

# Town of Waitsfield Pre Disaster Mitigation Plan September 2010 Update

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## **1. Introduction**

The impact of expected, but unpredictable natural events can be reduced through community planning. The goal of this Pre Disaster Mitigation Plan is to provide a local mitigation plan that makes the Town of Waitsfield more disaster resistant.

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

Hazard mitigation strategies and measures alter the hazard by eliminating or reducing the frequency of occurrence, avert the hazard by redirecting the impact by means of a structure or land treatment, adapt to the hazard by modifying structures or standards, or avoid the hazard by preventing or limiting development.

## **2. Purpose**

The purpose of this Pre Disaster Mitigation Plan is to assist the Town of Waitsfield in recognizing hazards facing its community and identifies strategies to begin reducing risks from acknowledged hazards.

## **3. Community Profile**

The Town of Waitsfield is a small, rural, residential, and tourism-based community located in the southwestern portion of Washington County. According to the 2000 Census, Waitsfield has a total population of 1,659 people living in 734 housing units. The Town's estimated 2008 population is 1,659, a 1.4% decrease in 8 years.

Waitsfield is located in the heart of the 143 sq. mile Mad River watershed, which drains in a northerly direction into the Winooski River Basin, and is bounded to the east by the Northfield mountain range with elevations nearing 3,000 feet. Vermont Route 100 follows the Mad River in a North-South direction and provides connection to Waterbury and Warren. The Village of Irasville is located at the intersection of Vermont Route 100 and Vermont Route 17, which provides passage west beyond the Green Mountains via Appalachian Gap.

According to information contained in the Waitsfield 2010 Town Plan, approximately 73% of Waitsfield is forested, 19% is agriculture/open land, 2.5% is residential, 0.8% is surface waters

and the remaining land (4.7%) is in commercial, institutional, industrial, and recreational use. The Town of Waitsfield strives to encourage compact village centers surrounded by rural landscapes. Recent development primarily consists of low-density, scattered residential development. The town has designated Irasville and Waitsfield Village as future growth centers for development. All new development will be required to adhere to the recently adopted Flood and Fluvial Erosion Hazard zoning regulations where applicable.

Currently, the town is completely dependent upon groundwater for its domestic water supply and relies on on-site septic systems for wastewater treatment. However, construction will soon be underway for a municipal water system serving approximately 150 parcels in Irasville and Waitsfield Village. The purpose of the water system is to address public health concerns, protect water quality of the Mad River, provide for economic development, and reduce the potential for sprawl outside these areas. The town is currently investigating decentralized wastewater options for its population centers.

In Waitsfield, electricity is provided by Green Mountain Power to the majority of residents with the exception of a small area along the North Fayston and Airport Roads, which is supplied by the Washington Electric Cooperative. The Town's fire coverage is provided by the Waitsfield-Fayston Volunteer Fire Department, which provides support to the inter-municipal Capital Fire Mutual Aid System. The Mad River Valley Ambulance Service provides emergency medical care to all Valley residents via its home in Waitsfield Village. Law enforcement is provided by the Vermont State Police and by the Washington County Sheriff's Office which is under contract for 16 hours per week. The Town Constable is also a Deputy Sheriff.

### ***3.1 Local Hazard Mitigation Goals***

The following goals from the 2010 Waitsfield Town Plan support Pre-Disaster Mitigation:

- The responsible stewardship and sustainable use of Waitsfield's natural resources in a manner that protects and enhances the town's environmental well-being for the benefit of future generations;
- To provide a safe, efficient and convenient transportation network for all Waitsfield residents, visitors and businesses; and
- To provide a full range of community services and facilities as needed to accommodate anticipated growth and development in a cost effective, environmentally sound manner without creating an undue burden on local taxpayers.

## **4. Plan Update Process**

The Waitsfield Pre Disaster Mitigation (PDM) Plan was originally adopted by the Town as an Annex to the Central Vermont Regional Pre Disaster Mitigation Plan in October 2005 and received FEMA final approval in January 2006. The 2010 update is intended to be submitted as a stand alone town PDM Plan.

The entire plan was revised and the update process included:

- an update of all data and statistics;
- reevaluation, identification and analysis of all significant hazards (new hazards identified from the 2005 plan include flash flooding and fluvial erosion);
- acknowledgement of implemented mitigation strategies since 2005; and
- identification of on-going and new mitigation projects and strategies.

Town land-use planning and emergency preparedness documents were also reviewed as part of the update process.

The following chart provides an overview of Waitsfield’s proposed 2005 pre disaster mitigation actions along with their current status. Additionally since the 2005 plan the town has revised and updated local flood hazard bylaws and adopted a fluvial erosion hazard bylaw.

2005 Mitigation Action	2010 Status
Wire town shelters and emergency operations center (EOC) to more quickly and easily install a standby generator	Town shelters have been wired for emergency generator installation. Primary EOC (Town Office building) are not wired, secondary EOC (Ambulance building) is wired for generator. Generator purchased.
Increase communication with Town of Warren concerning the potential failure of the Brooks Dam	No action to date (for additional information see Section 6.1)
Relocate essential town functions (Town Offices, records, computers, etc) out of its current flood prone location	No action to date. Still under consideration. See Section 7.
Replace abutments on the Great Eddy Bridge	Design and engineering study underway. Estimated construction 2011.
Stabilize eroding stream bank of the Mad River upstream of the Village	Design and engineering underway.
Participate in a Stream Geomorphic Assessment in order to mitigate Waitsfield’s fluvial erosion hazards, the predominate mode of flood related damage	Assessment completed in 2009. <i>Fluvial Erosion Hazard Area Overlay Zoning District</i> adopted May 2010.
Construct flood walls, waterproof essential facilities, and relocate vulnerable interior contents in the event of a flood	No action to date. Still under consideration. See Section 7.
Develop and implement education program for residents and property owners of flood risk and mitigation activities/programs	Flood information added to town website. Web page includes information about NFIP, actions to reduce flooding and state and federal contacts.

A PDM working group met on August 4, 2010 and August 27, 2010. The working group included municipal officials and local citizens, plus a member of the Central Vermont district’s Local Emergency Planning Committee (LEPC #5), the Director of the sub regional planning entity, the Mad River Valley Planning District (which represents all the Mad River Valley

towns) and a river scientist for the Vermont Agency of Natural Resources River Management Program. Input was provided by:

- Steven Shea, Waitsfield Planning Commission
- Valerie Capels, Waitsfield Town Administrator
- Carla Straight, LEPC #5/ Town Volunteer
- Frederick Messer, Waitsfield Emergency Management Director
- Joshua Schwartz, Mad River Valley Planning District
- Clare Rock, Central Vermont Regional Planning Commission
- Kari Dolan, Vermont River Management Program & Waitsfield Planning Commission

The Pre Disaster Mitigation Plan update was discussed at the September 13, 2010 Select Board meeting and broadcasted on local access television, providing members of the public and stakeholders to provide input. Notice of the meeting was distributed to stakeholders via the internet and the local newspaper, The Valley Reporter. Copies of the draft plan were made available on the municipal website, at the town clerks office and at the local library.

Additionally, neighboring communities were notified of the planning process via the Central Vermont Regional Planning Commissions monthly reports. Monthly staff reports are distributed to over 150 municipal officials and stakeholders throughout the Central Vermont Region.

## **5. Existing Hazard Mitigation Programs, Projects & Activities**

### Land Use Planning

- Flood Hazard Area Overlay District
- *Mad River Geomorphic Assessment Report, 2007*
- *Fluvial Erosion Hazard Area Overlay District zoning, adopted May 2010*

### Protection/Retrofit of Infrastructure and Critical Facilities

- Dry Hydrant Program
- Municipal emergency generator

### Insurance Programs

- Participation in NFIP

### Hazard Control & Protective Works

- Culvert Inventory, 2008
- Capital Mutual Aid System
- Capital Equipment Plan

### Community Preparedness

- Basic Emergency Operations Plan, draft 2010
- Emergency Operations Plan, draft 2010
- Mad River Valley All-Hazards Mitigation Plan, 2005
- School Emergency Evacuation Plan, 2009

- Red Cross Certified Shelter (Elementary School)
- Archival Recovery Team
- E911 address labeling

Public Awareness, Training & Education

- Fire safety educational programs
- First responder CPR & hazmat trainings
- CERT program
- Disaster Animal Response Team (DART)
- Municipal website: Flood information web page & E911 web page
- 211 emergency information phone resource

## 6. Hazard Identification & Analysis

The following natural disasters were discussed and the worst threat hazards were identified based upon the likelihood of the event and the community’s vulnerability to the event.

Hazard	Likelihood <sup>1</sup>	Community Vulnerability <sup>2</sup>	Worst Threat
Avalanche/ Landslide	Low	No	x
Dam Failures	Med	Yes	✓
Drought	Med	No	x
Earthquake	Low	No	x
Extreme Cold	Low	No	x
Flash Flood	High	Yes	✓
Flood	Med	Yes	✓
Fluvial Erosion	Med	Yes	✓
High Wind	Med	No	x
Ice Jam	Med	Yes	✓
Hurricane	Low	No	x
Structure Fire	Low	No	x
Tornado	Low	No	x
Water Supply Contamination	Med	No	x
Wildfire/Forest Fire	Low	Yes	x
Winter Storm / Ice Storm	High	Yes	✓

<sup>1</sup> High likelihood of happening: Near 100% probability in the next year.

Medium likelihood of happening: 10% to 100% probability in the next year or at least once in the next 10 years.

Low likelihood of happening: 1% to 10% probability in the next year or at least once in the next 100 years.

<sup>2</sup> Does the hazard present the threat of disaster (Yes)? Or is it just a routine emergency (No)?

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

- Dam Failure
- Flash Flood
- Flood
- Fluvial Erosion
- Ice Jam
- Winter Storm/Ice Storm

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

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Type of hazard	General areas within municipality which are vulnerable to the identified hazard.	Types of structures impacted	<p><u>Minimal:</u> Limited and scattered property damage; no damage to public infrastructure contained geographic area (i.e., 1 or 2 communities); essential services (utilities, hospitals, schools, etc.) not interrupted; no injuries or fatalities.</p> <p><u>Moderate:</u> Scattered major property damage (more than 50% destroyed); some minor infrastructure damage; wider geographic area (several communities) essential services are briefly interrupted; some injuries and/or fatalities.</p> <p><u>Severe:</u> Consistent major property damage; major damage to public infrastructure (up to several days for repairs); essential services are interrupted from several hours to several days; many injuries and fatalities.</p>	Dollar value or percentage of damages.	<p><u>High:</u> 10% to 100% probability within the next year or at least once in the next 10 years.</p> <p><u>Medium:</u> less than 10% to 100% probability within the within the next year or less than once in the next 10 years.</p>

### 6.1 Dam Failure

History of occurrences:

- No known local history of occurrences

Dam failure can occur with little warning and may be the result of rainstorm, debris jam, accumulation of melting snow or due to human or technological mis-operation. The Vermont Department of Environmental Conservation’s Dam Safety and Hydrology Section compiles and tracks dam safety data in Vermont as part of the Vermont Dam

Inventory (VDI). The VDI identifies 162 dams in Central Vermont, ranging from hydroelectric dams (in-service and historic) to flood control dams to historic milldams.

According to the VDI, there are two dams in Waitsfield; one located on the Mad River near the Great Eddy Bridge on Bridge Street and the other located at the Sugarbush snow-making pond, adjacent to the Mad River near Route 100 on the southern town boundary. These dams are classified as “no significant hazard” and “low hazard,” respectively. A low hazard dam is defined as failure or mis-operation may result in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner’s property.

In addition, the following dams were identified during the PDM plan update process: a dam at the Waitsfield Town Pond (located at the intersection of Route 100 and Carroll Road) and the Warren Village Dam (a timber crib dam located south of Waitsfield, upstream on the Mad River in Warren Village). The Waitsfield Town Pond impoundment nearly failed in spring 2008 during a rain on snow event. The dam was repaired by the town in 2009 and is no longer recognized as a hazard. The VDI identifies the Warren Village Dam as a low hazard dam. A dam study was proposed to examine the timber crib dam and referenced in the 2005 Waitsfield PDM Plan, yet the study was suspended as a result of a Warren town-wide vote.

While no dam inundation study has been undertaken for either the Sugarbush snow-making pond or the Warren timber crib dam, a dam failure would most likely cause localized flooding and river channel adjustments downstream. The Vermont Center for Geographic Information has not calculated and mapped the dam inundation areas of any dams within the Mad River Watershed therefore the impact and vulnerability of this hazard is unknown. Yet there are 203 properties within Waitsfield’s NFIP’s designated 100-year floodplain, these properties could be vulnerable to flooding following a dam failure event. Additionally the main transportation route, Route 100 would most likely sustain moderate damage. At this time, aside from the municipal water system and the mitigation project proposed for the Bridge Street Marketplace parking lot, there are no major construction plans proposed within the designated floodplain and all development is subject to adhere to Waitsfield’s Flood and Fluvial Erosion Hazard zoning regulations.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Dam Failure	Sugarbush snow-making pond & Timber Crib Dam, Warren	Route 100, potentially all properties within NFIP 100-year floodplain.	Moderate	Estimated loss for all properties within 100-yr floodplain = ~\$57,900,000 <sup>3</sup>	Medium

## 6.2 Flash Flood

<sup>3</sup> Dollar amount calculated by overlaying the NFIP FIRM flood maps (pre 2010 DFIRM update) with the municipal digitized parcel data and median property values from municipal 2008 grand list data.



History of occurrences:

- June 28, 2010
- September 2003 – DR1448
- July 2002 – DR1428
- July 1999 – DR1336
- June 27, 1998 (July 1998 – DR1228)
- November 1999 – DR1307
- February 1996 – DR1101

According to FEMA, floods are one of the most common hazards in the United States; this is also the case in Waitsfield. Flooding occurs when rapidly rising water inundates an area beyond the body of water's normal or accepted channel or basin. Floods can affect a neighborhood, a community or an entire river basin and it should be noted not all floods are alike. Some floods develop slowly over a period of days due to rain fall or snowmelt; others can develop quickly due to a sudden rain burst and are commonly referred to as flash floods.

The most prominent body of water within Waitsfield is the Mad River, which originates in Granville Gulch and flows in a northerly direction along Vermont Route 100 and 100B, converging with the Winooski River in Moretown. Several stream tributaries originating in Waitsfield's upland areas converge with the Mad River in the Mad River Valley.

According to the State of Vermont Hazard Mitigation Plan, updated 2007, "recent studies have shown most flooding in Vermont occurs in upland streams and road drainage systems that fail to handle the amount of water they receive. Due to steep gradients, flooding may inundate these areas severely, but only briefly." Such is the case in Waitsfield and the Mad River may have indeed been name *Mad* due to its flashy nature. Steep slopes, heavy rain events, undersized culverts and areas of impervious surfaces all contribute to the resulting damages of flash flooding.

During a recent flash flood event on June 28, 2010, more than 2 ½ inches of rain fell. The Valley Reporter newspaper characterized the event in its July 1, 2010 edition as is follows: "area streams and brooks rose so fast that culverts were overwhelmed, roads washed away and rivers breached their banks." Flooding was also reported behind the Bridge Street Marketplace in Waitsfield when the smaller streams emptied into the Mad River.

Changes in watershed hydrology such as waterway channelization, increased development resulting in greater amounts of impervious surface, and changing weather patterns may all increase flash flooding potential. Aside from the implementing the municipal water system which will service some properties within the floodplain and the mitigation project proposed for the Bridge Street Marketplace parking lot, there are no major construction plans proposed within the NFIP's designated floodplain and all development is subject to adhere to Waitsfield's Flood and Fluvial Erosion Hazard zoning regulations and maintain 75 ft to 150 ft vegetative buffers strips along streams.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Flash Flood	Bridge Street Market Place parking area, culverts.	Municipal infrastructure, transportation routes.	Moderate	\$44,581 in damages from 1998 flood event	High

### 6.3 Flood

#### History of Occurrences:

- June 28, 2010
- July 2008 – DR 1790
- September 2008 – DR 1715
- September 2003 – DR1448
- July 2002 – DR1428
- April 14, 2002
- May 10, 2000
- July 1999 – DR1336
- November 1999 – DR1307
- June 1998 (July 1998 – DR1228)
- February 1996 – DR1101
- August 5, 1995
- March 11, 1992
- November 4, 1927

As stated previously, according to FEMA, floods are one of the most common hazards. Floods can affect a neighborhood, a community or an entire river basin and it should be noted not all floods are alike. Some floods develop slowly over a period of days due to rain fall or snowmelt and cause property damage due to inundation.

The majority of Waitsfield’s development is located within the valley floor. Overlaying the Flood Insurance Rate Maps with parcel data results in 203 properties located within the National Flood Insurance Program’s designated 100-year floodplain. This represents approximately 17% of Waitsfield properties. The estimated loss for a severe flooding event for all properties located within the town’s 100-year floodplain is approximately \$57,936,200. It should also be noted that FEMA has produced updated digitized floodplain maps for Washington County; these updates are currently being reviewed by municipalities and are intended to replace previous floodplain maps by early 2011. Waitsfield currently participates in the National Flood Insurance Program and has a Community Rating System (CRS) rating of 9. Additionally the Town has adopted Flood and Fluvial Hazard Area zoning regulations designed to minimize losses due to flooding. The Town will consider additional actions to increase their CRS rating. There are no NFIP Repetitive Loss Properties in Waitsfield.

Waitsfield Village has historically been affected by flooding events. A June 1998 flood event brought the Mad River out of its banks and inundated numerous buildings including Joslin Memorial Library, which houses the Town Offices on the first floor. Water levels nearly reached

Vermont Route 100, damaged the Great Eddy Bridge, and eroded the banks of the Mad River upstream of the Village. More recently the June 2010 flash flood event bought the Mad River out of its banks once again.

Changes in watershed hydrology such as waterway channelization, increased development creating greater amounts of impervious surface, and changing weather patterns may all increase flooding potential. Aside from the water municipal water system which will service some properties within the floodplain and the mitigation project proposed for the Bridge Street Marketplace parking lot, there are no major construction plans proposed within the NFIP’s designated floodplain and all development is subject to adhere to Waitsfield’s Flood and Fluvial Erosion Hazard zoning regulations and maintain 75 ft to 150 ft vegetative buffers strips along streams.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Flood	All properties within floodplain, Waitsfield Village	Municipal Offices and Library, business, residences.	Moderate	\$44,581 from 1998 flood event up to ~\$57,900,000 <sup>4</sup> .	Medium

#### **6.4 Fluvial Erosion**

History of occurrences:

- June 28, 2010
- June 27, 1998

While inundation-related flood loss is a significant component of flood disasters, the more common mode of damage in Vermont is associated with the dynamic, and oftentimes catastrophic, physical adjustment of stream channel dimensions during storm events. These adjustments are often due to fluvial erosion of the stream bed.

A Fluvial Geomorphic Assessment was completed on the Mad River in accordance with Vermont’s River Management protocols in 2007. Waitsfield recently adopted Flood and Fluvial Hazard Area zoning regulations designed to minimize losses due to flooding and fluvial erosion. Overlaying the Fluvial Erosion Hazard (FEH) area with building footprint data, there are 20 buildings located within the Fluvial Hazard zone. By overlaying FEH zone with the municipal digitized parcel data and median property values from the municipal 2008 grand list, the estimated loss for a severe fluvial erosion event for all buildings located within the town’s FEH is approximately \$5,780,800.

The flood of June 27, 1998 is one of the most significant flooding and fluvial erosion events in the recent history of Waitsfield. The banks of the Mad River eroded substantially upstream of the

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<sup>4</sup> Dollar amount calculated by overlaying the NFIP FIRM flood maps (pre 2010 DFIRM update) with the municipal digitized parcel data and median property values from municipal 2008 grand list data.

covered bridge and negatively impacted the bridge’s abutments. The June 28, 2010 flood event further compounded the river bank erosion.

Changes in watershed hydrology such as waterway channelization, increased development creating greater amounts of impervious surface and changing weather patterns may all increase flooding and fluvial erosion potential. Aside from the water municipal water system which will service some properties within the fluvial erosion hazard area and the mitigation project proposed for the Bridge Street Marketplace parking lot, there are no major construction plans proposed within the NFIP’s designated floodplain and all development is subject to adhere to Waitsfield’s Flood and Fluvial Erosion Hazard zoning regulations and maintain 75 ft to 150 ft vegetative buffers strips along streams.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Fluvial Erosion	All properties within FEH zone	Properties upstream; privates residences, business, municipal infrastructure.	Minimal to Moderate	\$5,780,800	Medium

### 6.5 Ice Jam

History of Occurrences:

- March 22, 2003

According to the US Army Cold Region Research and Engineering Lab an ice jam is a stationary accumulation of fragmented ice or frazil that restricts flow. Ice jams can form on rivers where the flow capacity is exceeded, around sharp bends, or at the confluence of two rivers.

The Vermont Division of Emergency Management and the Vermont Agency of Natural Resources developed a statewide list of historic ice jam locations; the list does not contain precise locations, only affected towns and streams. The Vermont State Hazard Mitigation Plan, updated 2007, identifies an ice jam on the Mad River on March 22, 2003.

According to Barry Cahoon, Stream Alteration Engineer with the Vermont River Management Section, the stretch of the Mad River in the vicinity of the Bridge Street covered bridge is susceptible to ice jams. In the event of an ice jam properties upstream of Bridge Street would be susceptible river bank erosion and flood inundation.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Ice Jam	Mad River in vicinity of Bridge Street covered bridge, Waitsfield Village	Properties upstream; privates residences, business, municipal infrastructure.	Minimal - Moderate	Data gap - \$ amount unknown	Medium

## 6.6 Winter Storm

History of Occurrences:

- February 14, 2007
- January 4, 2003
- March 22-23, 2001
- December 31, 2000
- January 16, 1998 - DR1201

A winter storm is defined as a storm that generates sufficient quantities of snow, ice or sleet to result in hazardous conditions and/or property damage. Ice storms are the result of cold rain that freezes on contact with the surfaces coating the ground, trees, buildings, overhead wires and other exposed objects with ice, sometimes causing extensive damage. One of the major problems associated with winter storms is building roof collapses and the loss of electrical power due to downed trees.

February 14, 2007 Vermont experienced one of the heaviest snowfalls on record. According to the State Hazard Mitigation Plan, updated 2007, some areas of Vermont received 28 to 36 inches of snow in 25 to 48 hours. The National Oceanic and Atmospheric Administration classified this storm as a Category 3 “Major” Winter Storm.

In Waitsfield, the heavy snow resulted in downed trees and power outages along North Road and at least one roof collapse. The roof collapse at the Turner Barn, a local farm, killed 5 cows and displaced 16 cows according to the March 1, 2007 Valley reporter new article. The cost to rebuild the barn was estimated at approximately \$50,000 - \$60,000.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood
Winter Storm	Town wide	Power outages: along North Road. Roof Collapses: Large barns, garages and storage facilities, including the Fire Station.	Minimal	\$60,000 +/-	Medium

## 7. Proposed Hazard Mitigation Programs, Projects & Activities

Hazard mitigation programs, projects and activities that were identified for implementation at the Town PDM meeting:

### Dam Failure, Flash flooding, flooding and fluvial erosion

- Stabilize approx 300ft of eroding river bank, upstream of covered bridge
- Control flood damages by reducing unmanaged storm water from the impervious surfaces at Bridge Street Market Place parking area,

- Control flood damages by reducing unmanaged storm water on Bridge Street
- Flood proof municipal offices and library building
- Purchase river channel management rights through river conservation easements
- Upgrade high priority culverts as identified in the municipal Culvert Inventory and Geomorphic Assessment including culvert # 6 on Tremblay Road and the culvert on Ronk Road.
- Develop a dam failure notification system, including increased communication regarding the Warren timber crib dam
- Protect stream corridor to allow for passive restoration of the reach, flow and sediment attenuation and to improve water and habitat quality
- Increase Community Rating thru the NFIP's Community Rating System (CRS)

#### Ice Jam

- Install ice motion detectors
- Purchase ice cutting and ice breaking equipment

#### Winter Storm

- Implement recommendations of Fire Station structural analysis
- Develop a program to retrofit/reconstruct roofs of town structures to withstand heavier snow/ice loads
- Conduct a tree removal/trimming program to reduce risk of tree fall on structures and above ground utilities
- Develop public alerts about the potential for and impacts of roof collapses

The Hazard Mitigation Activities Matrix (Attached) lists mitigation activities in regards to local leadership, possible resources, implementation tools, and prioritization. Prioritization was based upon the economic impact of the action, the Community's need to address the issue, the action's cost, and the availability of potential funding. The action's cost was evaluated in relation to its benefit.

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

In situations where planning mechanisms exist to implement the identified action, they are highlighted in the Implementation Tools column. Where no implementation tool exists, the action shall be implemented by the Town Select Board.

## **8. Plan Maintenance Process**

The Waitsfield Pre Disaster Mitigation Plan should be evaluated and updated either every five years or after every federally declared disaster according to FEMA regulations and requirements. Additionally, the Select Board will coordinate this assignment by public notices and community meetings as describes in *Section 5: Planning Process* section of this plan. Dependant on available funding the Central Vermont Regional Planning Commission will be able to assist with the future updates.

The process of evaluating and updating the plan will include continued public participation through the inclusion of stakeholders through public notices posted on the municipal website and may include changes in community mitigation strategies, progress in implementation of initiatives and projects, effectiveness of implemented projects or initiatives, and evaluation of challenges and opportunities. If new actions are identified community actions can be amended without formal adoption.

Waitsfield shall also consider incorporation of mitigation planning into their long term land use and development planning documents. It is recommended the town review and incorporate elements of the Pre Disaster Mitigation Plan when updating the municipal plan and zoning regulations.

## **9. Attachments**

Hazards Analysis Map  
Areas of Local Concern Map  
Hazard Mitigation Activities Matrix  
Town Resolution Adopting the Plan

# Waitsfield Hazard Analysis Map

**Legend**

- Dams
- NFIP 100 Year Flood Area
- FEH Zone

**Facilities**

- Government
- Church
- School
- Cultural
- Fire Station
- Public Gathering Place
- Ambulance House

**Roads**

- Minor Roads
- Major Roads

**Streams**

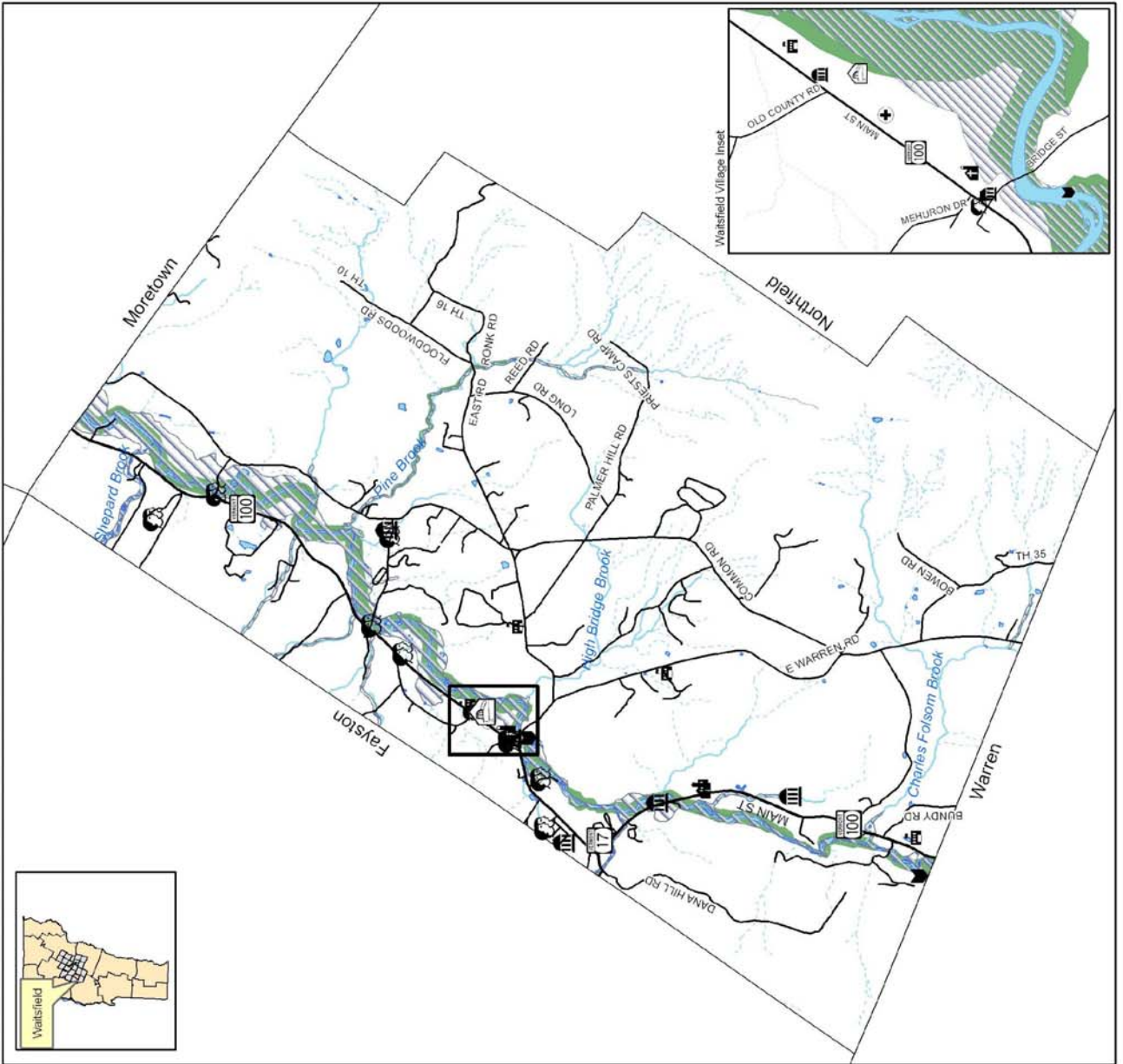
- Intermittent
- Perennial
- Lake/River



**SOURCE**  
 Facilities: ECH Data, 2010  
 Flood Zone: NFIP Q3, 1996  
 FEH Zone: VT ANR, 2010  
 Roads: Tranks, 2009  
 Streams: Vermont CVRPC, 1993  
 Dams: VDI - VT ANR, 2009

Map created 7-18-05 by CVRPC.  
 Updated 9-10-2010  
 N:\towns\waitsfield\pdm\haz\_ana

Data is only as accurate as the original sources.  
 This map is for planning purposes only.  
 This map may contain errors and omissions.





# Waitsfield Areas of Local Concern

**Legend**

**Areas of Local Concern**

- Flash Flood
- Dams of Local Concern
- Ice Jam
- NFIP 100 Year Flood Area
- FEH Zone
- Winter Storm Related Power Outages

**Facilities**

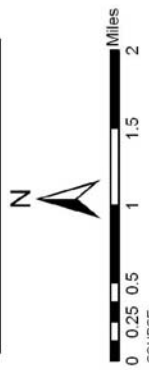
- Government
- Church
- School
- Cultural
- Fire Station
- Public Gathering Place
- Ambulance House

**Roads**

- Minor Roads
- Major Roads

**Streams**

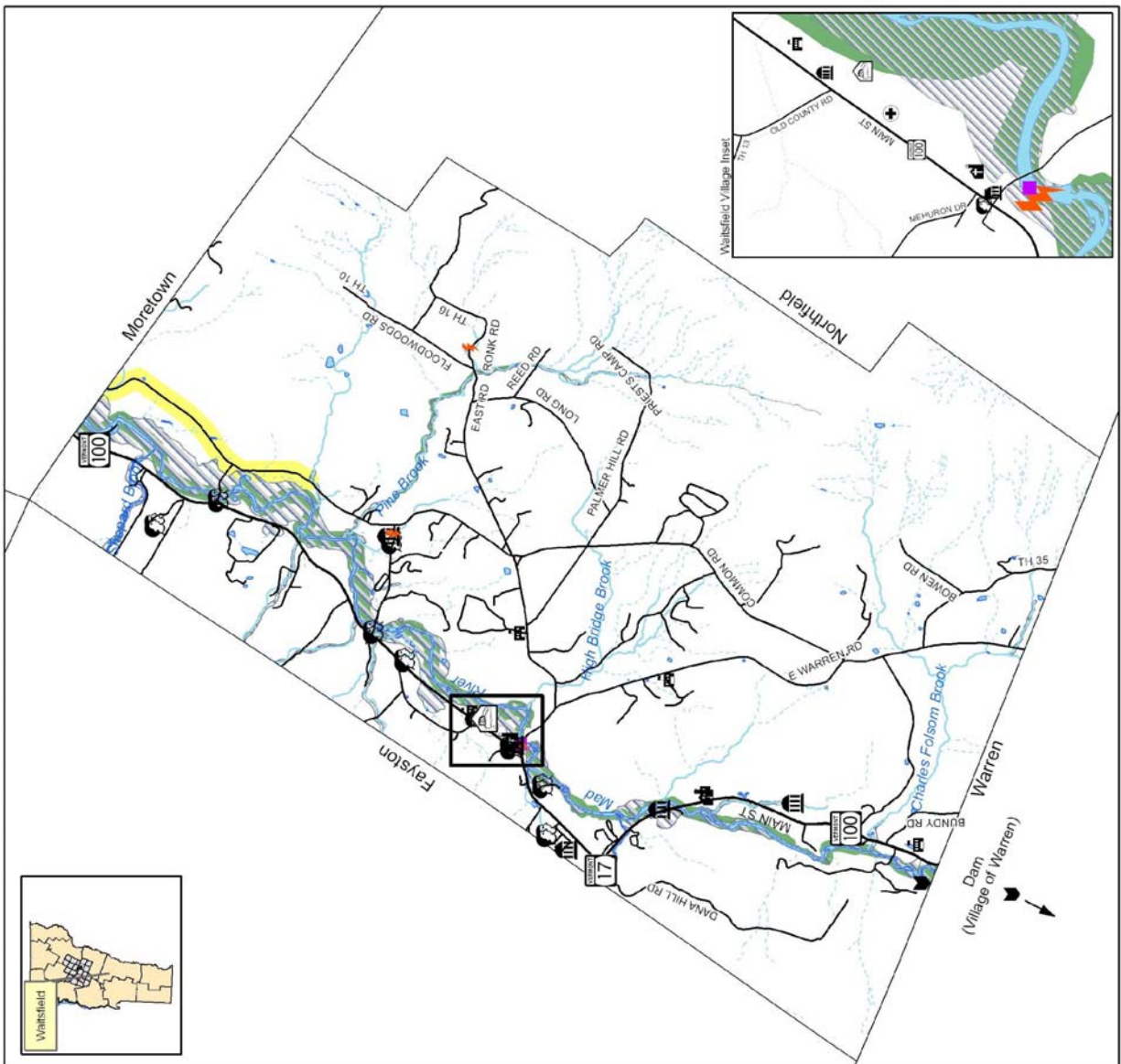
- Intermittent
- Perennial
- Lake/River



SOURCE: ERI Data, 2010  
 Facilities: ERI Data, 2010  
 Flood Zone: NFIP, 2010  
 FEH Zone: VT ANR, 2010  
 Roads: VTtrans, 2009  
 Surface Waters: CVRPC, 1993  
 Dams: VDI - VT ANR, 2009  
 Ice Jam: Waitsfield, 2010  
 Flash Flood: Waitsfield, 2010  
 Power Outages: Waitsfield, 2010

Map created 7:48:05 by CVRPC  
 Updated 05-10-2010  
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Data is only as accurate as the original sources.  
 This map is for planning purposes only.  
 This map may contain errors and omissions.



### Hazard Mitigation Activities Matrix

Mitigation Action	Local Leadership	Prioritization (High, Med)	Possible Resources
Stabilize approx 300ft of eroding river bank, upstream of covered bridge	Select Board	High	Pre Disaster Mitigation – Competitive grant program (PDM-C)
Reduce amount of impervious surface at Bridge Street Market Place parking area	Select Board	High	Pre Disaster Mitigation –Competitive grant program
Retrofit trenches and expand bio-retention areas at Bridge Street Market Place parking area	Select Board	High	Pre Disaster Mitigation –Competitive grant program
Install tree box filters for street trees on Bridge Street	Select Board	Medium	
Flood proof municipal offices and library building	Select Board	High	Pre Disaster Mitigation –Competitive grant program
Purchase river channel management rights through river conservation easements	Select Board	Medium	
Upgrade high priority culverts as identified in the municipal Culvert Inventory and Geomorphic Assessment including culvert # 6 on Tremblay Road, culvert # 15 & 22 on North Road, and culvert on Ronk Road.	Select Board	Medium	Pre Disaster Mitigation –Competitive grant program
Develop a dam failure notification system, including increased communication regarding the Warren timber crib dam	Select Board	Medium	<ul style="list-style-type: none"> <li>▪ Emergency Management Performance Grant (EMPG)</li> <li>▪ Hazard Mitigation Grant Program (HMGP)</li> </ul>
Increase Community Rating thru the NFIP's Community Rating System (CRS)	Select Board	Medium	Municipal resources
Install ice motion detectors	Select Board	Medium	<ul style="list-style-type: none"> <li>▪ Emergency Management Performance Grant (EMPG)</li> <li>▪ Hazard Mitigation Grant Program (HMGP)</li> </ul>
Purchase ice cutting and ice breaking equipment	Select Board	Medium	<ul style="list-style-type: none"> <li>▪ Emergency Management Performance Grant (EMPG)</li> <li>▪ Hazard Mitigation Grant Program (HMGP)</li> </ul>

Implement recommendations of Fire Station structural analysis	Select Board	High	<ul style="list-style-type: none"> <li>▪ Emergency Management Performance Grant (EMPG)</li> <li>▪ Hazard Mitigation Grant Program (HMGP)</li> </ul>
Develop a program to retrofit/reconstruct roofs of town structures to withstand heavier snow/ice loads	Select Board	Medium	<ul style="list-style-type: none"> <li>▪ Emergency Management Performance Grant (EMPG)</li> <li>▪ Municipal resources</li> </ul>
Conduct a tree removal/trimming program to reduce risk of tree fall on structures and above ground utilities	Select Board	Medium	<ul style="list-style-type: none"> <li>▪ Municipal resources</li> </ul>
Develop public alerts about the potential for and impacts of roof collapses	Select Board	Medium	<ul style="list-style-type: none"> <li>▪ Emergency Management Performance Grant (EMPG)</li> <li>▪ Municipal resources</li> </ul>



# TOWN OF WAITSFIELD

## RESOLUTION to Adopt the Town of Waitsfield, Vermont Pre-Disaster Hazard Mitigation Plan

WHEREAS, the Town of Waitsfield, Vermont has worked with the Central Vermont Regional Planning Commission to identify hazards, analyze past and potential future losses due to natural and manmade-caused disasters, and identify strategies for mitigating future losses; and; and

WHEREAS, the Waitsfield Pre-Disaster Mitigation (PDM) Plan was originally adopted by the Town of Waitsfield as an Annex to the Central Vermont Regional Pre-Disaster Mitigation Plan in October 2005 and received final approval from the Federal Emergency Management Agency in January 2006; and

WHEREAS, the purpose of the Pre-Disaster Mitigation Plan is to assist the Town of Waitsfield in recognizing hazards facing its community and identify strategies to begin reducing risks from acknowledged hazards; and

WHEREAS, the Waitsfield Pre-Disaster Mitigation Plan contains several potential projects to mitigate damage from disasters that could occur within the town; and

WHEREAS, the 2010 update is intended to be submitted as a stand-alone document;

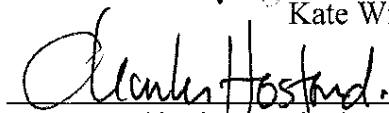
WHEREAS, a duly-noticed public meeting was held by the Town of Waitsfield Selectboard on November 22, 2010 to formally adopt the Waitsfield, Vermont Pre-Disaster Mitigation Plan;

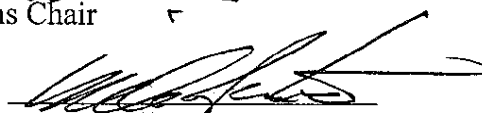
NOW, THEREFORE BE IT RESOLVED, the duly elected Selectboard of the Town of Waitsfield hereby adopts the Waitsfield Pre-Hazard Mitigation Plan, as updated.

Adopted and signed this 22nd day of November, 2010 .

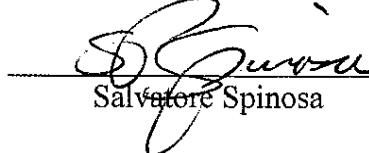
Waitsfield Selectboard:

  
Kate Williams Chair

  
Charles Hosford

  
William Parker

  
Paul Hartshorn

  
Salvatore Spinosa