insect species due to the large volume of wetlands in the town.

With a community vulnerability score of 2, invasives would be considered a MODERATE PRIORITY based on a high probability and large geographic impact with little property damage or immediacy.

## 5. Community Mitigation Strategies

### 5.1 Hazard Mitigation Goals by Hazard Type 44CFR 201.6(c)(3)(i)

Each hazard type identified in Section 4.3 “Community Risk Assessment” can be mitigated dependent on the willingness to do so at the local, state or federal level. For example, the mitigation of flood damage is basically a simple fix- don’t allow anything in the floodplain that can’t afford to be lost and when it is lost, don’t replace it. This would include all forms of infrastructure whether it be homes, highways, dams or croplands. Unfortunately, political will can rarely stand up to the simplicity of mitigation.

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

Identified Hazard	Primary Mitigation Goal
Ice Storm	Ensure that essential services can function during disaster
Highway Accident	Ensure that highway improvements result in safer conditions
Structure Fire	Protect the health and safety of the public
Winter Storm/Ice Storm	Ensure that essential services can function during disaster
Wildfire	Protect the health and safety of the public
Earthquake	Protect existing and new properties and structures
Extreme Temperatures	Protect the health and safety of the public
Ice Jam	Ensure that highway improvements result in safer conditions
High Winds	Ensure that essential services can function during disaster
Tornado	Ensure that essential services can function during disaster
Drought	Ensure that all new and existing residences are drought resistant
Invasive Species	Reduce impacts to residents and local industry and provide for the outdoor recreational safety of the public

5.2 Authorities, Policies, Programs, Resources (and the ability to expand upon these) 44CFR  
201.6(c)(3)

**Authorities of Town Officials:**

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

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

Conservation Commission: The Town Conservation Commission is responsible for inventories of the natural resources of a town and making recommendations to the Planning Commission related to conserving them. Conservation Commission members are appointed by the Selectboard.

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

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

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

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

Town Service Officer: The Town Service Officer's responsibilities are to coordinate aid for residents needing assistance during hours when State offices are closed. In many towns, this office has become redundant as State agencies have developed 24/7 emergency assistance programs.

Emergency Manager or Coordinator: By default, a towns Selectboard chair is the town's emergency management director (EMD) unless one is appointed. Many communities

retain the authorities of an EMD within the Selectboard and appoint an emergency coordinator instead. The emergency manager is responsible for the organization, administration and operation of the local emergency management organization. Emergency managers prepare local emergency operations plans, coordinate a local emergency management group and perform emergency management functions at the local level.

**Current policies, programs, resources and the ability to expand on these for identified hazards:**

**Ice Storm**

Many private residences have back-up power sources and essential Town facilities like the Fire Station and Town Garage have been retrofitted in recent years.

As population growth and housing expands along remote road corridors, increasing reliance on dependable power by the new homeowners requires changes in line maintenance. Green Mountain Power (GMP), the utility servicing the Town of Monkton, has an ongoing program of line clearing and relocation to ensure outages are kept to a minimum. In addition, recent improvements to the transmission system in northwest Vermont have provided redundant systems to bring electric power to the region.

The Town of Monkton supports continued development of a robust and redundant local electric generation and transmission system for its residents. This support is limited to that which can prove that the benefit to local residents outweighs the societal costs associated with industrial generation and transmission degradation of the local landscape.

The ability to expand on the town's activities is directly related to the availability of funds. Were funding to be unlimited, additional maintenance efforts could be made. It is also possible to require back-up power sources by ordinance though support for this type of action is practically non-existent.

**Highway Accidents**

A representative from the town sits on the local Transportation Advisory Committee (TAC), a regional group whose purpose is to prioritize potential transportation related projects within the region. This group rates high crash locations highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, added signage and reduced speeds.

Monkton has been the recipient of grant funding in the past to evaluate traffic calming strategies through Monkton Ridge and Monkton Boro. The 1997 Traffic Calming and Non-vehicular Routes for 5 Addison County Towns made recommendations for actions the Town could take to reduce speeds and address dangerous intersections. Some of which have been implemented by the community.

The community is also a participant in the VTrans High Risk Rural Roads program, currently addressing signage on Boro Hill Road.

The Town's ability to more actively mitigate highway accidents is limited. One area where activities that would mitigate some accident risks have been defined is in the traffic calming study of 1997. At the time of its release, some recommendations in the study were considered to be too radical for the then sleepy hamlets. While some basic changes were made to limit speeds, the populace opposed the more major changes involving rehabilitation of intersections and speed humps.

### **Structure Fire**

Installation of dry hydrants at water supply locations can increase the availability of and speed in which water can be accessed for firefighting purposes. The Town of Monkton supports installation of these hydrants as funding permits and suitable locations can be identified.

The ability to increase fire resistance in new construction is technically feasible at this time. The wholesale lack of building codes in residential construction has a long history in Vermont as only a few communities have adopted any codes. It is within the ability of the town planning commission and Selectboard to adopt national codes but the political will to do so is nonexistent in the local populace.

Actions identified under the Drought hazard would also mitigate structure fire and wildfire risk in future developments.

### **Severe Snow Storm**

Mitigation activities by power companies have re-routed many of the remote lines along town highways since a 1998 ice storm and an increased pruning effort has reduced the impact of a wind driven blizzard event would it happen today.

The Town of Monkton generally mitigates its severe snow storm risk through preparedness activities in the form of appropriately sized equipment and training. The periodic cutting of brush along town highways also mitigates the effects of large snow events by reducing their ability to act as snow fence dropping windblown snow into the town highway system.

All improvements to the road system take into account ease of snow removal in design.

As identified in the structure fire section above, building codes requiring roof design that will support a heavy snow load could be legislated at the local level. While possible, this approach is politically unfeasible in communities such as Monkton which have never had building codes.

### **Wildfire**

Monkton has an active fire warden who requires permits prior to any outdoor burning in the town. This process includes a site visit at the proposed burn site and a subsequent issuance of a permit. Enforcement is usually limited to a warning if the fire seems lit out of ignorance and can result in fines if the fire department is called out.

The town has no guidelines for home construction in place that would limit the risk to wildfire in Monkton. Actions taken as described above, serve to limit the setting of uncontrolled outdoor fires and result in an overall limited risk. In addition, fire ponds

required as an impact assessment should mitigate wildfire fire risk in future developments.

If the support is present, fire ponds required as part of overall development design could also be required to be built with dry hydrants in place.

### **Earthquake**

Despite the probability of an earthquake within the next 50 years, most town residents do not even attempt to mitigate its hazard.

The Town of Monkton has also not historically identified earthquake as a hazard it feels is imminent enough to justify much in the way of mitigation actions. However, safety reviews of the school and town buildings are possible including identification of hazards which might be associated with earthquake risk.

### **Extreme Temperatures**

The Town of Monkton currently does little in the way of mitigating the effects of extreme temperatures on town residents. The Town Service Officer does keep a list of vulnerable residents (primarily elderly) that could be used to identify those who may be at greatest risk to extreme temperatures.

As extreme temperatures become more common in the community, additional outreach activities could be undertaken to identify vulnerable populations and a “check your neighbor” program could be implemented. While warming shelter operation is possible during cold snaps, cooling shelters could also be made available.

### **Ice Jam**

The Town of Monkton does not specifically address ice jams as hazards that are being mitigated. Ice jam hazards, however, are slowly being removed due to flood mitigation actions which are increasing the size of culverts townwide. The future replacement of the Lime Kiln Road and Tyler Bridge Road bridges will be constructed to pass bank-full width stormwaters and as an added benefit, will also reduce ice jam risks at those locations.

### **High Winds**

Residents of the Town generally do not recognize high wind as a hazard which can be mitigated with the exception of the effects previously discussed under Ice Storm risks.

Newly constructed buildings may have tie downs between roof and side walls but no building codes exist within the community that require construction to any particular standard.

Where high wind hazards have been recognized, it is usually a function of damage that might be caused if a tree were to be blown over and its effect on a residents’ home. For this reason, some trees are removed from the landscape to reduce their vulnerability to high wind events. The Town of Monkton supports removal of dead and hazardous trees in the town right-of-ways to mitigate the hazards associated with their falling either on town highways or on power lines.

Since the vulnerabilities associated with High Winds are, in many cases, the same as for an Ice Storm, similar actions could be taken as well as adoption of building codes which would require roof tie downs. The ability take some of these actions does exist but the political will is virtually nonexistent.

### **Tornado**

As in the case of High Winds, most residents of Monkton do not recognize Tornado as a hazard they must mitigate. The Town government also does not intentionally mitigate for tornado. Fortunately, much of what is being done to address high wind events is the same as would be viable for Tornadoes.

In general, removal of weak trees is the primary action which will help mitigate some of the damages that would be expected from a tornado. The town also has the ability to raise the residents level of awareness through education by supplying informative material to its residents. As has been identified in other vulnerabilities, the lack of any standard building codes contribute to the risks associated with Tornadoes but the desire for adoption of such standards does not exist. The community feels the added security that would be the result of stringent building codes is not significant enough to remove the “right to build as I please” from residents bundle of property rights.

### **Drought**

Most homeowners with shallow wells have learned to live with the inconvenience of dry spells by purchasing bottled water and using public toilets and laundries for the short periods they would be without a dependable water supply. When the inconvenience has become too much, many of these homeowners have mitigated the problem by drilling deep wells. Increasingly, home mortgages are requiring a dependable deep well water supply as a condition of a loan.

Recent work by citizen volunteers, supported by the town and the State Geologist has confirmed and vetted information on existing private wells in town. Analysis of this confirmed data will potentially assist in identification of underground aquifers which could be tapped during drought conditions.

Agricultural activities highly dependent on water such as fruit and vegetable crops can be severely impacted by lack of rain. Most of these businesses have mitigated the effects of periodic droughts by providing irrigation systems. Other farms, dependent on crops to feed livestock rather than humans, are highly impacted by low water supplies and may be dependent on a USDA disaster declaration to find relief.

Reduced water supplies also impact the community’s fire fighting capabilities. Since no public water supply is available, the contract fire department is highly dependent on surface water supplies for fire fighting. The Monkton Volunteer Fire Department is active in installing dry hydrants in deep water ponds and streams to make access to water easier within the Town. As housing continues to expand into rural areas, the potential lack of a dependable water supply for fighting fire is becoming an issue.

As a mitigation measure shared with structure fire and wildfire, future development may need to be required to provide fire ponds as part of an impact assessment. Monkton's current subdivision regulations call for "adequate" water supply to be provided for any subdivision.

### **Invasive Species (Insects, Plants)**

The Town of Monkton has an active tree warden appointed annually to oversee the publicly owned trees located in the Town's right-of-way. Unhealthy or hazardous trees are removed on a regular basis. Careful watch of these trees may indicate the presence of Emerald Ash Borer, Asian Long-horned Beetle or others. Any drastic increase in tree deaths due to invasives may need to be budgeted for separately from the highway budget should the need arise.

Biting insects and the diseases they carry are not currently officially addressed by the Town of Monkton which has a high percentage of its land mass in frequently flooded soils and abandoned farmlands. These lands are home to insects, some of which also carry arboviruses. In other parts of the state where the disease risk is higher, towns have joined together to create insect control districts which primarily spray for mosquitoes as a nuisance. The ability to join or create such a district with shared spray costs is possible should these hazards rise in priority.

Roadside invasive plants are spreading rapidly throughout town. The Town currently does not address this spread through use of recommended roadside mowing schedules. This seems to be the best treatment known at this point short of an active herbicide spray program to rid or reduce the spread of these plants.

Active programs to combat the impacts of these species are a possibility though the benefit vs. cost equation is often unjustified.

### **5.3 Project Prioritization Process**

Projects and actions included in Section 5.2 are generally supported by the Town of Monkton or regional and State agencies where noted. The Town encourages its residents to adopt mitigation actions which could protect their personal property by making educational materials available to residents. Many of these potential actions are contained in Annex C as mitigation measures for individuals. Mitigation actions identified in Section 5.4, however, are considered the jurisdiction's priority mitigation actions.

The Town has established the following priorities for choosing mitigation projects: Life safety and the safety of its residents, keeping local roads and bridges open to ensure access for emergency vehicles, and protecting critical infrastructure facilities in the town. These actions/projects are constantly evaluated for benefit to the community, estimated project cost and political will to implement and will be implemented as those factors indicate. The actions identified in Section 5.4 under each hazard have passed a preliminary evaluation utilizing those general concepts by the hazard mitigation committee, and are listed in their order of priority. Before undertaking these projects, they will additionally be prioritized based on their feasibility and a benefit vs. cost review. A minimum C/B result of 1.0 will be required prior to any request for federal mitigation funds. Annex D identifies only some of the available programs which can help

to fund some of these actions/projects. All projects in section 5.4 will be reviewed for progress following any local disaster declaration and will be considered annually as part of overall town budgeting.

#### 5.4 Proposed Mitigation Actions and Projects by Hazard Type 44CFR 201.6(c)(3)(ii)

In developing the following list of proposed mitigation actions and projects, care was taken to include only those projects which could be considered reasonable and feasible based primarily on cost and political willingness. The town will maximize 406 mitigation opportunities whenever possible when making repairs to P/A eligible damages during a declared disaster.

Each project in this action plan includes an estimated cost, perceived benefits, possible funding sources, the lead person or agency responsible for completion of the project and an estimated timeframe for project initiation

#### **Ice Storm**

In future requests for Right of Way usage for maintenance purposes, the Town will normally grant access. Due consideration in granting these permissions will be given when such access will adversely impact scenic corridors and residents desires to keep the beauty of tree-lined streets and roads.

*Estimated cost: \$0*

*Source of Funds: None needed*

*Possible Benefits: Reduced vulnerability associated with falling trees*

*Responsibility: Selectboard*

*Timeframe: Q2 2017-Q2 2021*

Acquire back-up power capacity for the Monkton Central School as funding becomes available.

*Estimated cost: \$15,000-\$20,000*

*Source of Funds: Town General Fund, HMGP*

*Possible Benefits: Provide a viable warming shelter and EOC viability*

*Responsibility: Emergency Manager*

*Timeframe: Q3 2017 or as grant funds are available*

#### **Highway Transportation Accidents**

The Town has identified the following high crash locations on the highway system and supports mitigation of the hazard in any future construction/reconstruction activities:

- The intersection between Monkton Ridge and States Prison Hollow Road has been identified as location with conflicting traffic patterns. The town will review the 1997 recommendations for possible implementation including a stop sign and additional fog line to clarify the appropriate routes

*Estimated cost: Ranging from \$500 to \$50,000*

*Source of funds: Town highway budget VTrans town highway grants*

*Possible benefits: Reduce confusion and resultant accident frequency*

*Responsibility: Joint Selectboard and Highway Dept.*

*Timeframe: Q2, 2017- Q2 2018*

- The stretch of the Bristol Road through “Meaders Swamp” is a high crash location and efforts should be taken to reduce that risk. The town will pursue cost effective safety measures which could be applied to this location.

***Estimated cost: Less than \$5,000***

***Source of funds: Town highway budget, High Risk Rural Roads program***

***Possible Benefits: Reduction in accidents related to ice on road***

***Responsibility: Selectboard and Highway Dept.***

***Timeframe: Q 3, 2018 – Q3 2020***

- Tyler Bridge Road is currently a loitering location for younger drivers who routinely use straight stretches for speeding. The town will explore additional safety treatments and increased Sheriff patrols at this location.

***Estimated cost: \$2,000+***

***Source of funds: Town highway budget and General Fund***

***Potential Benefits: Increased safety to drivers and reduced suspected drug deals***

***Responsibility: Joint Selectboard and Highway Dept.***

***Timeframe: Q2, 2017 – Q3 2018***

### **Structure Fire**

The Town supports efforts by the fire department to install dry hydrants throughout town.

***Estimated cost: None additional beyond annual FD support***

***Source of funds: Federal Rural fire protection grants and town FD funds***

***Possible Benefits: Increased water for firefighting, and better ISO rating***

***Responsibility: MVFD***

***Timeframe: Q2, 2018 or as grant funds are available***

The Town supports review of possible fire pond installations in the next planning commission zoning bylaw rewrite to support water availability in new developments.

***Estimated cost: \$2,000 as part of an overall rewrite***

***Source of funds: Municipal planning grants.***

***Possible Benefits:***

***Responsibility: Joint Selectboard and Planning Commission***

***Timeframe: At next zoning rewrite***

### **Severe Snow**

The Town has historically mitigated the effects of winter storms through the annual funding of the highway crew and its equipment. While an eye is always kept open for new approaches and equipment options, no actions are currently required.

The Town has identified installation of back-up power for the school and Town Office as important to allow continued operations in the event of a severe winter storm. This has previously been identified and evaluated in the Ice Storm section.

Install snow fencing annually at Huizenga Hill and at the Fire Station/Post Office to prevent drifting.

***Estimated cost: \$1,000 annual cost***

***Source of funds: Town highway budget***

***Possible Benefits: Reduced snow clearing expenses, reduced road closures***  
***Responsibility: Joint Town Highway Dept and Selectboard***  
***Timeframe: Q4, 2017 ongoing (if results are seen)***

Manage vegetation in the ROW to minimize/allow space for heavy/wet snow events

***Estimated cost: \$5,000 annual cost***  
***Source of funds: Town highway budget***  
***Possible Benefits: Reduced snow clearing expenses, reduced road closures***  
***Responsibility: Joint Town Highway Dept and Selectboard***  
***Timeframe: Q2, 2017 Ongoing***

Purchase and install a generator at the Town Office for use as an EOC during bad snow events.

***Estimated cost: \$5,000-\$7,000***  
***Source of Funds: Town General Fund, HMGP***  
***Possible Benefits: Provide a viable EOC during power outages***  
***Responsibility: Emergency Manager***  
***Timeframe: Q3 2017 or as grant funds are available***

### **Wildfire**

The Town supports the fire warden system requiring outdoor burn permits prior to any outdoor burning.

***Estimated cost: None***  
***Source of funds: Town General Fund***  
***Responsibility: Joint Selectboard and Fire warden***  
***Timeframe: Q2 2017 ongoing***

The Town believes it is the homeowner's responsibility to mitigate their susceptibility to wildfire through "firewise" practices. The town will support education in this area by providing educational materials in the town office.

***Estimated cost: None to town***  
***Source of funds: Government printing office***  
***Possible Benefits: Increased public awareness leading to better preparedness***  
***Responsibility: Town Clerk/ACRPC***  
***Timeframe: Q2, 2017 ongoing***

### **Earthquake**

The Town believes it is the responsibility of private homeowners to be prepared for earthquakes. The town generally believes that building construction standards are the responsibility of each private homeowner.

The Town feels education is the key to preparing private homes for an earthquake and will make earthquake education materials available at the town office when available.

***Estimated cost: None to town***  
***Source of funds: Government Printing Office***  
***Possible Benefits: Increased public awareness leading to better preparedness***  
***Responsibility: Town Clerk/ACRPC***  
***Timeframe: Q2, 2017 ongoing***

The Town believes its time is best spent conducting safety reviews of town-owned buildings to identify hazard vulnerabilities.

*Estimated cost: None to town*

*Source of funds: None Needed*

*Possible Benefits: Reduced risk in public buildings and increased awareness*

*Responsibility: Town Emergency Manager, MVFD*

*Timeframe: Q2, 2017 – Q4 2017*

The Town anticipates the safety reviews will identify unanchored book stacks at the library and would propose to alleviate that problem.

*Estimated cost: Under \$1,000*

*Source of funds: Town General Fund or Library funds*

*Possible Benefits: Reduced risk of falling stacks in public library*

*Responsibility: Town Emergency Manager, MVFD*

*Timeframe: Q3, 2017*

### **Extreme Temperatures**

The Town generally believes it is the responsibility of private homeowners to be prepared for extreme temperatures.

The town recommends a current list of vulnerable populations be kept and will explore programs which encourage “neighbor helping neighbor” activities.

*Estimated cost: None to town*

*Source of funds: None Needed*

*Possible Benefits: Increased resiliency via neighbor helping neighbor*

*Responsibility: Town Emergency Manager and Town Service Officer*

*Timeframe: Q2, 2017 ongoing*

### **Ice Jam**

The Town believes its current program of upgrading culverts and bridges as they are replaced will mitigate much of the Ice Jam issues in town.

### **High Winds**

The town road crew, with assistance from the tree warden, currently removes dead and dying trees from its right of way as part of normal maintenance. This is ongoing work which requires no new actions.

### **Tornado**

Because tornados are essentially extremely high winds rotating a defined center, the actions recommended for high winds will also help to mitigate tornado damage.

The Town believes it is the homeowner’s responsibility to mitigate their susceptibility tornado should they desire. The town will support education in this area by providing educational materials in the town office.

*Estimated cost: None to town*

*Source of funds: Government printing office*

*Possible Benefits: Increased awareness and resultant actions*

*Responsibility: Town Clerk/ACRPC*

*Timeframe: Q2, 2017 ongoing*

## **Drought**

The town believes the State of Vermont's water/wastewater rules will likely help mitigate the impacts of future droughts.

Town volunteers have recently completed a location confirmation/review of private wells in the community. This new data when combined with surficial geology may assist in future well production estimates and the town encourages the further development of this data.

*Estimated cost: None to town*

*Source of funds: Volunteer match*

*Possible Benefits: Better identification of aquifers and identified future wells*

*Responsibility: VT State Geologist and town volunteers*

*Timeframe: Q2, 2017 As project funding is found by the State*

## **Insect-Borne Illness**

The Town believes it has a responsibility to its residents to apply adequate insect repellent to limit exposure to biting insects.

The Town believes its residents should be responsible for their own safety and encourages use of appropriate repellants and behavior patterns which reduce the likelihood of mosquito bites through education.

*Estimated cost: None to town*

*Source of funds: VT Dept Health printing*

*Possible benefits: Reduced exposure to insect carrying diseases*

*Responsibility: Town Clerk/ACRPC*

*Timeframe: Q2, 2017 ongoing*

The Town supports the State of Vermont's efforts to trap and identify tree damaging invasive insects. They support citizen efforts to become bug spotters as an added surveillance method.

*Estimated cost: None*

*Source of funds: Town General Fund*

*Possible benefits: Removal of impacted trees limits host availability*

*Responsibility: Town Tree warden*

*Timeframe: Q2, 2017 ongoing*

The Town will explore roadside mowing techniques which may reduce spread of unwanted invasives along roadsides

*Estimated cost: up to \$5,000 annually in additional mowing costs*

*Source of funds: Town Highway Budget*

*Responsibility: Town Selectboard, Highway Dept.*

*Timeframe: Q2, 2017 – Q3 2021*

## **6. Plan Maintenance Procedures**

Any Hazard Mitigation Plan is dynamic and should not be fixed. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan will be updated at a minimum every five years in accordance with the following procedure:

### **6.1 Plan Review/Update Process (5 year Cycle) 44CFR 201.6 (c)(4)(i) and 44CFR 201.6 (c)(4)(iii)**

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

### **6.2 Programs, Initiatives and Projects Review**

Although the plan should be reviewed in its entirety every five years as described above, the Selectboard will monitor and evaluate its goals, strategies and actions/projects annually as the town budget is created. Creation of the town budget is a public process which takes place in January of each year when the town Selectboard develops the next year's budget based on known needs and incorporating appropriate public input. This review will ensure that progress

will be reviewed and actions/projects either added or removed from the towns work plan based on changing local needs and priorities. In creation of the municipal plan by the planning commission, concepts, goals and strategies from this plan will be used to inform the development of that plan and incorporated into that plan when appropriate.

### 6.3 Post-Disaster Review Procedures

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

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

**7. CERTIFICATE OF ADOPTION**

**TOWN OF MONKTON, VERMONT SELECTBOARD ADOPTION RESOLUTION**

**Town of Monkton, Vermont Single Jurisdiction All-Hazards Mitigation Plan**

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

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

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

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

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

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

1. The **Town of Monkton, Vermont Single Jurisdiction All-Hazards Mitigation Plan** is hereby adopted as an official plan of the Town of Monkton, Vermont;
2. The respective Town officers identified in the action plan are hereby directed to pursue implementation of the recommended actions assigned to them.
3. Support agencies within the Town of Monkton are also requested to implement actions assigned to them within this plan;
3. Plan maintenance procedures described in Section 6 of this plan are also adopted as part of this resolution

IN WITNESS WHEREOF, the undersigned have affixed their signatures for the Town of Monkton this \_\_\_\_ day of \_\_\_\_\_ 201\_\_.

\_\_\_\_\_

Selectboard Chair

\_\_\_\_\_

Selectboard Member

\_\_\_\_\_

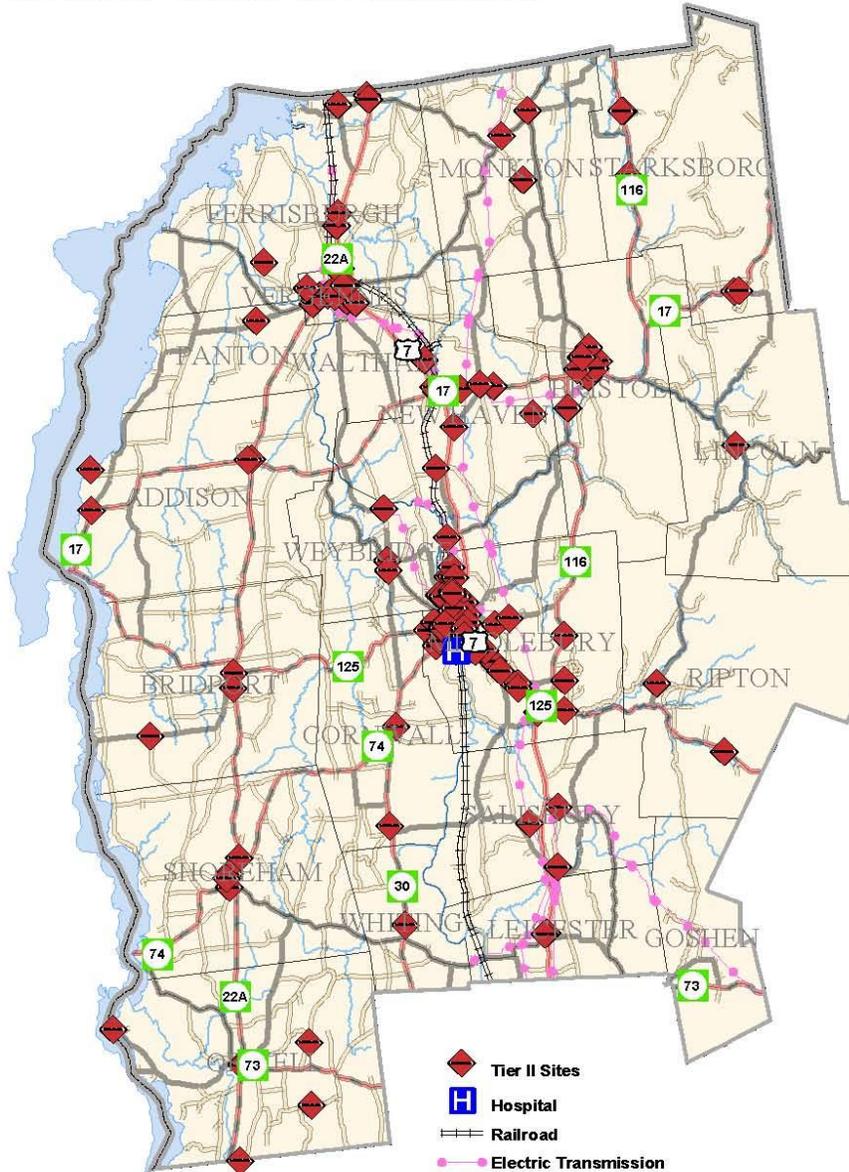
Selectboard Member

ATTEST:

\_\_\_\_\_

**Annex A  
Regional Maps**

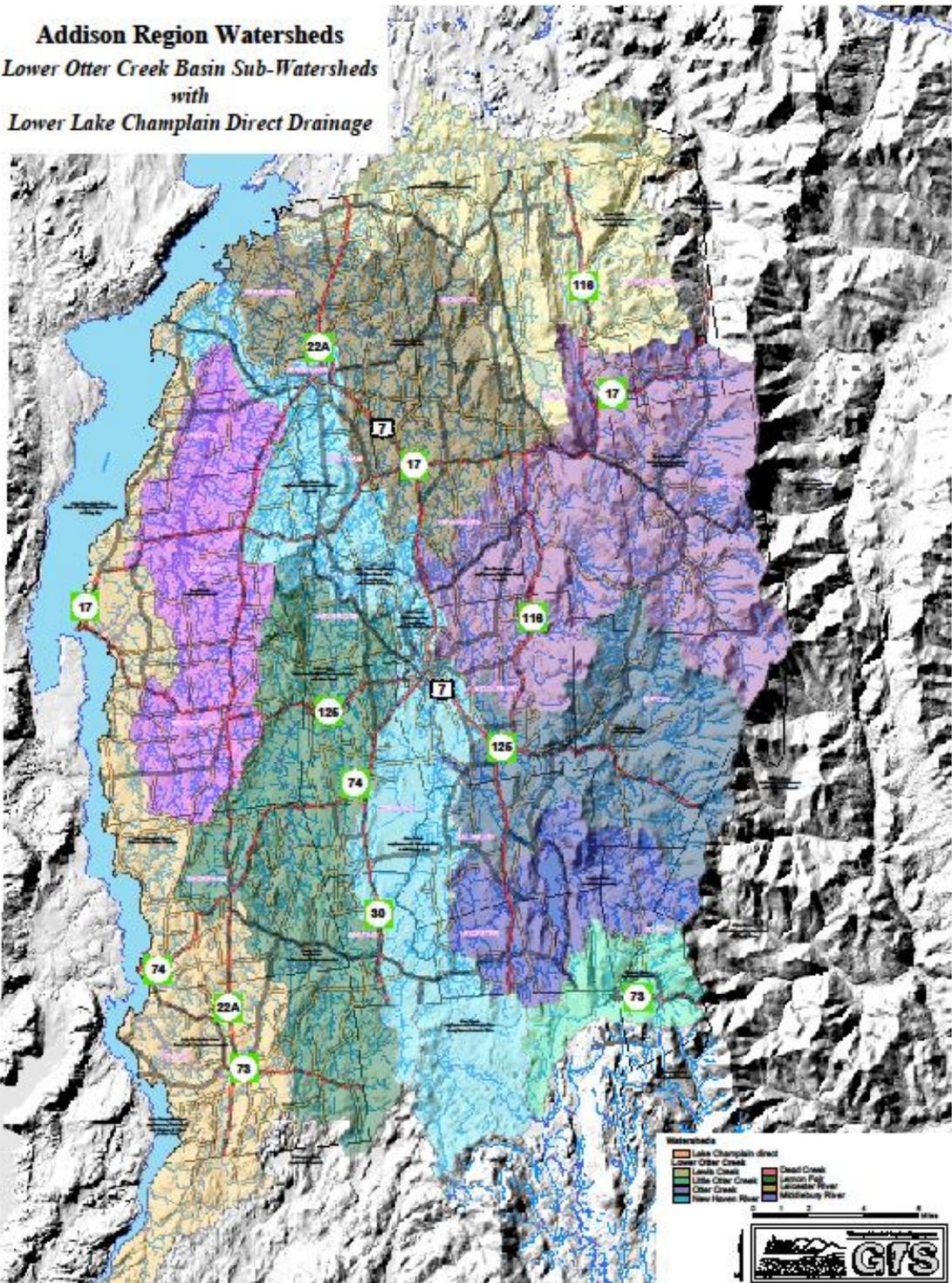
**Addison Region  
Hazardous Material Locations**



Source:  
EPCRA Tier II Reports, 2008.

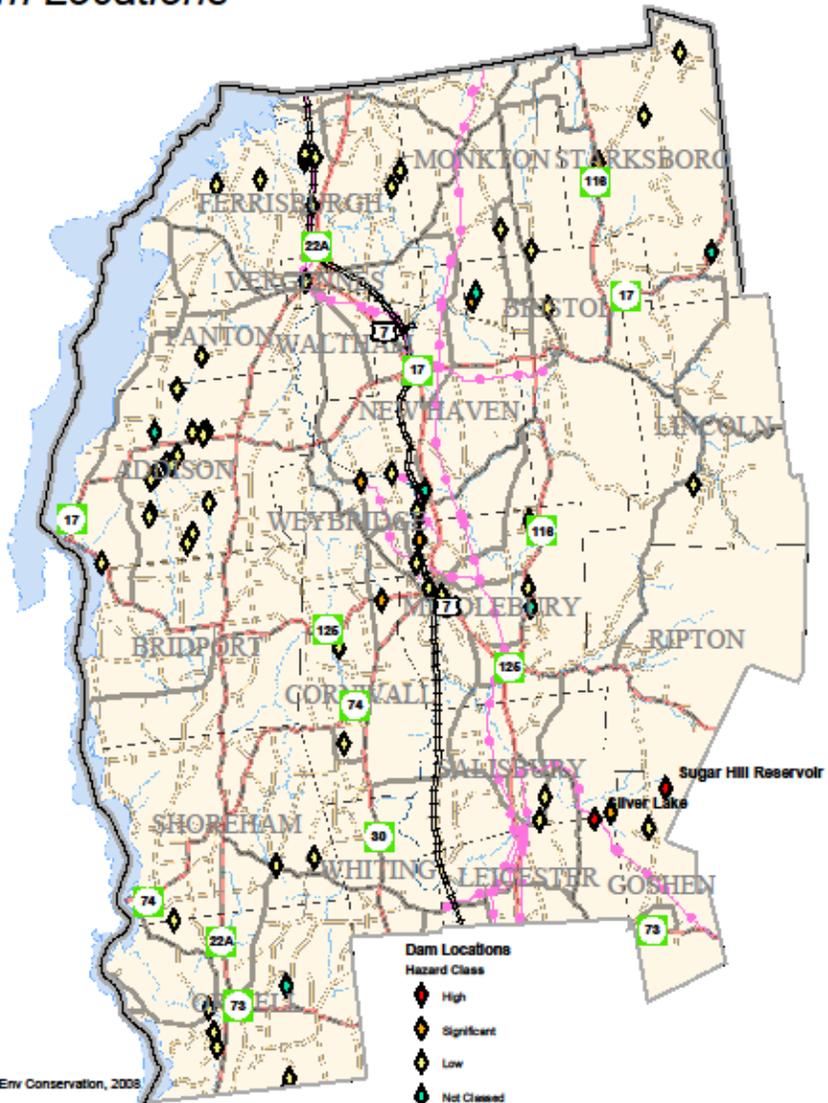
ACRPC 7/08

**Addison Region Watersheds**  
*Lower Otter Creek Basin Sub-Watersheds*  
with  
*Lower Lake Champlain Direct Drainage*



ACRWC 0008

# Addison Region Dam Locations



Source:  
Vermont Dept Env Conservation, 2008

High - A dam where failure or mis-operation will probably cause loss of human life.

Significant - A dam where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities.

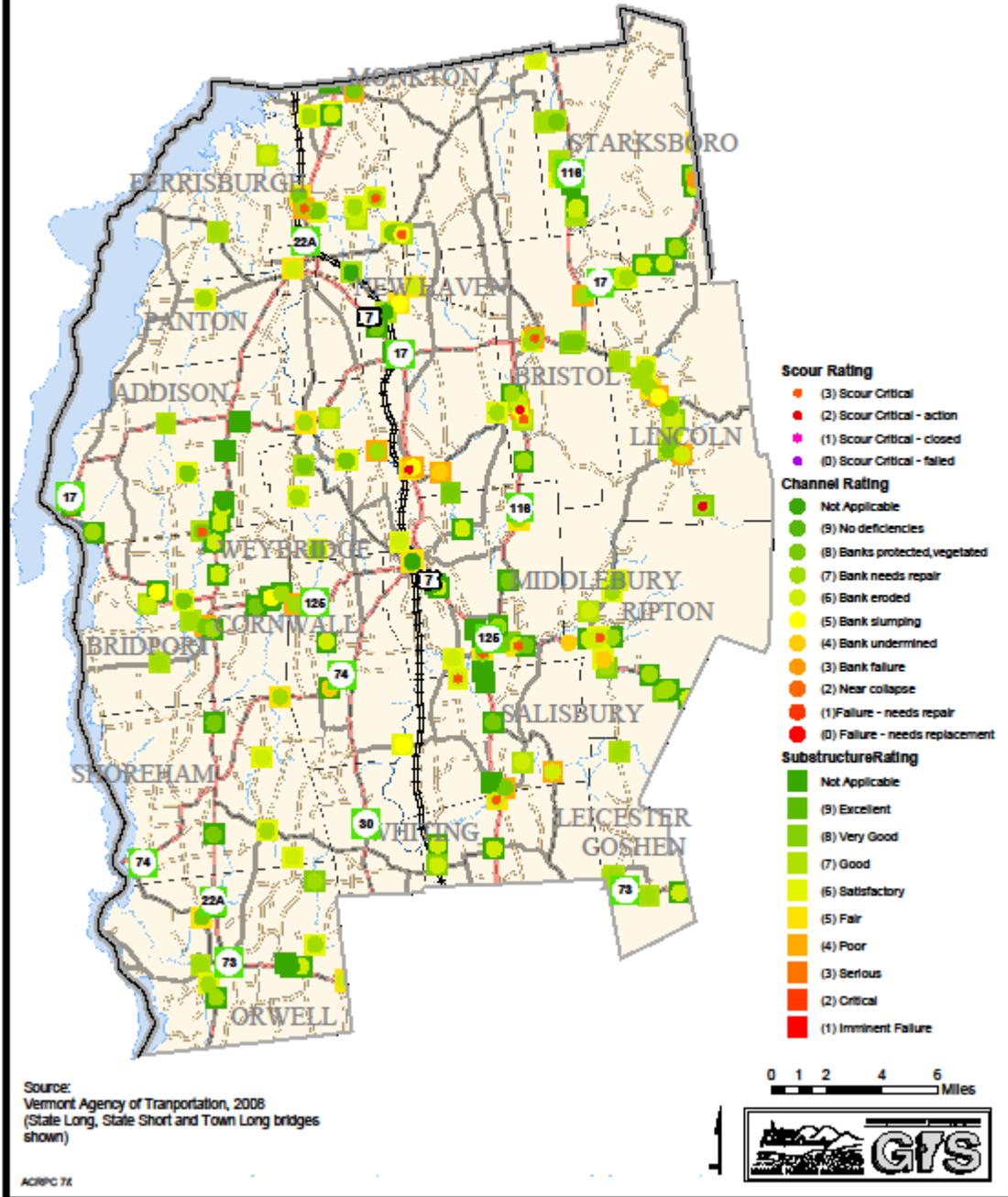
Low - A dam where failure or mis-operation results in no probable loss of human life and low economic and/or environmental loss. Losses are principally limited to the owner's property.

- Dam Locations**
- ◆ High
  - ◆ Significant
  - ◆ Low
  - ◆ Not Classed
- Railroad**
- Railroad
- Electric Transmission**
- Electric Transmission
- Road System**
- US Highway
  - State Route or Class 1
  - Town Class 2
  - Town Class 3



# Addison Region

## Bridge Locations with fluvial associated ratings



**Annex B**  
**Local Documents:**  
**Local Road and Bridge Standards**

Handbook for Local Officials

①

January 23, 2013

**TOWN ROAD AND BRIDGE STANDARDS**  
**TOWN OF MUNKTON, VERMONT**

The Town of MUNKTON hereby adopts the following Town Road and Bridge Standards which shall apply to the construction, repair, and maintenance of all town roads and bridges.

The standards listed here are considered minimum and apply to construction projects and repair and maintenance activities. The standards include management practices and are designed to: ensure the safety of the traveling public, minimize damage to road infrastructure during flood events, and enhance water quality protections by minimizing sediment delivery to surface waters and/or wetlands.

The select board reserves the right to modify the standards for a particular project or repair or maintenance activities where, because of unique physical circumstances or conditions, there is no possibility that the project or activities can be completed in strict conformance with these provisions. Any modifications to the standards must be done in a manner that serves the underlying intent of the management practice, be it public safety, flood hazard avoidance, or water quality protection. Fiscal reasons are not a basis for modification of the standards. Questions about modifications to the standards should be directed to the VTrans District Office.

Municipalities must comply with all applicable state and federal approvals, permits and duly adopted standards when undertaking road and bridge activities and projects.

Any new road regulated by and/or to be conveyed to the municipality shall be constructed according to the minimums of these standards. If any federal and/or state funding is involved in a project, the VTrans district office must be notified prior to any field changes taking place that would alter the original scope of work.

**Roadways**

- All new or substantially reconstructed gravel roads shall have at least a 12-inches thick processed gravel sub-base, with an additional 3 inches (minimum) top course of crushed gravel.
- All new or substantially reconstructed paved roads shall have at least a 15 inches thick processed gravel sub-base.
- All roadways shall be graded so water does not remain on the road surface. For roadways that are not super-elevated, this generally means a 2-4% ( $\frac{1}{4}$ " -  $\frac{1}{2}$ " per ft) crown for gravel roads and a 1-2% ( $\frac{1}{8}$ " -  $\frac{1}{4}$ " per ft) crown for paved roads to promote sheeting of water.
- Proper grading techniques for gravel roadways must be used to avoid creating a ridge or berm between the crown and the ditch.
- Any berm along the roadway shoulder that prevents the proper sheeting of water must be removed.

**Ditches and Slopes**

Soil exposed during ditch and slope construction, repair or maintenance must be treated immediately following the operation and temporary erosion prevention and sediment control practices must be installed and maintained during construction activities and until the ditch or slope is permanently stabilized.

The following are minimum erosion control measures. Careful attention must be given to areas vulnerable to erosion and immediately adjacent or discharging to surface waters and/or roadway drainage facilities:

- Seed and mulch all ditches with grades less than 5% when undertaking projects or repairs or maintenance activities that result in exposed soil. Vegetation must be established and monitored. If vegetation is not established within 10 days of placement, install biodegradable non-welded matting with seed.
- Stone line all new or reconstructed ditches or whenever soils are disturbed by maintenance activities with grades equal to and greater than 5%; alternatively, install stone check dams. The check dams must meet criteria outlined in the "Standards and Specifications for Check Dams," from the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control*. Specifically, dams must be placed so that the crest of the downstream check dam is at the same elevation as the base of the upstream dam.
- Create parabolic (wide "U" shaped) ditches when constructing new or substantially reconstructing ditches, rather than narrow "V" shaped ditches wherever lateral space allows. Ditches with gradual side slopes (maximum of 1:2, vertical to horizontal ratio) and a wide bottom (at least 2 feet) are preferred. Use biodegradable, non-welded matting to stabilize side-slopes where slopes are greater than 1:2 and less than 1:1 ½; apply seed and mulch to any raw or exposed side-slope if slopes are less than 1:2.
- All ditches must be turned out to avoid direct outlet into surface waters. There must be adequate outlet protection at the end of the turnout, either a structural (rock) or vegetative filtering area.
- If in the best professional engineering judgment of the VTrans Operations Division, there is a cost effective ditch treatment that will meet the intent of the management practices described above, but represents a departure from these standards, the municipality may implement the more cost effective ditch treatment alternative with the professional recommendation submitted in written form by VTrans prior to the municipality executing the work.
- When constructing new or substantially reconstructing side slopes, use appropriately sized stone armament on slopes that are 1:1½ or greater. If perennial streams are affected by the toe of slope the project must conform to the statewide Stream Alteration standards.

**Culverts and Bridges**

- Replacement of existing culverts and any new culvert must have a minimum culvert diameter of 18 inches.
- Replacement of existing bridges and culverts and any new bridges and culverts must be designed in accordance with the VTrans Hydraulics Manual, and, in the case of perennial streams, conform to the statewide Stream Alteration standards.
- All new driveway culverts must have a minimum diameter of 15 inches.
- When installing or replacing culverts, use appropriate techniques such as headwalls and wingwalls, where there is erosion or undermining or where it is expected to occur.

3

- Install a splash pad or plunge pool at the outlet of new or repaired drainage culverts where there is erosion or where erosion may occur. Splash pads and plunge pools are not appropriate for use in streams supporting aquatic life.

**Guardrails**

When roadway, culvert, bridge, or retaining wall construction or reconstruction projects result in hazards such as foreslopes, drop offs, or fixed obstacles within the designated clear-zone, a roadside barrier such as guardrail must be installed. The most current version of the AASHTO Roadside Design Guide will govern the analysis of the hazard and the subsequent treatment of that hazard.

**Access Management**

The town must have a process in place, formal or informal, to review all new drive accesses and development roads where they intersect Town roads, as authorized under 19 V.S.A. Section 1111. Towns may reference VTrans A-76 Standards for Town & Development Roads and B-71 Standards for Residential and Commercial Drives; and the VTrans Access Management Program Guidelines for other design standards and specifications.

**Training**

Town highway maintenance crews must collectively attend a minimum total of 6 hours of training per year on best road management practices. The town must keep documentation of their attendance for a period of three years.

Passed and adopted by the Selectboard of the Town of MONKTON, State of Vermont on FEB 10, 2014.

**Select Board:**

John Phillipi \_\_\_\_\_

Anna Jay \_\_\_\_\_

[Signature] \_\_\_\_\_

**Certification of Compliance  
for  
Town Road and Bridge Standards**

We, the Legislative Body of the Municipality of MONKTON certify that we have reviewed, understand, and comply with the Town Road and Bridge Standards / Public Works Specifications and Standards passed and adopted by the Selectboard City Council / Village Board of Trustees on FEB. 10, 2014.

We further certify that our adopted standards  do  do not meet or exceed the minimum requirements included in the January 23, 2013 VTrans template.

John Phillipini  
Anne Lipp  
[Signature]

Date: Feb. 10, 2014

(Duly Authorized Administrator)

## Monkton Letter of Support for Hazard Mitigation Planning



Town of Monkton

NOV 12 2013

November 7 2013  
Tim Bouton  
Addison County Regional Planning Commission  
14 Seminary Street  
Middlebury, VT 05753

Dear Tim,

At its meeting on November 7, 2013, the Selectboard of the Town of Monkton voted to support the application of the Addison County Regional Planning Commission for planning funds from the FEMA Hazard Mitigation Grant Program (HMGP). The application, if funded, will support the development of a FEMA-approved Hazard Mitigation Plan for the Town of Monkton.

Once completed, and approved by FEMA, the resultant plan will be adopted by the Selectboard as a single jurisdiction all hazards mitigation plan. We are looking forward working with you and fully support this effort to better provide for the safety of our residents into the future.

Yours,

For the Town of Monkton, Selectboard

**Town of Monkton**  
**Hazard Mitigation Planning Committee Initial Meeting**  
**Thursday, October 22. 7:00pm – 8:30pm**  
**Town of Monkton Town Office**

**Agenda:**

- 7:00 – Convene meeting/Introductions**
- 7:05 - Brief overview of the hazard mitigation planning process**
- 7:15 – FEMA Review tool**
- 7:30 - Filling out the Hazard Inventory/Risk Assessment matrix**
- 8:15 – Project brainstorming (if time allows)**
- 8:30 - Adjourn**

Town of Monkton

Hazard Mitigation Planning Committee Initial Meeting

Thursday, October 22. 7:00pm – 8:30pm

Town of Monkton Town Office

Minutes:

7:00 The initial start-up meeting of the Monkton Hazard Mitigation Planning Committee started with each attendee introducing themselves. In attendance were: Stephen Pilcher, Chair Monkton Select Board, Robert Howard, Assistant Chief, Monkton Fire Dept., Robin Hopps, Monkton Town Health Officer, Bailee Layne/Gordon, Monkton Town Service Officer, Tim Bouton, Addison County Regional Planning Commission- Facilitating

Tim then gave a brief overview of the hazard mitigation planning process and an expected timeframe. The committee will meet at least 3 times, the first to complete a hazard inventory/vulnerability assessment, the second to brainstorm possible mitigation projects, and a third as an open public meeting to elicit citizen involvement.

A handout was given to each committee member that included: An Agenda, copy of the current FEMA Review tool, a copy of bar graphs representing before and after preparedness and mitigation efforts, a copy of the Town of Monkton Risk Assessment matrix and a packet of maps (road names, road erosion risk rankings, dam locations, fault locations, GMP power distribution, river corridors and high crash locations).

Tim then led the committee through the process of filling out the Hazard Inventory/Risk Assessment (HIRA) matrix for the Town of Monkton. A new column in the matrix was included that tried to gauge the committee's overall concern for each hazard. The matrix identified ice storm and Structure fire as the highest risks in town which was mirrored by the committee's concern level. The committee was also concerned about insect-borne illness, invasive species and extreme temperatures which were not as high priority based on the matrix calculations.

At the conclusion of the HIRA session, Tim asked the committee to identify areas of town where hazards were most prevalent. He passed out maps for Highway Accident, Ice Storm, Severe Snow Storm, Ice Jam, and High Wind and asked members to highlight the general locations on those maps where these hazards seemed the worst.

The meeting recessed and the next meeting was set for November 12 starting at 7pm when the committee will try to brainstorm mitigation actions for the community.



**Town of Monkton**  
**Hazard Mitigation Planning Committee Meeting**  
**Tuesday, December 1, 6:30pm – 8:00pm**  
**Town of Monkton Town Office**

**Agenda:**

**6:30 – Convene meeting**

**6:35 – Brainstorm hazard mitigation projects**

**7:45 – Determine extent for hazards based on committee memory**

**8:00 - Adjourn**

Town of Monkton

Hazard Mitigation Planning Committee Initial Meeting

Tuesday, December 1, 6:30pm – 8:00pm

Town of Monkton Town Office

Minutes:

6:30 The second meeting of the Monkton Hazard Mitigation Planning Committee was delayed by trying to print the draft plan as it now stands. In attendance were: Stephen Pilcher, Chair Monkton Select Board, Robert Howard, Assistant Chief, Monkton Fire Dept., Lee Mahoney, Monkton Planning Commission, Bailee Layne/Gordon, Monkton Town Service Officer, Tim Bouton, Addison County Regional Planning Commission- Facilitating

Tim began the meeting by letting attendees know that this would be a brainstorming session to try to identify projects which could be undertaken to mitigate the hazards identified at the last meeting. Projects identified were:

Ice storm: Generator for School, support GMP in tree pruning around power lines, continue roadside brush clearing by town crew under power lines, encourage an active tree warden to annually identify dead-diseased-dying trees for removal, Identify vulnerable populations as a preparedness measure. Committee members also identified the 1998 ice storm as the worst they had seen with ice  $\frac{3}{4}$  inch thick and power out for up to 2.5 weeks. Without power, water was the main issue.

Highway Accidents: Additional signage and fog lines at the intersection of State's Prison Hollow Rd. and the Bristol road, selective thinning of evergreen trees and installation of guardrails along Meader's Swamp. Tyler Bridge Road was discussed and the most reasonable solution was agreed to be additional sheriff patrols. Committee members identified the most serious extent of highway accidents was a fatality and the committee identified three such accidents since 1994 as well as several serious but not fatal accidents requiring extended efforts to extricate the person.

Structure Fire: General financial support of the fire dept, fire safety training at open houses at the fire station(use of extinguisher, extinguisher refill, general safety education), add additional dry hydrants, survey and map the current hydrants to identify gaps, planning commission addressing fire ponds in new developments. Tim also brought up the idea of making sure driveways and new roads are constructed adequate to service emergency vehicles. The extent of structure fires has averaged one per year with the majority "saved". The minority result in either a totally destroyed building or one so infused with smoke that it must be removed.

Severe Snow: Installation of snow fences along "Huizenga Hill" and State's Prison Hollow Rd. near the fire station, Installation of a generator at the school, new trucks purchased with snow removal in mind. The worst snow event in memory occurred in 2006 when two storms (Valentine's Day and St. Patrick's Day) dropped 30+inches of snow and a barn roof collapsed due to the weight. One animal needed to be put down. December of 2014 saw a storm with less snow but heavier which caused downed trees and power outages lasting 3 days.

Wildfire: An active Fire Warden, educational brochures, fire house open house. The worst was when the top of Hogback Mountain burned for 2.5 weeks before extinguishment.

Earthquake: Tie down book shelves in library, Brochures in town hall. Worst seen was 4.1 basically resulted in rumbling and minor shaking.

Extreme Temperatures: List of Vulnerable populations, as well as free and reduced lunch kids because when school is closed due to weather, many do not have food. Winter of 2014-15 saw -30 temperatures with some frozen pipes. Highest temperatures recollectd within the committee was 102 degrees date unknown.

High winds: Tree pruning, education. 75mph gusts were seen during a storm in 2005. Outdoor furniture blown away, temporary garage blown away, roof shingles blown off.

Lightning: Put lightning rods on public buildings if they are not present. Common occurrence, multiple strikes are possible in a short period. No damage recollectd.

Flash Flooding: increased culvert size on Piney Woods Rd. – no events recollectd

Inundation flooding: Beaver deceivers, raise Hollow Rd. below the rec. field. Inundation is common following heavy rain but damage is minor Cobble Creek Nursery, Hollow Rd.

Drought: education, occasional droughts 1997-98 and 2000 several people without deep wells lost water. Springs and dug wells dried up.

Adjourn 8:00pm



## Annex C

### Common Mitigation Measures by Hazard Type

Mitigation measures for “all-hazards” have been adapted from a flood mitigation approach developed by French Wetmore, of Wetmore and Associates in Park Forest, Illinois, into six categories:

- Prevention – measures intended to keep a hazard risk problem from becoming worse. They ensure that future development does not increase hazard losses. Examples would include: Planning and Zoning, Open space preservation, Land Development regulations, Storm water management.
- Property Protection – measures used to modify buildings, or their surroundings, subject to hazard risk rather than prevent the hazard from occurring. Examples are: Acquisition of vulnerable properties, Relocation from hazard prone areas, Rebuild or modify structures to reduce damage by future hazard events, Flood-proofing of flood-prone buildings.
- Natural Resource Protection – measures intended to reduce the intensity of hazard effects as well as improve the quality of the environment and wildlife habitats. Erosion and sediment control and Wetlands protection are examples.
- Emergency Services – measures that protect people before and after a hazard event. That would include: Warning, Response, Critical facilities protection, Health and safety maintenance.
- Structural Projects – measures that involve construction of man-made structures to control hazards. Some examples would include: dams, reservoirs, debris basins, channel modifications, storm sewers, elevated roadways.
- Public Information – activities intended to inform and remind people about hazardous areas and the measures to avoid potential damage and injury. Examples are: Outreach projects, Real estate disclosure, Technical assistance, Community education programs.

The following suggested Mitigation Measures were taken from the website of the Northeast States Emergency Consortium (NSEC).

#### ALL HAZARDS

- Map vulnerable areas and distribute information about the hazard mitigation strategy and projects.
- Provide information to contractors and homeowners on the risks of building in hazard-prone areas.
- Develop a list of techniques for homeowner self-inspection and implementation of mitigation activities.
- Organize and conduct professional training opportunities regarding natural hazards and hazard mitigation.
- Distribute NOAA weather radios.
- Develop sound land use planning based on known hazards.
- Enforce effective building codes and local ordinances.
- Increase public awareness of community hazards.

- Provide sites that are as free as possible from risk to natural hazards for commercial and industrial activities.
- Consider conservation of open space by acquisition of repetitive loss structures.
- Consider conservation of open space by acquisition of areas identified as “vulnerable or at risk”
- Ensure a balance between residential growth, conservation of environmental resources through a detailed analysis of the risks and vulnerability to natural hazards.
- Conduct joint planning and sharing of resources across regions, communities, and states.
- Establish a hazard mitigation council.
- For future proposed development design guidelines, incorporate hazard mitigation provisions, including improved maps.
- Consider adding a "safe room" requirement for all new buildings.
- Establish incentives to encourage business owners and homeowners to retrofit buildings with hazard resistant features.
- Teach disaster and hazard awareness in schools.

## **FLOOD**

### **Flood Hazard Mitigation Measures for Communities:**

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into future land use plans through riparian corridor protection, limiting flood hazard area development, and other measures.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.
- Participate in the National Flood Insurance Program (NFIP).
- Conduct watershed geomorphic assessments.
- Encourage riparian corridor protection.

### **Flood Hazard Mitigation Measures for Individuals:**

#### *How to Protect Your Property:*

- Keep insurance policies, documents, and other valuables in a safe-deposit box. You may need quick, easy access to these documents. Keep them in a safe place less likely to be damaged during a flood.
- Avoid building in a floodplain. Some communities do not permit building in known floodplains. If there are no restrictions, and you are building in a floodplain, take precautions, making it less likely your home will be damaged during a flood.
- Raise your furnace, water heater, and electric panel to higher floors or the attic if they are in areas of your home that may be flooded. Raising this equipment will prevent damage. An undamaged water heater may be your best source of fresh water after a flood.

- Install check valves in building sewer traps to prevent flood water from backing up into the drains of your home. As a last resort, when floods threaten, use large corks or stoppers to plug showers, tubs, or basins.
- Seal walls in basements with waterproofing compounds to avoid seepage through cracks.
- Consult with a construction professional for further information if these and other damage reduction measures can be taken. Check local building codes and ordinances for safety requirements.
- Contact your local emergency management office for more information on mitigation options to further reduce potential flood damage. Your local emergency management office may be able to provide additional resources and information on ways to reduce potential damage.

## **HAZARDOUS MATERIALS**

### **Hazardous Material Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

Natural hazard events have often triggered technological hazards such as ruptured pipelines and building fires, clearly linking the natural and technological risks. Accordingly, the National Mitigation Strategy, as an all-hazards strategy, will build upon existing programs that mitigate technological hazards, and focus on the critical importance of coordination among efforts to mitigate hazards, regardless of the source of the risk.

- Recognize the dangers posed by hazardous materials.
- Identify places where hazardous materials are likely to be encountered.
- Understand when a hazard may exist.
- Contact the appropriate persons or agencies to give or receive specific hazardous materials information.
- Identify procedures to minimize personal and community exposure to hazardous materials.

Hazardous materials events can and do occur as independent events. Natural hazard events, however, have often triggered technological hazards such as ruptured pipelines and building fires, clearly linking the natural and technological risks. Accordingly, the National Mitigation Strategy, as an all-hazards strategy, will build upon existing programs that mitigate technological hazards, and focus on the critical importance of coordination among efforts to mitigate hazards, regardless of the source of the risk.

Communities can and should:

- Recognize and identify the dangers posed by hazardous materials in the community.
- Identify industries and other locations places where hazardous materials are stored and used.
- Develop a community hazardous materials emergency plan.

- Develop an early warning and notification system.
- Work with local businesses and industry to Identify procedures to minimize personal and community exposure to hazardous materials.

Hazardous Materials Hazard Mitigation Measures for Individuals: Individual and families should develop a personal plan of what to do in case of a hazardous materials accident.

*How to Plan for a Hazardous Materials Incident:*

- Learn to detect the presence of a hazardous material.
- Many hazardous materials do not have a taste or an odor. Some materials can be detected because they cause physical reactions such as watering eyes or nausea. Some hazardous materials exist beneath the surface of the ground and can be recognized by an oil or foam-like appearance.
- Contact your Local Emergency Planning Committee (LEPC) or local emergency management office for information about hazardous materials and community response plans.
- Find out evacuation plans for your workplace and your children's schools.
- Be ready to evacuate. Plan several evacuation routes out of the area.
- Ask about industry and community warning systems.
- Have disaster supplies on hand.
- Flashlight and extra batteries
- Portable, battery-operated radio and extra batteries
- First aid kit and manual
- Emergency food and water
- Non-electric can opener
- Essential medicines
- Cash and credit cards
- Sturdy shoes
- Develop an emergency communication plan. In case family members are separated from one another during a hazardous materials accident (this is a real possibility during the day when adults are at work and children are at school), develop a plan for reuniting after the disaster. Ask an out-of-state relative or friend to serve as the "family contact." After a disaster, it's often easier to call long distance. Make sure everyone knows the name, address and phone number of the contact person.

## **STRUCTURE FIRE**

### **Fire Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting driveway and water supply standards for new development.
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

The United States Fire Administration (USFA) serves as the national focus on reducing fire deaths, injuries, and property losses. In 1974, Congress passed the Federal Fire Prevention and Control Act which established the USFA and the fire research program at the National Institute of Standards and Technology (NIST). The USFA works to involve the public and private sector to reduce losses through public education, arson detection and control, technology and research, fire data collection and analysis and fire service training and education. NIST performs and supports research on all aspects of fire with the aim of providing scientific and technical knowledge applicable to the prevention and control of fires.

### **Fire Hazard Mitigation Measures for Individuals:**

#### *How to Protect Your Property:*

- Keep lawns trimmed, leaves raked, and the roof and rain-gutters free from debris such as dead limbs and leaves.
- Stack firewood at least 30 feet away from your home.
- Store flammable materials, liquids and solvents in metal containers outside the home at least 30 feet away from structures and wooden fences.
- Create defensible space by thinning trees and brush within 30 feet around your home.
- Landscape your property with fire resistant plants and vegetation to prevent fire from spreading quickly.
- Post home address signs that are clearly visible from the road.
- Provide emergency vehicle access with properly constructed driveways and roadways, at least 12 feet wide with adequate turnaround space.
- Make sure water sources, such as hydrants and ponds, are accessible to the fire department.
- Burning yard waste is a fire hazard. Check with your local fire agency on a non-emergency number for fire permit requirements and restricted burning times.
- Use fire resistant, protective roofing and materials like stone, brick and metal to protect your home. Avoid using wood materials that offer the least fire protection.
- Cover all exterior vents, attics and eaves with metal mesh screens no larger than 6 millimeters.
- Install multipane windows, tempered safety glass or fireproof shutters to protect large windows from radiant heat.
- Use fire-resistant draperies for added window protection.
- Have chimneys, wood stoves and all home heating systems inspected and cleaned annually by a certified specialist.
- Fire Alarm Safety requires checking on or installing fire alarms in your home.
- Residential sprinklers have become more cost effective for homes. Currently, they protect few homes.

#### *How to Prepare for a Fire Emergency:*

- Know how to contact fire emergency services in your area.
- Plan ahead. Make sure you and your family are prepared for a fire emergency.
- Develop and practice escape and evacuation plans with your family.
- Install smoke alarms on every level of your home. Test them monthly and change the batteries at least once a year. Consider installing the new long-life smoke alarms.

### **WINTER STORM**

## **Winter Storm Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

In addition, FEMA recommends the following actions to further protect communities from the effects of Winter Storms:

- Building code development and enforcement of snow loads
- Develop a storm water management plan for snowmelt
- Assuring adequate supplies of sand and salt
- Maintaining snow removal equipment so that it is ready to be deployed
- Retrofitting public buildings to withstand snowloads and prevent roof collapse
- Clearing roofs of excessive snow accumulations
- Develop a winter storm plan or annex to the local emergency management plan
- Develop a capability to monitor weather forecasts, conditions and warnings issued by the National Weather Service
- Identify appropriate shelters for people who may need to evacuate due to loss of electricity, heat or coastal flooding due to storm surge
- Assure that critical facilities such as police and fire stations and schools are accessible and equipped
- Clearing streets and roads of snow to assure the passage of public safety vehicles and general traffic.

## **Winter Storm Hazard Mitigation Measures For Individuals:**

### *How to Protect Your Property:*

- Make sure your home is properly insulated. If necessary, insulate walls and attic. This will help you to conserve electricity and reduce your home's power demands for heat. Caulk and weather-strip doors and windowsills to keep cold air out, allowing the inside temperature to stay warmer longer.
- Install storm windows or cover windows with plastic from the inside. This will provide an extra layer of insulation, keeping more cold air out.
- To keep pipes from freezing:
  - Wrap pipes in insulation or layers of old newspapers.
  - Cover the newspapers with plastic to keep out moisture.
  - Let faucets drip a little to avoid freezing.
  - Know how to shut off water valves.
- If the pipes freeze, remove any insulation or layers of newspapers and wrap pipes in rags. Completely open all faucets and pour hot water over the pipes, starting where they were most exposed to the cold (or where the cold was most likely to penetrate). A hand-held hair dryer, used with caution to prevent overheating, also works well.
- Consider storing sufficient heating fuel. Regular fuel sources may be cut off. Be cautious of fire hazards when storing any type of fuel.

- Before winter, be sure you install and check smoke alarms.
- Consider keeping safe emergency heating equipment:
- Fireplace with ample supply of wood.
- Small, well-vented wood, coal, or camp stove with fuel.
- Portable space heater or kerosene heater. Check with your local fire department on the legality of using kerosene heaters in your community. Use only the correct fuel for your unit and follow the manufacturer's instructions. Refuel outdoors only, and only when cool. Keep your kerosene heater at least three feet away from furniture and other flammable objects.
- When using alternative heat from a fireplace, wood stove, space heater, etc., use fire safeguards and ventilate properly. Fire hazard is greatly increased in the winter because alternate heating sources are used without following proper safety precautions.
- Install snow fences in rural areas to reduce drifting in roads and paths, which could block access to homes, barns, and animals' feed and water.
- If you live in a flood-prone area, consider purchasing flood insurance to cover possible flood damage that may occur during the spring thaw. Homeowners' policies do not cover damage from floods. Ask your insurance agent about the National Flood Insurance Program if you are at risk.

#### *How to Plan for a Winter Storm:*

- Understand the hazards of wind chill, which combines the cooling effect of wind and cold temperatures on exposed skin. As the wind increases, heat is carried away from a person's body at an accelerated rate, driving down the body temperature. "Wind chill" is a calculation of how cold it feels when the effects of wind speed and temperature are combined. A strong wind combined with a temperature of just below freezing can have the same effect as a still air temperature about 35 degrees colder.
- Service snow removal equipment before winter storm season. Equipment should be available for use if needed. Maintain it in good working order.
- Keep your car's gas tank full for emergency use and to keep the fuel line from freezing.
- Get training. Take an American Red Cross first aid course to learn how to treat exposure to the cold, frostbite, and hypothermia.
- Discuss with your family what to do if a winter storm WATCH or WARNING is issued. Designate one household member as the winter storm preparedness leader. Have him or her discuss what to do if a winter storm watch or warning is issued. Have another household member state what he or she would do if caught outside or in a vehicle during a winter storm. Everyone should know what to do in case all family members are not together. Discussing winter storms ahead of time helps reduce fear and lets everyone know how to respond during a winter storm.

## **HIGH WINDS**

### **High Wind Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs

- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

FEMA also suggests that communities further reduce their vulnerability to hurricanes through the adoption and enforcement of wind- and flood-resistant building codes. Sound land-use planning can also ensure that structures are not built in the highest hazard areas.

### **High Wind Hazard Mitigation Measures for Individuals:**

- Make a list of items to bring inside in the event of a storm. A list will help you remember anything that can be broken or picked up by strong winds. High winds, often in excess of 40 miles per hour, can turn unanchored items into missiles, causing damage or injury when they hit.
- Keep trees and shrubbery trimmed. Make trees more wind resistant by removing diseased or damaged limbs, then strategically remove branches so that wind can blow through. High winds frequently break weak limbs and hurl them at great speed, causing damage when they hit property. Debris collection services may not be operating just before a storm, so it is best to do this well in advance of approaching storms.
- Remove any debris or loose items in your yard. High winds can pick up anything unsecured, creating damage to property when the debris hits.
- Install protection to the outside areas of sliding glass doors. Glass doors are as vulnerable as windows to breakage by wind-driven objects.
- If you live in a flood plain or are prone to flooding, also follow flood preparedness precautions. Nor'easters and severe thunderstorms can bring great amounts of rain and frequently cause floods.

## **EARTHQUAKE**

### **Earthquake Hazard Mitigation Measures for Communities:**

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

FEMA's Earthquake Program has four basic goals directly related to the mitigation of hazards caused by earthquakes. They are to:

- Promote Understanding of Earthquakes and Their Effects.
- Work to Better Identify Earthquake Risk.
- Improve Earthquake-Resistant Design and Construction Techniques.
- Encourage the use of Earthquake-Safe Policies and Planning Practices.

### **Earthquake Hazard Mitigation Measures for Individuals**

*How to Protect Your Property:*

- Bolt bookcases, china cabinets, and other tall furniture to wall studs. Brace or anchor high or top-heavy objects. During an earthquake, these items can fall over, causing damage or injury.
- Secure items that might fall (televisions, books, computers, etc.). Falling items can cause damage or injury.
- Install strong latches or bolts on cabinets. The contents of cabinets can shift during the shaking of an earthquake. Latches will prevent cabinets from flying open and contents from falling out.
- Move large or heavy objects and fragile items (glass or china) to lower shelves. There will be less damage and less chance of injury if these items are on lower shelves.
- Store breakable items such as bottled foods, glass, and china in low, closed cabinets with latches. Latches will help keep contents of cabinets inside.
- Store weed killers, pesticides, and flammable products securely in closed cabinets with latches, on bottom shelves. Chemical products will be less likely to create hazardous situations from lower, confined locations.
- Hang heavy items, such as pictures and mirrors, away from beds, couches, and anywhere people sit. Earthquakes can knock things off walls, causing damage or injury.
- Brace overhead light fixtures. During earthquakes, overhead light fixtures are the most common items to fall, causing damage or injury.
- Strap the water heater to wall studs. The water heater may be your best source of drinkable water following an earthquake. Protect it from damage and leaks.
- Bolt down any gas appliances. After an earthquake, broken gas lines frequently create fire hazards.
- Install flexible pipe fittings to avoid gas or water leaks. Flexible fittings will be less likely to break.
- Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects. Earthquakes can turn cracks into ruptures and make smaller problems bigger.
- Check to see if your house is bolted to its foundation. Homes bolted to their foundations are less likely to be severely damaged during earthquakes. Homes that are not bolted have been known to slide off their foundations, and many have been destroyed because they are uninhabitable.
- Consider having your building evaluated by a professional structural design engineer. Ask about home repair and strengthening tips for exterior features, such as porches, front and back decks, sliding glass doors, canopies, carports, and garage doors. Learn about additional ways you can protect your home. A professional can give you advice on how to reduce potential damage.
- Follow local seismic building standards and safe land use codes that regulate land use along fault lines. Some municipalities, counties, and states have enacted codes and standards to protect property and occupants. Learn about your area's codes before construction.

#### *How to Plan for an Earthquake:*

- Pick "safe places" in each room of your home. A safe place could be under a sturdy table or desk or against an interior wall away from windows, bookcases, or tall furniture that could fall on you. The shorter the distance to move to safety, the less likely you will be injured. Injury statistics show that persons moving more than 10 feet during an earthquake's shaking are most likely to experience injury.

- Practice drop, cover, and hold-on in each safe place. Drop under a sturdy desk or table, hold on, and protect your eyes by pressing your face against your arm. Practicing will make these actions an automatic response. When an earthquake or other disaster occurs, many people hesitate, trying to remember what they are supposed to do. Responding quickly and automatically may help protect you from injury.
- Practice drop, cover, and hold-on at least twice a year. Frequent practice will help reinforce safe behavior.
- Talk with your insurance agent. Different areas have different requirements for earthquake protection. Study locations of active faults, and if you are at risk, consider purchasing earthquake insurance.
- Inform guests, babysitters, and caregivers of your plan. Everyone in your home should know what to do if an earthquake occurs. Assure yourself that others will respond properly even if you are not at home during the earthquake.
- Get training. Take a first aid class from your local Red Cross chapter. Get training on how to use a fire extinguisher from your local fire department. Keep your training current. Training will help you to keep calm and know what to do when an earthquake occurs.
- Discuss earthquakes with your family. Everyone should know what to do in case all family members are not together. Discussing earthquakes ahead of time helps reduce fear and anxiety and lets everyone know how to respond.

## Annex D Potential Mitigation Project Funding Sources

### Federal

#### FEMA

- **Pre-Disaster Mitigation Program.** As part of the Disaster Mitigation Act of 2000 (Section 322 of the Robert T. Stafford Disaster Relief and Emergency Act), FEMA's Pre-Disaster Mitigation Competitive (PDM-C) Grant Program provides funds to states, territories, and federally recognized tribes for pre-disaster mitigation activities. The grant program is administered by FEMA for pre-disaster mitigation planning and projects primarily addressing natural hazards. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. The intent of the PDM-C grant program is to provide a consistent source of funding for pre-disaster mitigation planning and projects.
- **Hazard Mitigation Grant Program.** The Hazard Mitigation Grant Program (Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act) is activated during Presidential Disaster Declarations to assist in identifying mitigation projects, and funding these projects on a 75% Federal/25% non-Federal cost share basis. Mitigation program funding is based on 20% of the federal funds expended for the Infrastructure and Individual Assistance Programs. The HMGP supports other program activities, i.e. participation the NFIP is required for recipients of HMGP funds.
- **Section 406 Hazard Mitigation.** Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act provides funding to mitigate certain projects as they are being repaired as part of overall disaster assistance to a community. Under Section 406, if it can be shown to be cost effective to mitigate a Public Assistance eligible project as part of the repair, FEMA may fund the mitigation as part of the overall project cost.
- **Disaster Preparedness Improvement Grants.** Under the Disaster Preparedness Improvement Grants (Section 201 of the Stafford Act), FEMA provides up to 50% matching funds to states annually to improve or update their disaster assistance plans and capabilities. States can use these funds to: implement measures in a Hazard Mitigation Plan; develop pre-disaster Hazard Mitigation Plans; expand an existing Hazard Mitigation Plan; develop hazard specific annexes; or develop administrative plans for the implementation of the Hazard Mitigation Grant Program.
- **Hazard Mitigation Technical Assistance Program Contract.** HMTAP was established to provide FEMA with response capability for various post-disaster mitigation opportunities. The contractor has the capability to: (1) evaluate construction science techniques and practices, including build codes; (2) prepare environmental assessments or impact statements and historic preservation reviews and assessments; (3) conduct biological assessments and surveys, (4) conduct

surveys, assessments, and reviews of other areas of impact such as water quality and wetland delineation; (5) conduct benefit/cost, social science, and public administration assessments; (6) conduct post-event assessments to identify mitigation opportunities; (7) Provide post-disaster land surveying, mapping services and cost estimates using GIS, GPS, and remote sensing; (8) Perform floodplain analyses; (9) conduct hazard identification and risk assessment to confirm accuracy and specific actions or methodologies needed for disaster areas; (10) document estimated flood elevations to guide reconstruction and to compute flood frequency; and (11) provide training for benefit/cost analysis, retrofit options, the Hazard Mitigation Grant Program, and National Environmental Policy Act.

- **National Flood Insurance Program (NFIP).** The National Flood Insurance Program (NFIP) makes federally subsidized flood insurance available to property owners in locations agreeing to participate in the NFIP. If communities enter the NFIP, they are required to adopt floodplain ordinances meeting criteria established by FEMA. These criteria include: requiring permits for development within designated floodplains; review development plans and subdivision proposals to determine whether proposed sites will be reasonably safe from flooding; require protection of water supply and sewage systems to minimize infiltration of floodwater; obtain, review, and utilize all base flood elevation data; and assure the maintenance of flood carrying capacities within all watercourses.
- **The Community Rating System.** An element of the NFIP, is designed to promote the availability of flood insurance, reduce future flood damages, and ensure the accurate rating of flood insurance policies. Participating communities may receive credit for proven mitigation measures, thus reducing the cost of flood insurance within their jurisdictions.
- **The Individual Assistance Loss Prevention Program.** Available to provide eligible owner- occupants, who sustained damage and received Disaster Housing Minimal Repair Funds, the opportunity to participate in a voluntary program where additional 100% federal funds are made available to break the damage-rebuild-damage cycle and help homeowners reduce or eliminate losses from future weather-related damage.
- **The Individual and Family Grant (IFG) Minimization Program.** Available to provide IFG-eligible owner- occupants the opportunity to participate in a voluntary program where additional state and federal funds are made available to break the damage-rebuild-damage cycle, and help reduce or eliminate losses from future weather-related damage. In addition, FEMA's 800 series provides funding for low cost mitigation measures.
- **The Infrastructure Program (Section 406 of the Stafford Act).** Authorizes funding for the repair, restoration, or replacement of damaged facilities belonging to public and private non-profit entities, and for other associated expenses, including emergency protective measures and debris removal. The Infrastructure Program also authorizes funding for appropriate cost-effective hazard mitigation related to damaged public facilities.

- **The National Inventory of Dams (US Army Corps of Engineers project).** Identifies high-hazard dams and encourages the development of warning systems and emergency plans for many of these facilities.
- **Hazardous Materials Program.** FEMA's mission under this program is to provide technical and financial assistance to States and local jurisdictions and to coordinate with public and private sector entities to develop, implement, and evaluate HAZMAT emergency preparedness programs. FEMA supports State and local agencies in the design, implementation, and evaluation of HAZMAT-related training and planning exercises, and cooperates with the U.S. Department of Transportation in the maintenance of electronic bulletin boards to provide the latest information on HAZMAT planning, training, exercises, and conferences.
- **US Fire Administration (USFA).** Through the USFA, FEMA administers a nationwide program to enhance fire prevention and control activities and to reduce significantly the loss of life and property caused by fires. Programs are carried out by: National Fire Academy; Office of Fire Prevention and Arson Control; Office of Firefighter Health and Safety; Office of Fire Data and Analysis; Office of Federal Fire Policy and Coordination; Office of National Emergency Training Center Operations and Support, and Office of Educational Technology.

**The Emergency Planning and Community Right-to-Know Act of 1986** imposed upon state and local governments planning and preparedness requirements for emergencies involving the release of hazardous materials. The role of the federal government in response to an emergency involving the release of hazardous materials is to support local and state emergency operations. Activation of the federal Regional Response Team (RRT) provides access to federal resources not available at the state and local levels. An on scene coordinator is designated to manage federal resources and support. The national warning and communications center for emergencies involving the release of hazardous materials is manned 24 hours a day, and is located at the U.S. Coast Guard headquarters in Washington, D.C.

**The National Weather Service** provides meteorological and hydrologic services that include weather and hydrologic warnings, forecasts, and related information. The primary mission of the NWS is to save lives and reduce property damage through timely issuances of tornado and flood warnings and river stage forecasts. To cope with dangerous weather, the NWS interacts with emergency services personnel throughout the state by: issuance of tornado and flash flood watches or warnings for those areas in which a threat is posed; issuance of flood watches and warnings for major streams and rivers within the state. Addison County is within the coverage area of the NWS office in Burlington but also may receive information from the Albany, NY office.

**The U.S. Army Corps of Engineers** undertake a broad range of civil works projects to develop, manage, and conserve the nation's water resources. No work may be undertaken without authorization and funding from Congress, either from specific legislation or continuing authorities. Projects **are** planned to serve as many purposes as are feasible and to protect or improve the environment as much as possible. The Corps is involved in

developing and implementing plans for flood control, navigation, hydropower, recreation, and water supply. The Corps has authority for emergency operations, bank protection, permit administration, and technical assistance. Corps of Engineers assistance includes:

- Studies and Projects
- Discretionary Authority to implement certain types of water resources projects without specific Congressional approval. These projects are typically limited in cost and duration, and include:
  - Section 14 - Emergency Stream bank Protection of Public Facilities, limitation of \$500,000 per project.
  - Section 107 - Small Navigation Projects, usually for port facilities and navigation channels. Work on channels usually improves stream flow and aids flood control efforts.
  - Section 205 - Small Flood Control Projects, not to exceed \$5 million. Funds may be used for projects such as upgrading flood protection structures and channelization of streams.
  - Floodplain Technical Assistance, to include:
    - Conducting floodplain mapping surveys to provide either first-time mapping of an area or to correct older floodplain maps;
    - Conducting flood studies in cooperation with FEMA to determine actual flood levels for settlement of flood insurance claims;
    - Providing technical advice regarding proposed floodplain ordinances and building codes.
- Emergency operations to respond to flood emergencies, to include flood fighting, constructing advance temporary measures in anticipation of imminent flood, and the repair of damaged flood control works after the flood event.
- Permit authority, the Corps has the authority to issue Permits to cover construction excavation and other related work in or over navigable waterways; and Permits covering the discharge of fill material in all waters of the United States and adjacent wetlands.

### **Department of Housing and Urban Development**

- Community Development Block Grant Program. Funds are provided as grants to units of local government. Local governments can use the funds to: construct flood and drainage facilities; finance rehabilitation projects that include flood proofing, elevation, purchase of flood insurance, etc.; finance acquisition and relocation of homes to remove them from the floodplains.
- Rental Rehabilitation Program. Funds to rehabilitate rental properties can be used for flood proofing and repair to flood damage.
- Section 312 Loan Program. Provides funds to rehabilitate both residential and non-residential properties, including flood repair and flood proofing.

**Department of Agriculture Natural Resource Conservation Service (NRCS)** can provide technical assistance in the conservation, development, and productive use of water resources. In addition, the NRCS monitors use of prime farmland.

- Watershed Protection and Flood Prevention. Technical and financial assistance to local entities to plan and install works of improvement for watershed protection, flood prevention, agricultural water management, and other approved purposes.
- Resource Conservation and Development. Technical and financial assistance to local entities to plan and install works of improvement for watershed protection, flood prevention, agricultural water management, and other approved purposes.
- Emergency Watershed Protection. Provides assistance to reduce hazards to life and property in watersheds damaged by severe natural events. NRCS can provide 100% of the cost of exigency situations, and 80% of the cost for non-exigency situations, if funds are available.
- Conservation Technical Assistance. Provided to land users to control erosion, sediment, and to reduce upstream flooding.
- River Basin Surveys and Investigations. Includes Conservation River Basin Studies to assist in solving existing problems or meeting existing or projected needs, and Floodplain Management Studies to provide information and assistance for reducing future flood damages. Financial assistance is provided by sponsors.

**U.S. Geological Survey (USGS)** provides certain hazard studies and recommendations. A portion of the mission of the USGS is to collect and analyze data on the quantity of surface water through a network of gauging stations. The data is used in preparing flood frequency reports to evaluate the severity of floods. This data is useful in flood hazard mitigation studies, establishing flood prone areas, and potential flood heights near hydraulic structures.

**Economic Development Administration** was established to generate new jobs, to help protect existing jobs, and to stimulate commercial and industrial growth in economically distressed areas of the United States.

**Small Business Administration (SBA)** Disaster Assistance Programs provide loans to businesses and individuals affected by presidential and SBA disaster declarations. The program provides direct loans to businesses to repair or replace uninsured disaster damage to property owned by the business, including real estate, machinery, and equipment, inventory and supplies. Businesses of any size are eligible. Non-profit organizations are also eligible. Assistance to individuals comes in the form of low-interest loans for repair or replacing damaged real and personal property. The SBA administers the Disaster Assistance Programs.

- Pre-Disaster Mitigation Loans. This new loan program began in January 2000 and is funded for five years. This program makes funds for mitigation available to businesses in Project Impact communities.

## State

### **VTrans**

- Town Highway Grants Program. State aid grants for highways are made annually to the governing body based on the number of Class 1,2 or 3 miles in the Municipality. The General Assembly appropriates a lump sum annually for this purpose (19 V.S.A. Section 306(a)). Distribution is made quarterly, with no

application required. There is no requirement that State funds be matched with local funds, other than a requirement that municipalities expend no less than \$300 per mile of local tax revenues of their highways (19 V.S.A. Section 307).

- **Town Highway Bridge Program.** State assistance for major rehabilitation or reconstruction of bridges with a span of six feet or more on class 1, 2 or 3 town highways is made available by the Secretary of Transportation from annual appropriations for that purpose (19 V.S.A. Section 306(b)). State assistance amounts are not limited for any one project. The State assistance requires 10 percent participation or match of total project cost with town funds for replacement projects and 5% for rehabilitation projects. The local match is capped at the amount raised by a municipal tax rate of \$0.50 on the Grand List (19 V.S.A. Section 309(a)).
- **Town Highway Structures Program.** State grants for bridges, culverts and retaining walls that are part of the municipalities highway (Class 1, 2 or 3) infrastructure are made by the Secretary of Transportation from annual appropriations for the purpose. State grant amounts are limited to \$150,000 for any one project. State funds are required to be matched, as follows:
  - By at least 20% of the total project cost, or
  - By at least 10% of the total project cost providing that town has adopted Town Highway codes and standards and the town has conducted a highway infrastructure study (not less than three years old), which identifies all town culverts, bridges and identified road problems.
- **Town Highway Class 2 Roadway Program.** State grants to provide for the preservation of any Class 2 highways by providing grants for resurfacing or reconstruction are made by the Secretary of Transportation or his/her designee from annual appropriations for that purpose. State grants are limited to \$150,000 for any one project and there are match requirements for the town similar to the Town Highway Structures Program.
- **Town Road & Bridge Standards, Infrastructure Study.** As a result of legislative action relating to the Town Aid programs an incentive program was created providing additional funding to towns meeting two requirements:
  - Adopted codes and standards.
  - Conducted a network infrastructure study.

### **Agency of Natural Resources**

- **Ecosystem Restoration Grant Program.** As part of a governor's initiative to improve water quality in Lake Champlain, Funds have been allocated to assist in clean-up. Funds from this source have paid for a large portion of recent geomorphic studies in the Addison region as well as supporting the development of Fluvial Erosion Hazard Zones. Additionally, funds have been allocated to purchase development rights in hazardous locations.

### **Department of Public Safety, Division of Emergency Management**

- Hazard Mitigation Grant Program. Previously described under Federal Programs.
- Pre-Disaster Mitigation Program. Previously described under Federal Programs.
- Local Emergency Management Director Program. A continuing program of training for local emergency management directors to provide a consistent base of knowledge to understand their roles and responsibilities in Emergency Management.
- Generator Grant Program. VEM allocates funds from FEMA EMPG to allow towns to purchase back-up power sources for emergency shelters for continued use in the event of a power failure.

## **Regional**

The Addison County Regional Planning Commission (ACRPC) provides assistance to local governments concerning planning for future land use, business, transportation, emergency management and population.

In addition to the specific programs mentioned below, ACRPC has identified Municipal Development Plans and Capital Improvement Plans as appropriate local planning mechanisms suitable for incorporating many of the provisions of this plan. These plans, by statute, need to be updated on a 5 year rotation. In Addison County, each municipality adopts these new or updated plans according to their own timetable and therefore, each is at a different place in the planning and adoption process. At the time of each rewrite, ACRPC generally assists local planning commissioners and will encourage inclusion of appropriate provisions of this plan into any new document.

ACRPC annually sets aside funds from its transportation planning activities to be administered by the Transportation Advisory Committee (TAC). Proposals are entertained each year to fund planning projects for transportation projects. One effective ongoing program is a local culvert survey and upgrade program, which funds updates of culvert surveys for 2-3 towns annually. TAC grants have funded several mitigation studies in the past including:

- Route 125 relocation study
- Bakers Bridge mitigation study

ACRPC assists community mitigation projects and planning through utilization of:

- FEMA PDM-C planning grants
- FEMA HMGP planning grants
- FEMA HMGP project grants
- Federal Emergency Planning Grants

**Annex E  
Local Plan Review Tool Self Assessment**

**LOCAL MITIGATION PLAN REVIEW TOOL**  
**Jurisdiction Name & State: Town of Monkton, Vermont**

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<b>Jurisdiction:</b> Town of Monkton ,Vermont	<b>Title of Plan: Town of Monkton Vermont Single Jurisdiction Hazard Mitigation Plan</b>	<b>Date of Plan:</b> 8/15/2016
<b>Single or Multi-jurisdiction plan?</b> <u>Single</u>		<b>New Plan or Plan Update?</b> <u>New</u>
<b>Regional Point of Contact: Tim Bouton</b> Title: Sr. Planner Agency: ACRPC  Phone Number: (802) 388-3141 E-Mail: <a href="mailto:tbouton@acrpc.org">tbouton@acrpc.org</a>		<b>Local Point of Contact: Stephen Pilcher</b> Title: Selectboard Chair Agency: Town of Monkton, Vermont  Phone Number: E-Mail: <a href="mailto:spilcher@monktonvt.com">spilcher@monktonvt.com</a>

<b>State Reviewer:</b>	<b>Title:</b>	<b>Date:</b>
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<b>FEMA Reviewer:</b>	<b>Title:</b>	<b>Date:</b>
<b>Date Received in FEMA Region I</b>		
<b>Plan Not Approved</b>		
<b>Plan Approvable Pending Adoption</b>		
<b>Plan Approved</b>		

1. REGULATION CHECKLIST		Location in Plan	Met	Not
Regulation (44 CFR 201.6 Local Mitigation Plans)				
<b>ELEMENT A. PLANNING PROCESS</b>				
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	1.1 Current Plan Development Process Pg.3			
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	1.2 Opportunities for public comment. Pg 3			
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	1.3 Opportunities for additional comments. Pg 4			
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	1.4 Extent of Review Pg 4			
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	6.0 Plan Maintenance Procedures Pg 56			
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	6.1 Plan Review/Update Process Pg 56			
<b><u>ELEMENT A: REQUIRED REVISIONS</u></b>				
<b>ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability Pg 20			
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability Pg 20			
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability Pg 20			
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	2.0 Community Background Pg 9			

1. REGULATION CHECKLIST		Location in Plan	Met	Not
Regulation (44 CFR 201.6 Local Mitigation Plans)				
<b>ELEMENT B: REQUIRED REVISIONS</b>				
<b>ELEMENT C. MITIGATION STRATEGY</b>				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	5.2 Authorities, Policies, Programs, Resources (and the ability to expand upon these) Pg 45			
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	2. Community Background Pg 7 and Authorities of Town Officials Pg 45			
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	5.1 Hazard Mitigation Goals by Hazard Type Pg 44			
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	5.4 Proposed Mitigation Actions and Projects by Hazard Type Pg 51			
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	5.3 Project Prioritization Process Pg 50			
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	6.0 Plan Maintenance Procedures Pg 56			
<b>ELEMENT C: REQUIRED REVISIONS</b>				
<b>ELEMENT E. PLAN ADOPTION</b>				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	7. Certificate of Adoption Pg58			

### **Acknowledgements:**

The creation of this plan is the result of many, many efforts to create hazard mitigation plans for communities in the State of Vermont. We have borrowed liberally from other adopted plans from throughout the state sometimes basic concepts and design, and at other times duplication of wording and illustrations.

ACRPC wants to thank specifically all other Regional Planning Commissions and their collective staff for the collaborative efforts that have resulted in this and many other plans statewide. Additional thanks for many of the same reasons need to go out to all the state agencies that are equally committed to mitigating the risks we face in Vermont.

Special thanks to the State of Vermont's Division of Emergency Management and Homeland Security mitigation division including SHMO Lauren Oates and Mitigation Planner Stephanie Smith.

Lastly, the members of the Monkton Hazard Mitigation planning committee and others who have spent countless hours living and working with the hazards; for caring enough about their community to spend even more hours to bring that experience into this document.

Thank you to:

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Bailee Layn-Gordon	Monkton Town Service Officer
Lee Mahony	Monkton Planning Commission