Town of Fayston, Vermont
Local Hazard Mitigation Plan

Prepared by the Town of Fayston and CVRPC

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Town of Fayston, VT
Local Hazard Mitigation Plan Update
December 2016
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1. Executive Summary

The purpose of this Local Hazard Mitigation Plan is to recognize hazards facing the community of Fayston and identify strategies to avoid or reduce risks of damage or loss from those hazards. The Plan was developed by a team of local municipal officials in partnership with the Central Vermont Regional Planning Commission. The Plan also incorporates input from key community organizations, state agency stakeholders, and the public.

By researching the history of hazard occurrences and convening local and expert knowledge, the following hazards were prioritized as the worst threats to Fayston and the most important for the community to plan for:

- Flooding/Flash Flooding/Fluvial Erosion
- Hurricane/Tropical/Severe Thunder Storms with High Wind and/or Hail
- Extreme Cold/Winter Storm/Ice Storm
- Land/Rockslide/Debris Flow
- Invasive Tree Pests (Emerald Ash Borer, etc.)
- Wildfire/Forest Fire

In order to avoid damage and loss from these hazards before it happens, or reduce the amount of potential loss, the community has identified hazard mitigation projects and strategies. The following are highlights of those projects. The complete listing of projects can be found on page 31.

- Conduct analysis and community outreach to determine if the community would like to regulate River Corridors in addition to the Flood Hazard Overlay District
- Continue work toward engineering and/or mitigation solutions for slumping affecting Number Nine Road, Murphy Road, Bragg Hill Road and North Fayston Road
- Apply for funding to start the inventory and capital budgeting process in preparation for eventual development of a road stormwater management plan

The mitigation projects will be pursued over the five year course of this Hazard Mitigation Plan. Fayston's hazard mitigation program is a continuous effort by the community that also includes the ongoing land use planning, infrastructure and emergency management programs. The projects in this plan will be integrated into those processes as the community continues to grow its hazard mitigation capacity.

2. Introduction

The impact of expected, but unpredictable natural and human-caused events can be reduced through community planning. The goal of this Plan is to provide an all-hazards local mitigation strategy that makes the community of Fayston more disaster resistant.

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

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

3. Purpose

The purpose of this Local Hazard Mitigation Plan is to assist Fayston in recognizing hazards facing the region and their community and identify strategies to begin reducing risks from acknowledged hazards.

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

The 2016 Fayston Local Hazard Mitigation Plan is an update of the 2011 plan. The plan underwent review, evaluation, and implementation to reflect changes in development, progress in local mitigation efforts and changes in priorities. The plan has been reorganized and sections have been updated regarding:

- Plan Update Process
- Plan Maintenance
- Updates of Hazard Analysis Map
- Status update of 2011 mitigation strategies
- Identification of new mitigation strategies

4. Community Profile

The Town of Fayston is located in the southwest quadrant of Washington County. It is bordered by Duxbury to the north, Waitsfield to the east, Warren to the south and the Chittenden County

towns of Huntington and Buels Gore to the west. Fayston is characterized by steep mountains and high elevations, the spine of the northern Green Mountains run along the Town's western boundary, stream tributaries drain into the Mad River, a sub watershed of the Winooski Watershed.

Mt. Ellen, one of the prominent peaks in the Green Mountain Range, is the town's highest peak at 3,700 ft. Fayston's mountainous terrain is home to two of Vermont's major downhill ski areas: Sugarbush's Mount Ellen and Mad River Glen. The town's lowest point is a 700 ft where Shepherd Brook flows into the adjacent town of Waitsfield. Due to steep topography and poor shallow soils commercial and residential development has been limited to the lower elevation areas near and along the Waitsfield town line and around the base areas of the two ski resorts.

According to the Fayston Town Plan, 2014, Fayston is a rural community with 1,353 full-time residents (2010 US Census) and 1,000 part-time residents. Between 1960 and 2010 the population grew from only 158 residents to 1,353. According to the Town Plan it is very likely that the demand for development in the near future will be similar to what has been built over the last five years: single-family homes on several acres or more. Between 2010 and 2014, growth has slowed somewhat, as the Town has seen only a four percent increase in the number of year-round units, adding a total of 24 new units. This increases the hazard vulnerability of the town only minimally, will risk dispersed across several areas of town and among individual owners, versus concentrated in a few major investments.

The majority of Fayston's transportation network consists of Class 3 town highways. Fayston is served by three collector highways: Route 17, which traverses the Appalachian Gap and provides access from the Mad River Valley to Chittenden and Addison County on the west side of the Green Mountains. German Flats Road and North Fayston Road are also collector highways. Traffic on these roads increase dramatically on the weekends and holidays due to ski resort traffic, and see a lesser increase during fall foliage season.

The major economic activity occurs at the two major ski areas. Much of the residential development has occurred in North Fayston due to its proximity to Route 2 and Interstate 89 to the north and new development is occurring along German Flats Road, Center and North Fayston Roads, Kew-Vasseur and Bragg Hill. The Town Plan recommends that the existing road infrastructure be used for future development and that the overall development pattern enhance Fayston's rural character. This rural character limits land uses and densities in outlying areas and high elevations and instead encourages appropriate clustered or concentrated patterns of development. As stated above, this pattern of development does increase vulnerability in these areas minimally, however risk is also dispersed among each individual homeowner. Multi-unit developments at the ski resorts constitute a large investment, however none have been constructed since 2011.

5. Community Capacities

Services provided by the Fayston municipality are overseen by a three member volunteer Selectboard. The seven member volunteer Planning Commission is charged with developing the Municipal (Town) Plan, as well as the community's land use regulations. A volunteer Development Review Board ensures that development follows the land use regulations before a permit is issued. Fayston also has a 5 member Natural Resources Committee.

The Town employs a handful of staff members to carry out services to its residents on a daily basis. The following are the paid positions which are involved in hazard mitigation:

- Town Clerk/Treasurer (Full Time)
- Zoning Administrator/Floodplain Administrator (Part Time)
- Road Foreman & 1-2 Person Crew (Full Time & Part Time)
- Selectboard & Grant Writing Assistant (Part Time)

Volunteer municipal officials also play a crucial role in carrying out hazard mitigation. Allen Tinker is the volunteer Emergency Management Director. The Selectboard oversees all municipal & mitigation activities, the Planning Commission ensures long term community planning, including hazards, and the Natural Resources Committee takes on some planning and implementation, depending on the nature of the hazard.

The municipal budgeting process occurs on an annual basis, planning for a fiscal year from January to December. The budget is usually developed between early November and early January, and put to voter approval on the first Tuesday in March at Annual Town Meeting Day. The Selectboard is charged with developing and proposing the budget to the voters, including the Capital Budget. Individual municipal departments and committees (Planning Commission, Natural Resource Committee, Listers) develop budget proposals that are submitted to the Selectboard, and the Selectboard meets at least once with each department and/or committee Chair to discuss and finalize the proposals. After the budget has been adopted by vote of town residents, the Selectboard has the authority to modify it in cases of extraordinary circumstances; i.e. natural disaster, unexpected equipment/infrastructure failure (i.e., water well, power failure, major bridge/culvert failure). The budget is monitored several times a month by the SB, SB Assistant, Town Treasurer and an appointed citizen auditor.

Municipal revenues are generated primarily through levy of taxes on property value. Other major sources are federal & state payments to support the town school, aid from the Vermont Agency of Transportation for highways, and payments in lieu of taxes for land owned by the State of Vermont. The municipality also has the authority to incur debt through bonding.~~"~~

Fayston's transportation network is managed according to the 2013 Vermont Road and Bridge Standards. The 2015 highway budget comprised 35% of the total municipal general fund budget.

Green Mountain Power and Washington Electric Cooperative provide electricity to the Town of Fayston. Residents and businesses rely on individual or small-scale community wells and springs for their water supply and private waste water treatment systems. The State of Vermont administers all waste water permitting of both individual on site systems and public systems.

Fayston contracts with other area governments to provide emergency services for the town. Fayston has an agreement with the Town of Waitsfield for fire protection. Fayston contributes 40% to the Waitsfield-Fayston Volunteer Fire Department's budget. According to the *Annual Report of the Town Officers and School Directors of Fayston Vermont for the year ending December 31, 2015,* the volunteer department responded to 107 calls in the Mad River Valley, of all calls received 30% where from Fayston. Fayston has a volunteer Fire Warden, responsible for issuing open burning permits.

Police protection is provided by the Vermont State Police. The volunteer Mad River Valley Ambulance Service (MRVAS) is responsible for ambulance service in Fayston and according to the town report the MRVAS answered 440 calls in 2015, historically, about 1/5 of calls come from Fayston. Fayston is also served by and is a member of Local Emergency Planning Committee #5, which supports Tier II Hazardous Materials planning.

Fayston engages in significant planning activities via the Mad River Valley Planning District (MRVPD). The MRVPD was created in 1985 for the purpose to, "carry out a program of planning for the future of the Mad River Valley. The planning program shall be directed toward the physical, social, economic, fiscal, environmental, cultural, and aesthetic well-being of the member Towns and its inhabitants." The planning district includes Fayston and its neighboring towns, Waitsfield & Warren. The Sugarbush Ski Resort, Mad River Valley Chamber of Commerce and Central Vermont Regional Planning Commission serve on the Steering Committee with the member towns. MRVPD is staffed by an Executive Director and a Planning Coordinator that provide data gathering, analysis, coordination of stakeholders, local municipal planning support, and consultant and special project coordination.

The Town Plan, adopted in 2014, includes goals, objectives and implementation strategies which support hazard mitigation, as referenced in Section 8 of this plan. The LHMP is also incorporated by reference into the 2014 Town Plan. Vermont statue enables this incorporation to satisfy state municipal planning requirements for towns to develop a flood resilience element in municipal plans.

The goals of the Fayston local hazard mitigation plan are incorporated into the various local land use regulations. Fayston has adopted regulations that include zoning and subdivision bylaws. The 2011 Zoning Ordinance limits development within the Forest District and the Soil and Water Conservation District for the purpose of protecting forest resources and headwater streams and to prevent development in areas with steep slopes, shallow soils, wildlife habitat, fragile features, scenic resources and poor access to town roads, facilities and services. Wetlands are given protection as well, and regulations also help manage stormwater and sediment.

Fayston's Land Use Regulations address hazards relating to water resources in various ways. The Flood Hazard Overlay (FHO) District was created "to protect public health, safety, and welfare by preventing or minimizing hazards to life and property due to flooding and to ensure that private property owners with designated flood hazard areas are eligible for flood insurance under the National Flood Insurance Program." The FHO zoning regulation also includes a warning that "areas located outside this mapped district may also be subject to periodic or occasional flooding." The Flood Hazard Overlay District regulation prohibits new structures in the FHO district. Fayston has also adopted stream buffer standards which limit development within 50 feet of waterways. Development is limited within the vegetated buffer and its purpose is to prevent soil erosion, protect wildlife habitat and maintain water quality.

Fayston is eligible under the Vermont Emergency Relief and Assistance Fund (ERAF) to receive state funding to match Federal Public Assistance funds after a federally declared disaster. Communities that take specific steps to reduce flood damage can increase the percentage of state funding they receive from 7.5% up to a maximum of 17.5%. At the time of this plan development, Fayston has an ERAF rating of 17.5%. Fayston has taken the specific steps to reduce flood damage by 1) participating in the National Flood Insurance Program, 2) adopting standards that meet or exceed the current Vermont Roads and Bridge Standards 2013, 3) adopting a Local Emergency Operations Plan which is renewed and adopted annually, 4) adopting a Local Hazard Mitigation Plan approved by FEMA, and 5) adopting Interim River Corridor protection standards. Maintaining these measures ensures Fayston at least a 12.5% state contribution rating.

Fayston has taken an additional 5th step to receive the current 17.5% rating. It is one of numerous communities that has adopted regulations for a subset of their watercourses (buffer setbacks, Phase 2 data-generated FEH overlays, or avoidance-based Flood Hazard Areas) prior to the ERAF Amendments that took effect on October 2014. Therefore Fayston has approved Interim River Corridor standards. In order to retain eligibility under the River Corridor Plan criteria of the ERAF and qualify for the maximum 17.5% rate, Fayston will need to update their interim river corridor standards to meet the Agency of Natural Resources (ANR) criteria within two years of ANR publishing a statewide river corridor map updated to include existing Phase 2 Stream Geomorphic Assessment (SGA) data. The data release, expected to occur at the end of 2016, has been delayed and the agency has not announced a new release date. The other option to qualify for the maximum ERAF rate is for Fayston to enroll in the NFIP Community Rating System (CRS) and adopt a bylaw that prohibits new structures in the Flood Hazard Area. However, Fayston has elected not to pursue enrollment in the CRS.

Information on ERAF Eligibility Criteria – 17.5% State Share can be found at:
http://floodready.vermont.gov/sites/floodready/files/documents/ERAF17.5Criteria05282015.pdf
A copy of the criteria is an attachment to this plan.

National Flood Insurance Program Participation

The Town has been enrolled in the NFIP since September 1980 and is currently in compliance. The adopted 2010 flood hazard regulations regulate development in the NFIP floodplain according to Digital Flood Insurance Rate Maps that became official in 2013. The DFIRMs define the 100-year

floodplain along Mill Brook from the Waitsfield-Fayston Town line to 3-miles upstream. The Fayston Flood Hazard Overlay District (FHO) prohibits new structures, except those required for flood control or stream management, within the district.

To maintain compliance with the NFIP, Fayston will continue to follow NFIP requirements for close coordination with the Floodplain Management Section of the Vermont Department of Environmental Conservation. All applications will be submitted to the Floodplain Manager assigned to Fayston. Elevation Certificates will be required of structures to be substantially improved in the Zones specified by the Flood Hazard Regulations. Projects alleged or found to be in violation of the FHO regulations will be reported to the State NFIP Coordinator. This established channel of communication allows Fayston to stay aware of changes in state or federal standards to which it must respond, and maintain communication with the Vermont Floodplain Management Section to monitor local program status.

Fayston will also coordinate directly with the Vermont Department of Environmental Conservation, and the Central Vermont Regional Planning Commission, to stay apprised of pending floodplain mapping and any updates or revisions that may be subsequently necessary to Fayston's Flood Hazard Overlay District maps and standards.

Fayston may qualify to enroll in the NFIP Community Rating System (CRS), however the administrative resources necessary for enrollment and ongoing program maintenance are likely to be a significant challenge for the municipality and a deterrent for participation. The CRS Quick Check indicates that Fayston can achieve the 500 point threshold to apply for Class 9 status. The community's prohibition of new structures and fill contributes greatly to achieving potential CRS credit. However, due to the administrative burden, Fayston will not enroll in the CRS.

Other Existing Hazard Mitigation Programs, Projects & Activities

The additional hazard mitigation activities listed below constitute further mitigation capacities maintained by Fayston. The activities are ongoing or recently completed and are listed by mitigation strategy. They share and incorporate the overall goals of the local hazard mitigation plan. Fayston has the capacity to maintain these programs and initiatives using the staff and volunteers described in Community Capacities.

Community Preparedness Activities

- Local Emergency Operations Plan, May 16, 2016

Land Use Planning/Management

- Flood Resilient Transportation Pilot Study, 2015
- Highway Access Permit Ordinance, adopted on May 28, 2013

Hazard Control & Protective Works of Infrastructure and Critical Facilities

- Maintenance Programs (Culvert Inventory) – every 3 years, last updated 2013
- Dry Hydrants – 5
- Emergency Shelters (backup generator at Town Offices)

- Fayston School or Green Mountain Valley School (GMVS) (not Red Cross approved);
- Additional shelters in neighboring Town of Waitsfield
- State Regional American Red Cross Shelter at the Barre Auditorium, Barre, VT

Public Awareness, Training & Education

- School Fire Safety Program, Waitsfield-Fayston Fire Chief Bub Burbank, annually
- Public education materials about reducing wild fire risk, Fayston Fire Warden
- School evacuation plans
  - Fayston Elementary School, Principal Mr. Berthium, annual review
  - Green Mountain Valley School, Tim Harris, annual review
  - Fayston Elementary School Preschool, Rachel Foley, Director annual review

Status of Past Mitigation Projects

The following chart provides an overview of Fayston's proposed 2011 hazard mitigation actions along with their current status, reflecting the progress in local mitigation efforts.

2011 Mitigation Project	2016 Project Status
Work with the Pipers/landowners on Randall Rd to install a culvert	Project Pending: Culvert installation is scheduled for 2017
Replacement and upgrade culverts on German Flats Rd (6 ft culvert), Rankin Rd, Center Fayston Rd, Moulton Rd (4 ft culvert), Old Mansfield Rd, Phen Rd, Tucker Hill Rd, Fayston Farms Rd	Complete. Culverts upgraded on: German Flats Road Moulton Road Old Mansfield Road Phen Road Fayston Farms Road It was determined issues on Tucker Hill Road would be best addressed with extensive ditching. The Rankin Road culvert is privately maintained.
Require fire extinguishers at yurt sites on True North Property	No Longer Relevant: The project proposal was withdrawn and the outdoor therapy camp was not constructed.
Develop regulations for driveway culverts; have private landowners be responsible for maintenance and upgrades	Complete. A Highway Access Permit Ordinance was adopted on May 28, 2013
Provide education for landowners regarding storm water, culverts and low impact development	Still relevant and ongoing: Friends of the Mad River is now responsible for providing outreach directly to landowners. It is no longer a mitigation project carried out by the

	municipality, however the municipality supports the Friends in this work.
Work with State to develop alternative water supplies in State Forest for wildfire suppression purposes	Complete: A Fire Pond has been installed at the Fayston Town Garage.
Re-engineer Number Nine Rd to decrease probability of landslide	Still Relevant: Selectboard has contracted with engineering firm to conduct geologic evaluation and propose methods to stabilize the slumping bank. This strategy is incorporated into the 2016 Plan.
Develop public education materials about reducing wild fire risk	The Town Fire Warden is responsible for public education about reducing wild fire risk. This mitigation action has been incorporated into the regular duties and responsibilities of the Town Fire Warden. It will not be implemented as a new mitigation action in the 2016 plan.
Work with elected officials, the State and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education	No Longer Relevant: Documentation was reviewed by the State Floodplain Manager. There is no documented NFIP compliance issue in Fayston between 2005 and 2016, the planning period for both the former and current plan. It is possible this task refers to the need to review and update bylaws to reflect new Digital FIRMs that were about to be released during the 2011 LHMP planning process. See the attachments for documentation of absence of a compliance issue.

Ability to Expand Existing Municipal Policies & Programs

The majority of Fayston's capacity to expand its existing hazard mitigation program is through taking advantage of assistance provided by state agencies, the Mad River Valley Planning District and the Central Vermont Regional Planning Commission. State agencies such as the Division of Emergency Management and Homeland Security, Agency of Transportation, Agency of Natural Resources, and Agency of Commerce and Community Development provide guidance and technical assistance as well as funding resources which the Town may access to expand its mitigation programs.

Community institutions and organizations such as the Vermont League of Cities and Towns and the Friends of the Mad River can provide expertise, and in some cases direct man-power and/or financial resources, to assist the Town with carrying out hazard mitigation programming or projects.

Local businesses are another resource for Fayston to access for hazard mitigation capacity. Fayston already has a strong relationship with Sugarbush Ski Resort through the Mad River Valley

Planning District. As a major landowner, the resort can influence mitigation activities in Fayston, both by conducting mitigation for its own assets, and assisting the town to protect public assets utilized by the resort and its patrons.

The capital planning and budgeting process is also an important tool through which the municipality may work to incrementally grow revenues designated for specific hazard mitigation expenditures.

6. Planning Process

The Fayston Local Hazard Mitigation Plan was originally developed as an Annex to the Central Vermont Regional Local Hazard Mitigation Plan. In 2012 the town moved to a standalone Plan. The current plan updates the 2012 plan and reflects changes in development, progress in local mitigation efforts and changes in the community's priorities.

The Central Vermont Regional Planning Commission (CVRPC) coordinated the Fayston Local Hazard Mitigation Plan process in partnership with the Town of Fayston. CVRPC Planner Gail Aloisio worked directly with town. The Town Clerk, Patti Lewis, and Selectboard Chair, Jared Cadwell, served as the primary points of contact for the planning process. The planning process was conducted over the course of May 2016 – December 2016. Primary guidance and oversight of the process was provided by a local hazard mitigation team comprised of the following local officials:

- Robert Vasseur – Road Commissioner
- Patti Lewis – Town Clerk & Treasurer, Selectboard Assistant & Grant Writer
- Allen Tinker – Emergency Management Director
- Chuck Martel – Selectboard
- John Weir – Zoning Administrator/Floodplain Administrator
- Polly McMurtry – Planning Commission Chair
- Jared Cadwell – Selectboard Chair
- Stuart Hallstrom – Road Foreman
- Joshua Schwartz – Executive Director, Mad River Valley Planning District

The local mitigation team met over the course of May through October 2016 to review information about hazards and mitigation options in Fayston, and provide local knowledge and professional opinions. A Kick Off Meeting was held on May 11, 2016, providing an overview of the planning process and schedule, and to brainstorm outreach activities (7 in attendance). On June 15, 2016, the team convened again to discuss the hazards that impact Fayston and the town's greatest overall vulnerabilities. At this meeting the team determined the most important hazards for Fayston to plan for, and also started brainstorming potential mitigation projects (7 in attendance). CVRPC then worked to develop these mitigation project ideas with the team at a meeting on August 10, 2016. As described below, final survey results were reviewed before finalizing the mitigation actions. All team meetings took place at the Fayston Municipal Offices.

Although the meetings were noticed as Selectboard meetings and open to the public, no members of the public attended. Copies of the meeting minutes are included as an attachment.

Research and feedback on hazards, community capacities, community assets and potential mitigation projects was also conducted in coordination with other important stakeholders. Phone calls, emails and meetings were exchanged and held to involve the expertise of various state agency and regional stakeholders, extension offices, and a few non-profits with a role in resilience and mitigation planning.

Preparation for the meetings included a review of the following existing plans, studies, reports and technical information by CVRPC staff:

- 2014 Fayston Town Plan
- 2016 Local Emergency Operations Plan
- 2015 Town Report
- 2013 Flood Insurance Study
- 2008 Mad River Corridor Plan
- Draft Mad River Valley Ridge to River Phase 1 Report
- Flood Resilient Transportation Pilot Study
- 2010 Vermont Forest Resources Plan

The public, as well as neighboring communities, and regional and state entities were involved in the planning process in multiple ways. In May, a survey was circulated to gather feedback from Fayston residents, as well as other stakeholders like tax payers, those employed in town, residents of neighboring towns and regular visitors. Participants provided feedback on their experiences during disasters, hazards of most concern, and the most effective investments to address vulnerabilities. The survey was circulated via Front Porch Forum, a weekly email digest, and on the Town Website. A broader regional audience was solicited for feedback via the July CVRPC Newsletter. In August, the survey was again promoted via local public access television coverage at a Selectboard meeting. The survey results are included as an attachment to the plan.

To reach neighboring municipalities, the draft plan was distributed directly to Emergency Management Directors in those municipalities, to solicit their comments. Comments were accepted between October 5th and November 3rd, 2016. These towns are Warren (Jeff Campbell), Waitsfield (Fred Messer), Moretown (Stephen Smith), Duxbury (Erik Zetterstrom), Lincoln (David Harrison), Buels Gore (Jake Perkinson), and Huntington (Barbara Elliott). During this same time, additional comment on the draft was also solicited, via Front Porch Forum and the Fayston Municipal Website. No comments were received in response to this direct and online outreach.

Feedback from stakeholders was incorporated during drafting both before the final mitigation actions were chosen and before the draft was finalized. The local mitigation team was presented with the results of the survey after brainstorming potential mitigation actions, but before finalizing those that would be included in the draft. Documentation of opportunities for input on the plan are provided in the Attachments.

7. Risk Assessment

Hazard Risk Assessment

The natural disasters included in the table below were ranked to determine the worst threat hazards to Fayston. Worst Threat Hazards were identified based upon the likelihood of the event and the community's vulnerability to the event. The methodology used is described in further detail below the table.

Hazards not identified as a "worst threat" may still occur, but due to a low likelihood of the event and/or the community's vulnerability being limited to a routine emergency, this plan will not address the "non-worst threat" hazards (indicated by a blank box). Greater explanations and mitigation strategies of "non-worst threat" hazards can be found in the State of Vermont's Hazard Mitigation Plan.

Hazard	Likelihood[1]	Community Vulnerability[2]	Worst Threat
Flash Flood/Flood/Fluvial Erosion	High	Moderate	X
Hurricane/Tropical/Severe Storms/Thunderstorm/High Wind/Hail	Med	Severe	X
Extreme Cold/Winter Storm/Ice Storm	High	Moderate	X
Land/Rockslide/Debris Flow	Med	Moderate	X
Invasive Species (Emerald Ash Borer, etc.)	Med	Moderate to Severe	X
Wildfire/Forest Fire	Low	Severe	X
Terrorism (school or cyber incident, etc.)	Low	Severe	
Dam Failures	Med	Minimal	
Hail	Med	Minimal	
Highway Rock Cuts	Med	Minimal	
Avalanche	Med	Minimal	
Drought	Med	Minimal	
Infectious Diseases Outbreak	Low	Moderate	
Structural Fire	Low	Moderate	
Tornado	Low	Moderate	
Civil Disturbance	Low	Moderate	
Earthquake	Low	Minimal	
Ice Jam	Low	Minimal	
Water Supply Contamination	Low	Minimal	
Expansive Soils	Low	Minimal	
Extreme Heat	Low	Minimal	
Nuclear Power Plant Failure	Low	Minimal	
Avian (Bird) Influenza	Low	Minimal	
Subsidence	Low	Minimal	

Hazard	Likelihood[1]	Community Vulnerability[2]	Worst Threat
Karst Topography	Low	Minimal	-
Coastal Erosion	Low	Minimal	-
Tsunami	Low	Minimal	-
Volcano	Low	Minimal	-

[1]Likelihood: **High** – Nearly 100% probability of happening in the next year
Medium – will happen at least once in the next 10 years
Low – will happen at least once in the next 100 years

[2]Community Vulnerability: **Severe** – the hazard presents the threat of disaster
Moderate - a hard hit, but doesn't constitute a disaster nor a routine emergency
Minimal - routine emergency

After being rated for each Likelihood and Community Vulnerability, hazards were ranked according the most threatening combination of likelihood and community vulnerability. If hazards tied, the Local Mitigation Team determined which is more threatening by considering the magnitude of the hazard, prior impacts the hazard type has caused, the value of the community assets vulnerable to the hazard, the level of community preparedness or existing mitigation, and resources available to mitigate the hazard.

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

- Flooding/Flash Flooding/Fluvial Erosion
- Hurricane/Tropical/Severe Thunder Storms with High Wind and/or Hail
- Extreme Cold/Winter Storm/Ice Storm
- Land/Rockslide/Debris Flow
- Invasive Tree Pests (Emerald Ash Borer, etc.)
- Wildfire/Forest Fire

Fayston's hazard planning priorities have expanded since 2011 to include Extreme Cold/Winter Storm/Ice Storm and Invasive Tree Pests. Priorities related to Avalance/Landslide have been refined to focus specifically on landslides, rockslides and/or debris flow, and no longer avalanches. Similarly Fayston has recognized that severe storms present risks other than flooding when they include high wind and hail. The town's planning for Wildfire/Forest Fire remains the same.

Flooding, flash flood, and fluvial erosion are still the top priority for hazard mitigation planning in Fayston. The Town is interested in focusing a majority of mitigation efforts into reducing its impacts, as the events occur most frequently, severely and cause the most damage to public and private infrastructure.

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 *Hazard Analysis Map.*) Each subsection includes a list of past occurrences based upon County-wide FEMA Disaster Declarations (DR-#) plus information from national databases, local records, a narrative description of the hazard and a hazard matrix containing the following overview information:

Hazard	Location	Vulnerable Assets	Extent	Impact &/or Risk	Likelihood
Type of hazard	General areas within municipality which are vulnerable to the identified hazard.	Types of structures and community assets impacted	maximum recorded magnitude of the event, measuring things such as numerical measurement (inches rain/snow, flood depth, wind speed, etc.), rating on a scientific scale (i.e. Category 3 Hurricane), speed of onset, or duration of event. Typical magnitudes experienced may also be reported.	Dollar value or percentage of damages, or the value of the assets that are at risk of damage	High: 10% to 100% probability within the next year or at least once in the next 10 years. Medium: less than 10% to 100% probability within the within the next year or less than once in the next 10 years. Low: 1% to 10% probability in the next year or at least once in the next 100 years.

Hazard Profiles: Worst Threat Hazards

Flooding/Flash Flooding/Fluvial Erosion

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

Flooding of land adjoining the normal course of a stream or river has been a natural occurrence since the beginning of time. If these floodplain areas were left in their natural state, floods would not cause significant damage. Development has increased the potential for flooding because rainfall that used to soak into the ground or take several days to reach a body of water now quickly runs off streets, parking lots and rooftops and through human-made channels and pipes.

Fayston is located within the Mad River Watershed, a sub watershed of the Winooski Watershed. Most of the land is composed of steep hillsides, terraces, ridgelines and narrow valley bottoms.

Ninety-five percent of Fayston's landscape has slopes greater than 15%. Fayston is drained primarily by Shepherd Brook in North Fayston and Mill Brook in South Fayston, two of the Mad River's largest tributaries. According to the 2013 Flood Insurance Study covering Fayston, Mill Brook drains about 19 square miles and Shepard Brook 17 square miles. As the watersheds are steep with narrow floodplains and no swamps or other storage, these tributaries are prone to peak flows that accumulate quickly.

History of Occurrences: The Mad River Valley encompasses the towns of Waitsfield, Warren and Fayston. The Mad River does not flow through Fayston, however it is fed by large tributaries in Fayston. The Mad River flood gage is located in Moretown, approximately 8 miles downstream from Fayston. Limited historical data is available for specific fluvial erosion events, however this type of damage often occurs along with inundation flooding events.

Date	Event	Location	Extent - flood stage is 9 feet
4/15-18/2014 DR 4178	Severe Storms and Flooding	Countywide	Mad River flood gage at 10.02 ft
4/10-15/2014	Flood; heavy rain/snowmelt	Fayston	10.02 ft; 4-6 inches of water released from snowpack
6/25-7/11/2013 DR 4140	Severe Storms & Flooding	Countywide	9.33 ft
8/28/2011 DR 4022	Flash Flood (TS Irene)	Fayston; Washington County	Mad River flood gauge at 19.07 feet; 10.07 feet above flood stage
5/20/2011 DR 4001	Flash Flood	Washington County (No Fayston impact)	4" of rain
3/6/2011	Flood; ice jams	Fayston; Washington County	1-2" of rain followed by ~15" of snow
8/2/2008	Flash Flood	Washington County (Mad River Valley)	Mad River gauge at 7.89 feet
12/24/2003	Flood	Mad River Valley	Mad River flood gauge at 14.17 feet
12/17/2000	Flood	Mad River Valley	3" of rain
6/27/1998	Flash Flood	Mad River Valley	3-6" of rain over 2 day period – Mad River flood gauge at 14.13 feet
8/6/1995	Flood	Mad River Valley	Mad River flood gauge at 8.12 feet
3/31/1987	Flood	Mad River Valley	Mad River flood gauge at 11.97 feet
3/13/1977	Flood; ice jams	Mad River Valley	Mad River flood gauge at 13.72 feet,
8/10/1976	Flood	County Wide	Mad River flood gauge at 13.47 feet, More bank erosion and channel Incision than a prior even in 1973 (2008 Upper Mad River Corridor Plan)
9/22/1938	Flood	County Wide	Mad River flood gauge at 16.34 feet

Date	Event	Location	Extent - flood stage is 9 feet
11/03/1927	Flood	County Wide	Mad River flood gauge at 19.40 feet

The worst anticipated flooding is unknown in the low lying areas in the Town of Fayston. The worst flooding event in Fayston's recorded history occurred in 1927, followed closely by T.S. Irene in 2011. The Mad River flood gauge readings during these events were 19.4 feet and 19.07 feet, respectively. Detailed historical records relating to the extent of the 1927 flood in Fayston are lost; however, during Tropical Storm (T.S.) Irene up to 4 feet of flooding occurred in Fayston. Lesser but more regular flooding occurs in Fayston, with generally 1 -2 feet of flooding in low lying areas every two or three years.

Fayston incurred damages from flooding during the spring 2011 floods and Tropical Storm Irene. Culverts on the following roads were damaged: German Flats, Rankin, Center Fayston, Moulton, Old Mansfield, Fenn, Tucker Hill and Fayston Farms. Damages to culverts, bridges and road surfaces from these two events cost upwards of $250,000. In August of 2016, a very isolated severe thunderstorm caused flows that overwhelmed drainage infrastructure in North Fayston, especially along Sharpshooter Road. Preliminary estimates of total damage for this event are $170,000. The Town is looking to replace damaged culverts with upsized culverts.

Based on the results of overlaying the FIRM flood maps with the location of the E911structures, there are 67 properties (parcels) and 16 structures in the 100 year floodplain. By using median property values from the Fayston grand list, a very general sense of risk of loss can be calculated for 15 parcels that have both land and structures, parts of which may be in the floodplain. Many of the structures on these parcels, however, are not in the floodplain. The total value for these properties is $4,072,500, and the value of the land only is $6,489,600. As many of the structures represented in the land and structure value are not in the floodplain, this gives only a very broad sense of the value at risk in the Special Flood Hazard Area.

There are no FEMA repetitive loss properties in Fayston.

Fayston experiences damages from flooding events outside of the NFIP mapped 100-year floodplain. Localized heavy rainstorms inundate small mountain streams and tributaries creating fast-moving water that carries rocks, mud, and other debris. In addition, erosion caused by flooding undermines stream banks, mountain sides and road beds. The effects of these events are compounded by the failure of infrastructure such as undersized and/or blocked culverts.

The Town Plan recognizes the shortcomings of solely relying on the NFIP maps as they do not map all areas of possible flooding due to new development, localized drainage, or the effects of stream channel erosion during flooding events. The Town Plan also includes an Areas of Local Concern map that shows the most vulnerable areas of fluvial erosion, which include nine properties. This map also illustrates the importance of Fayston's taking steps to address erosion on downstream towns within the Mad River watershed.

147 parcels and 56 E911 structures are in the Statewide River Corridor hazard area. 107 of the parcels with both land and structures are valued at $29,050,500, and the land only at $4,992,000.

Again, many of the structures represented in this value are not actually located in the Statewide River Corridor.

To address both the flooding and water quality implications of stormwater runoff, Fayston and the other 4 towns in the Mad River Valley are starting a planning initiative to improve stormwater management. Called Ridge to River, the initiative will focus on the following strategies:

- Educate local officials, road crews, contractors and land owners about the implications of their routine decisions on stormwater runoff
- Minimizing erosion and stormwater runoff from land disturbance through better regulations, procedures, trainings, policies and inspection & reporting protocols
- Improving practices for roadway construction and maintenance and repair by both municipal road crews and local contractors
- Reducing the "water footprint" of land uses such as development, driveways, and recreation trails
- Ensure municipal permitting, standards and enforcement require effective erosion control & stormwater management
- Promote partnership with farmers, foresters and other working lands stewards

These strategies will all have effects that reduce the creation and/or exacerbation of flash flooding and inundation hazards from stormwater runoff. At the time of plan development the project team was reviewing the results of an information gathering report produced by the project consultant, and starting to review regulatory differences between the municipalities to identify the most effective improvements to regulatory strategy.

Fayston has also pursued mitigation projects to protect its highway assets by participating in the 2015 Mad River Valley Flood Resilient Transportation Study. The study analyzed the vulnerability of highway drainage structures to runoff and flooding damage, and made recommendations for infrastructure improvements. As part of the update of Fayston's LHMP, the Road Foreman prioritized vulnerable structures for both for inclusion in the LHMP implementation plan, or for future project development. Structures with a simple project scope have been included in the implementation plan. Project development efforts for structures with a less well defined project scope is beyond the scope of the current LHMP planning process. These projects have been listed for additional project development. A map of vulnerable structures, study recommendations, and the project development priorities list, are included in the attachments.

The Hazards Analysis Map (attached) identifies areas that have experienced flash flooding in the past. The following matrix provides an overview of the hazard:

Hazard	Location	Vulnerable Assets	Extent	Impact & Risk	Probability
Flooding	German Flats Rd, Rankin Rd, Center Fayston Rd,	Culverts, bridges, road infrastructure	TS Irene - ~6" of rain, Mad River flood	Impact: Over $250,000 from 2011 events;	High

	Moulton Rd, Old Mansfield Rd, Phen Rd, Tucker Hill Rd, Fayston Farms Rd		gauge at 19.07 feet; 9 ft is flood stage	Risk: ~$13 million in floodplain properties	

Hurricane/Tropical/Severe Storms with High Wind and/or Hail

Hurricanes and tropical storms are violent rain storms with strong winds that have large amounts of rainfall and can reach speeds up to 200 mph. Hurricane season is between the months of June and November. These types of storms originate in the warm waters of the Caribbean and move up the Eastern seaboard where they lose speed in the cooler waters of the North Atlantic. Severe storm events can occur late spring and early summer as temperatures increase in the summer season. The frequency and intensity of hurricanes, tropical storms, and severe storms is expected to increase with climate change.

The extent of severe storms is not well documented in the Town of Fayston. The impact of storms is usually flood related. See flood extent description in flood section above. Wind extent from storms is not well documented as there is no monitoring station in Fayston.

High wind is defined as an event with sustained wind speeds of 40 m.p.h. or greater lasting for 1 hour or longer or an event with winds of 58 m.p.h. or greater for any duration. Thunderstorms can generate high winds and down hundreds of large trees within a few minutes. The following is a history of occurrences of documented wind events in Fayston. Estimates for wind are gathered from county wide data off the National Climatic Data Center website.

History of Occurrence: (Mad River Valley encompasses the towns of Waitsfield, Warren and Fayston)

Date	Event	Location	Extent
02/29/2016	Strong Wind	County Wide	Wind gusts of 35 to 45 MPH. Isolated to scattered tree limbs and power lines downed by wind.
10/07/2013	Strong Wind	State Wide	Reports of tree branches on utility lines in Washington County.
01/20/2013	Strong Wind	County Wide, State Wide	Winds in excess of 50 MPG. Numerous reports of tree or power line failures statewide. Estimated 10,000 without power statewide
10/29/2012	Hurricane/Superstorm Sandy	Statewide	15 to 30 MPH winds with frequent gusts in excess of 40

Date	Event	Location	Extent
			MPH. Scattered damage to trees. 35,000 residents statewide without power.
07/23/2012	Hail	Fayston	Quarter and larger size hail reported. 1.75" total.
8/28/2011 DR 4022	Tropical Storm, Flash Flood (TS Irene)	Fayston; Washington County	Mad River flood gauge at 19.07 feet; 10.07 feet above flood stage (flood stage is 9 feet)
7/06/2011	Thunderstorm	Washington County	50 knot winds; 15,000 people in VT lost power
5/26/2011 DR 4001	Hail/Thunderstorms/Flash Flooding	Fayston/Irasville; Washington County	1" hail, 25,000 customers lost power in VT, 3-5" of rain Golf ball size hail along Butcher House Road in Irasville, causing minor dents in vehicles and siding. 1.75" total
8/9/2010	Thunderstorm/Wind/Hail	Fayston	50 knot winds
7/21/2010	Hail	Washington County (Mad River Valley)	1" Hail
7/18/2008	Hail	Mad River Valley	1" Hail, 30 knot winds
8/25/2007	Severe Storms	County Wide	55 knot wind gusts, 1" hail
7/9/2007 DR 1715	Hail, thunderstorms	Mad River Valley	Baseball sized hail
7/1/2006	Hail, thunderstorms	Mad River Valley	1" Hail, severe t-storms
6/19/2006	Severe storms	County Wide	50 knot winds, downed trees and power lines
9/29/2005	Severe thunderstorms	Mad River Valley	Downed trees and power lines, 35 knot winds
8/1/2005	Severe Storm	County Wide	1" hail, 55 knot winds
7/22/1999	Hail, Thunderstorms	Mad River Valley	1.5" hail, severe t-storms
6/27/1998 DR 1228	Severe Storms	County Wide	$2M in damages, 3-6" rain across county
6/17/1998	Severe Storms	County Wide	No Extent Data Available
7/15/1997	Severe Storms	County Wide	No Extent Data Available
8/4-6/1995 DR 1063	Severe storms, flooding	County Wide	Heavy rain, flooding – no NCDC/FEMA info
7/23/1990 DR 875	Severe Storms, flash flooding	County Wide	Heavy rain, flooding – no NCDC/FEMA info
5/19/1982	Thunderstorm winds	County Wide	56 knot winds

Date	Event	Location	Extent
8/5/1976 DR 518	Hurricane Belle	Statewide	Gale force winds, 2 deaths
7/3/1964	Hail	County Wide	1.5” hail
9/22/1938	Hurricane	Statewide	Category 1 force winds

On Aug 28, 2011, Tropical Storm Irene hit Vermont and proceeded to deposit 4-5” of rain over Fayston. Total damages from the storm exceeded $150,000. The municipality requested $18,700 to repair road & bridge damage, $900 of which was paid out of municipal funds. Roads that received the greatest damage were German Flats Rd and Route 17. These roads typically experience flooding during extreme rain events and were similarly damaged in the spring 2011 floods, but to a lesser extent. Culverts on German Flats Rd were previously upsized and replaced prior to Irene. One had to be replaced after Irene. Roads damaged in Irene are now open, but still need permanent repairs.

The Town is now focusing on upsizing all culverts up to new State standards and having hydraulic studies performed on culverts that are repeatedly flooding. Wind during Irene was not a problem.

Hazard	Location	Vulnerable Assets	Extent	Risk	Probability
Hurricane/ Tropical/ Severe Storms, High Winds, Hail	Town Wide for Wind impacts, German Flats Rd	Large trees, power lines, culverts/ Bridges, tall structures	~6” rain – TS Irene ; Mad River flood gauge at 19.07 feet; 55 knot winds, Baseball sized hail	Data gap – depends on severity $250,000 from Spring 2011 events	Medium

Extreme Cold/Winter Storm/Ice Storm

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

History of Occurrences (county wide)

Snow and/or ice events occur on a regular basis during the winter months. The following history of significant events has been gathered from Federal Disaster Declarations, the NOAA Storm Events Database & Property Damage estimates from the 2013 Vermont State Hazard Mitigation Plan.

Date	Event	Location	Extent (Magnitude)	Impact
02/01/2015 – 02/28/2015 UNDECLARED DISASTER	Cold/Wind Chill	Countywide Statewide	Average temp was 13 to 17 degrees below normal statewide.	Statewide, damage to infrastructure, frozen water mains, etc. totaled at least $1 million.
01/07/2015 – 01/08/2015	Extreme Cold/Wind Chill	Countywide , Statewide	Lows of 15-25 Degrees below 0 in Washington County.	No impact information available.
Dec. 9-13, 2014 DR 4207	Severe Winter Storm	Countywide	heavy, wet snow, 23” in Warren	175,000 power outages statewide
March 7, 2011	Winter Storm	Countywide	18+” snow in Fayston, 26” snow in Waitsfield, ice accumulation to ¼”	nearly all school districts closed, along w/local/state gov’t
Feb. 23, 2010	Winter Storm	Countywide	32” Snow in Warren, 31” in Waitsfield	50,000 w/o power cent. & S. VT
Feb. 14, 2007	Winter Storm	Countywide	29” snow in Waitsfield	 $237,192.99 Countywide
Oct. 25-26, 2005	Winter Storm	Countywide	8-14” snow countywide, gusty winds	snow heavy foliage took many trees, thousands w/o power
January 4, 2003	Winter Storm	Countywide	17” snow in Waitsfield	Numerous minor traffic accidents, $49,523.81
March 22-23 2001	Winter Storm	Countywide	20” snow in Waitsfield	power outages reported and a number of accidents
March 5-7, 2001 DR 3167	Snowstorm	Statewide	16” snow in Northfield	Many schools closed, many towns postponed Town Meeting Day
December 31, 2000	Winter Storm	Countywide	17” snow in Waitsfield	a few auto accidents
January 6-16, 1998 DR 1201	Ice Storm of ‘98	Countywide between 1500-2500’ elevation	<1/2” ice	much tree damage, power lines snapped, many brief power outages, numerous auto accidents

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

Other major problems include closed roads and restricted transportation.

By observing winter storm watches and warnings, adequate preparations can usually be made to lessen the impact of snow, ice and sleet, and below freezing temperature conditions on the Town of Fayston.

Providing for the mass care and sheltering of residents left without heat or electricity for an extended time and mobilizing sufficient resources to clear broken tree limbs from roads, are the primary challenges facing community officials. Fayston should plan and prepare for these emergencies. That planning and preparedness effort should include the identification of mass care facilities and necessary resources such as cots, blankets, food supplies and generators, as well as debris removal equipment and services. Fayston Elementary and Municipal Offices are the shelters located in town. Additional shelters are located in the neighboring towns of Duxbury and Waitsfield. The State Regional American Red Cross Shelter for Central Vermont is located at the Barre Auditorium on Seminary Hill in Barre, VT and opens at the direction of the State Emergency Operations Center Watch Officer.

Hazard	Location	Vulnerable Assets	Extent	Impact &/or Risk	Likelihood
Winter Storm/Ice Storm	Town Wide	Utilities, trees, roads, old/under insulated structures	18+" snow in March 2011 storm, 13-17 degrees below normal temps. for 1 mo.	5-10% damages – routine emergencies	High

Land/Rockslide or Debris Flow

History of past occurrences:

- July 6th, 1973 –Statewide Disaster Declaration #397 for Severe Storms, Flooding, Landslides – Unknown if Fayston Impacted
- July 14, 1897 – Slide Brook landslide
- 1812, 1827, 1840 Historical Accounts of Landslides terminating in Fayston on the eastern slope of the Green Mtns. ("Historical Sketch" by Anna Bixby Bragg for Fayston Centennial Celebration 1898)

A landslide is the sliding of a large mass of rock material, soil, etc., down the side of a mountain or cliff. Landslides can be caused by rainstorms, fires, alternate freezing or thawing and/or by the steepening of slopes by erosion or human modification.

In 1897 Fayston experienced a great landslide on the east side of Lincoln Mountain at Fayston's very southern end. According to Fayston's Historic Sites and Homes Tour quoted in the Town Plan "after a copious shower which lasted the whole night and most of the early morning, a heavy roaring sound was heard for a long distance and for a long time. Those living near "Slide Off Brook" soon saw a tremendous mass of floating trees, rock and mud coming down the stream. It cleared a wide channel in its course as it went on its way with a resistless current." The area of this historic debris flow is depicted in red on the attached Surficial Geologic Map of the Mad River Watershed – Northern Sheet (2007).

Four key landslides are of primary concern to the Town of Fayston. Each is detailed in the table below:

Slide Location	**Issues**
Number Nine Road	Slump/erosion along road. The Town has been patching the roadway damage for around 15 years. The erosion has been more gradual than tied to a severe isolated event. No waterways involved. The surficial geology of this area primarily consists of the thin till, which is a layer of mixed material that was laid down by glacial ice. Number Nine Road traverses a 25% grade near the intersection with Route 17 and the municipal road foreman has witnessed a 2-foot drop in the road level in the past couple of years. A sudden rain storm or alternate freezing and thawing could create a landslide resulting in the loss of a portion of Number Nine Road and extensive property damage to the private residence located down slope. Town has also solicited bore testing and engineering solution recommendations from an engineering firm. Road Foreman believes the fix is likely to be outside the town Right of Way. The roadway has been base ground and resurfaced within the last 10 years.
Bragg Hill Road	Stream bank of Mill Brook is eroding into stream and threatening to undermine Bragg Hill Rd. The erosion has 60-80 feet to go before it hits travel lane.
Murphy Road above address 353 Murphy Rd.	French Brook eroding its bank and undermining roadway. The very edge of the travel lane is starting to drop. The erosion has been more gradual than tied to a severe isolated event. The erosion creeps up to the roadway, the town dumps more material to rebuild the shoulder, it erodes and the process keeps repeating.
North Fayston Road	Hillside on private property abutting municipal road ROW has been depositing material along roadside. Town has repeatedly had to clean the shoulder ditch out to prevent material from filling into the roadway. Threatens to block roadway if hillside lets go, which happened once, perhaps 2 decades ago. Since that incident no events have cause damage warranting repair to the roadway. The exact number of structures served by this route is yet to be determined, however all residences do have other routes of access available. No waterways involved.

Several other roads and areas in Fayston are slumping due to erosion and undermining of road bases. These areas are: North Side of Tucker Hill area – under Hoop's house, "dark corner" of North Fayston Rd, Piper property on Randall's Rd, section of Mill Brook Trail, hill across from the Hyde Away.

The extents of the above mentioned possible landslide areas are unknown as extensive soil and geological studies have yet to be performed. Historical data for landslides in Fayston is limited. For the next plan update, Fayston can monitor the current possible slide areas and further investigate soil and geological maps of the known areas to better understand the risk each area poses.

Hazard	Location	Vulnerable Assets	Extent	Risk	Probability
Landslide	Number Nine Road, North side of Tucker Hill, Dark corner N. Fayston Rd, between Rte 17 and Bragg Hill Rd, Mill Brook Trail, across from Hyde Away, Randall's Rd	Road infrastructure & private residence located at 891 Mill Brook Road, culverts bridges, roads, trails	1897 slide – 330 feet average width x 80 feet deep - 4 miles long and 2400 ft drop in elevation	Unknown – data gap	Medium

Invasive Tree Pests (Emerald Ash Borer, etc.)

Some non-native species of plants and animals are able to proliferate to the detriment of native species, natural communities, and ecosystem functions. These organisms often have no natural predators and can out-compete native species, greatly reducing biodiversity and altering ecosystems. Such invasive exotic species pose a number of environmental, economic, and human health threats.

Fayston is particularly concerned about invasive tree pests. These include Asian longhorn beetle, emerald ash borer, and hemlock wooly adelgid. The community values its forests for many reasons that could be threatened by poor tree health or die offs that these pests can cause. The community values the forests for its ecological values, including water quality and habitat for flora and fauna. The forest is also a key recreational asset tied to Fayston's resort and recreational economy. Some businesses in the community still operate as timber producers or tapping maple trees for maple products.

Invasive tree pests have not yet been documented in Fayston, however they have been documented in other parts of Vermont and surrounding states. The magnitude of infestation can be measured in acres affected or cordage of wood from tree die off.

Fayston would like to better quantify its risk to this natural hazard. The table below provides a profile of Fayston's forest tree species composition. This gives some indication of the amount of forest susceptible to pests that target specific species. The Emerald Ash Borer targets ash, and the Hemlock Wooly Adelgid, hemlock. Asian longhorn beetle has some preference for maple, but will infest any hardwood, except oak. The profile is based on Fayston's 2007 Natural Heritage Inventory.

Table 3-7 Summary of Locally Significant Upland Natural Forest Communities

Natural Community	Number of Sites	Total Acres
Hemlock Forest	2	256
Hemlock-Northern Hardwood Forest	8	222
Montane Spruce-Fir Forest	13	1615
Montane Yellow Birch-Red Spruce Forest	13	2293
Montane Yellow Birch-Sugar Maple-Red Spruce Forest	1	37
Northern Hardwood Forest	3	5662
Red Oak-Northern Hardwood Forest	1	9
Red Spruce-Northern Hardwood Forest	3	14
Rich Northern Hardwood Forest	1	99

Source: 2007 NHI.

Hazard	Location	Vulnerable Assets	Extent	Risk	Probability
Invasive Tree Pests	Forest stands of susceptible tree species	Ecological and recreational assets, timber stands and sugarbushes.	Not yet documented	Unknown – data gap	Medium

Wildfire

FEMA indicates there are three classes of wild land fires – surface fires, ground fires and crown fires, with the most common type indicated as a surface fire. Surface fires burn slowly along the forest floor, killing and damaging trees. Ground fires burn on or below the forest floor and are usually caused by lightning. Crown fires move quickly by jumping along the tops of trees. Crown fires can spread quickly during windy conditions.

The Waitsfield-Fayston Fire Department documents one wildland fire occurring in Fayston in 2015, and 3 in 2014. The table below documents average wildfire occurrences over a recent 10 year period for the State of Vermont. Fayston is identified by the 2010 Vermont Forest Resources Plan as a Town at Low Risk for wildfire, along with the vast majority of the state.

Vermont Spring Wildfire Statistics		
10-Year Average 2005-2014		
Official reports – reports have been verified by warden or FPR		
	#Fires	**#Acres**
March	9	29
April	62	142
May	19	30
Total	**90**	**201**
Vermont Dept. of Forests, Parks & Recreation - 2015 Spring Fire Season Summary		

Data on the magnitude of forest fires affecting Fayston is not available from the local records documenting occurrences.

Approximately 90% or 21,204 acres of Fayston is forested. State and Federal agencies own 3,034 acres and the rest is in private ownership (see Hazards Analysis Map). The volume of the Town's forested landscape in conjunction with dry and windy weather has the potential to rapidly spread fire and create a hazardous situation. Stress caused by disease and climate change affect the health of the forest and can lead to die off, adding more fuel availability which can increase the risk, extent, duration, and severity of a wildfire.

While a dry hydrant system does exist in Fayston, much of the forestland is unreachable by road limiting firefighting measures. Private residences, ski resort infrastructure and timber related businesses are all located within forested areas. Fayston's Local Emergency Operations Plan identifies "Phenn Basin Forest Fire" as a vulnerable site to check in the case of an emergency. Additional impacts include loss of wildlife habitat and recreational amenities including hiking, skiing and snowmobiling trails. All impact the local tourist economy and resident's quality of life.

Fayston's Fire Warden is responsible for forest fire prevention and suppression activities in town. The Fire Warden issues open burning permits if fuel and weather conditions are safe for outdoor burning. The Warden also has the authority to ban open burning in town when fire danger is high or when conditions are hazardous.

Hazard	Location	Vulnerable Assets	Extent	Risk	Probability
Wildfire	Town Wide – State and Nat'l Forest land	State and private Forest land. Ski infrastructure, private homes on urban/forest interface	To date – 0 acres	Approx. 21,024 acres of forested area	LOW

8. Mitigation

Hazard Mitigation Goals and Strategies

The goal of this Hazard Mitigation Plan is:

- To take actions to reduce or eliminate the long-term risk to human life and property from:
  - Flooding/Flash Flooding/Fluvial Erosion
  - Hurricane/Tropical/Severe Storms
  - Extreme Cold/Winter Storms/Ice Storms
  - Land/Rockslide or Debris Flow
  - Invasive Tree Pests
  - Wildfire

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

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

Town Plan 2014 Goals & Objectives that Support Local Hazard Mitigation

In order to ensure that comprehensive community planning takes into account priorities of the hazard mitigation planning process, and that the LHMP process works within broad community goals, the two planning processes are used reciprocally to inform each other. The LHMP is an important source of information for defining Town Plan goals related to flood resilience, land use, location of development, and community infrastructure. As the Fayston Land Use Regulations (Zoning) must be in conformance with the Town Plan, mitigation goals adopted into the Town Plan must also be reflected in Land Use Regulations, especially the Flood Hazard Overlay District and any proposed fluvial erosion or River Corridor regulations.

The 2012 LHMP was reviewed during development of the 2014 Town Plan. The goals and objectives listed below are excerpted from Chapters of the plan incorporating hazard mitigation issues.

<u>History and Historic Resources:</u>

Objective:

- Protect and preserve historic buildings, structures, agricultural operations and archaeological sites significant to Fayston's history

Fayston's Ecology:

Goal: The responsible preservation, conservation, and enhancement of Fayston's ecological health and biological diversity.
Goal : The minimization of impacts to public: health, safety and welfare associated with natural hazards or poor environmental quality

Objectives:

- Prohibit land development on slopes of 25% or greater.
- Prohibit land development within 100 feet of wetlands and waterways where appropriate and require mitigation of development effects where necessary.
- Design land subdivisions to minimize development on and fragmentation of land characterized by:
    - Primary agricultural soils
    - High elevation (above 1,500 feet)
    - Significant wildlife habitat and travel corridors
    - Trail corridors, river accesses, and areas for dispersed recreation
    - Riparian lands, river corridors
    - Identified scenic viewsheds
    - Adjacency to existing conserved lands
- Encourage responsible use and careful stewardship of Fayston's natural heritage by landowners and managers.
- Encourage the permanent conservation of areas containing:
    - Significant natural heritage elements and other listed attributes
    - Primary agricultural soils
    - Ridgelines
    - Significant wildlife habitat and travel corridors
    - Trail corridors, river accesses, and areas for dispersed recreation
    - Riparian lands, river corridors Identified scenic viewsheds
    - Adjacency to existing conserved lands
- Protect water quality
- Reduce human impact on climate
- Prevent the exposure of Fayston residents to air and or water pollution.
- Minimize the extent to which development occurs in areas subject to natural and/or environmental hazards.
- To take actions to reduce or eliminate the long-term risk to human life and property from flooding and fluvial erosion.

Land Use:

Objective:

- Maintain an overall high level of site design and environmental protection throughout Town.

Transportation:

Objective:
- Ensure that new development and changes to land use activities do not produce undue adverse impacts to the condition and function of the Town's transportation system.

Community Facilities:

Goal : Increase cooperation and coordination with neighboring towns, the Central Vermont region, and the State.

Objective:
- Provide municipal services necessary to ensure the health, safety, welfare and emergency service needs of Fayston residents and visitors.

Fayston's Economy:

Objective:
- Ensure that any new business-related development preserves Fayston's rural character and natural features such as ridgelines, open fields, wildlife habitat, wildlife corridors, water quality, and wetlands.

Identified Hazard Mitigation Programs, Projects & Activities

The Hazard Mitigation Activities Schedule below lists mitigation activities in regards to local leadership, partners, possible funding resources, timeframe for completion, and prioritization.

The projects were selected and prioritized by considering them according to the particular hazard addressed, its overall risk to the community, the likely benefit of the proposed project for mitigating that risk, and the cost of the project. Other factors such as financial resources available, community support, and available staff capacity for project implementation were also weighed by the local hazard mitigation team. Factors were considered qualitatively, except when specific cost, financial or other measurement information was available. Final prioritization also had to be weighed against overall staff capacity, including outside technical and consulting assistance, to bear the work load scheduled at any point through the five year implementation cycle.

The team considered how these various factors balanced each other, in a spectrum from highly important projects, to projects that should be pursued after the others. Highest priority projects had a very high risk to the community and a mitigation solution that was likely to mitigate most of the problem. The costs of the high priority projects were attainable by the municipality, or funding assistance was readily available. Highest priority projects also enjoyed strong community support and staff capacity was available to carry them out. Lowest priority projects were of lower risk to the community, had solutions that did not mitigate very much of the problem, or were

extremely expensive or with no financial assistance available. Projects for which there was little community support or available staff capacity would also be low priority.

In some cases the factors were mixed. For example, a project might be very expensive, and unpopular, but the risk to the community is so great that officials must use their judgement to act in the best interest of the community. In this case, if the project cost or funding assistance can be spread out over several years, the team would prioritize this project as medium or high. Other various combinations of factors required the Mitigation Team to balance factors against each other to decide on the most appropriate prioritization. Numerical quantities were not assigned to balance the factors, however the Team considered each prioritization in the scope of the other projects, LHMP priorities and overall community priorities.

Fayston understands that in order to apply for FEMA funding for mitigation projects that a project must meet FEMA benefit cost criteria. The Town must also have a FEMA approved Hazard Mitigation Plan as well.

Hazard Mitigation Activities Schedule						
Hazards Mitigated	**Mitigation Action**	**Local Leadership**	**Partners**	**Possible Resources**	**Start & End Date**	**Priority**
General						
Flood/Fluvial Erosion, Severe Storms	Continue to participate in Ridge to River Stormwater Planning & Education project by • Planning Commission & Selectboard representatives continue to participate in core project team • Municipal officials and staff participate in education programs and work to implement recommendations of the project team	Planning Commission, Selectboard	Friends of Mad River, Sugarbush Resort; Mad River Food Hub/Irasville Business Incubator;	High Meadows Fund, Municipal Planning Grant	Fall 2015 - Fall 2017	High
Flood/Fluvial Erosion, Severe Storms	Support the Friends of the Mad River through staff and volunteer collaboration, for the following services: outreach & education on river hazard issues, landowner education & collaboration, River Corridor Planning, assessing erosion threats to bridges, culverts & ditches, Fluvial Erosion Hazard Planning - outreach events	Selectboard	Friends of the Mad River	Town Budget	Spring 2017 – Summer 2022	High
Town Planning & Land Use Regulations						
Flood/Fluvial Erosion	Conduct appropriate analysis and public outreach to determine if the community wants to augment its Flood Hazard Overlay District Standards to maintain its 17.5% ERAF state contribution rate, by adding Fluvial Erosion Hazard (or River Corridor) Regulations ERAF 17.5% Requirements: • adopt a River Corridor Or River Corridor Protection Area overlay for all streams and rivers draining greater than two square miles; • adopt a small streams setback as part of their flood hazard/river corridor bylaws (50" setback); • adopt a minimum regulatory requirement for River Corridors or River Corridor Protection Areas consistent with the Flood Hazard Area and River	Planning Commission, Selectboard	CVRPC, ANR River Scientist, ACCD	Municipal Planning Grant, EMPG funds	Probable Fall 2017-Fall 2018. Deadline 2 years after ANR release of Phase 2 River Corridor data (ANR has not projected a release	High

Hazard Mitigation Activities Schedule						
Hazards Mitigated	**Mitigation Action**	**Local Leadership**	**Partners**	**Possible Resources**	**Start & End Date**	**Priority**
	Corridor Protection Procedure or be at least as restrictive as those outlined in the ANR Municipal Guide to Fluvial Erosion Hazard Mitigation.				date)	
Flood/Fluvial Erosion	If community elects to bring FHO regs into conformance with State Models, make and adopt necessary revisions.	Planning Commission, Selectboard	CVRPC, ANR River Scientist, ACCD	Municipal Planning Grant, EMPG grant	Probable Fall 2018-Fall 2019. Deadline 2 years after ANR release of Phase 2 River Corridor data	Med
Forest Resources						
Wildfire	Join with regional municipalities and CVRPC to develop a Rural Water Supply Protection Plan and dry hydrant assessment and designs	Fayston - Waitsfield Fire Chief	CVRPC, Vermont Association of Conservation Districts (VACD)	EMGP, VACD Rural Fire Protection Grant (formerly Dry Hydrant Grant Program), VT FPR	April 2017-April 2019	Med
Land/Rockslide/Debris Flow						
Landslide	Number Nine Rd: decrease probability of landslide 1. seek funding & conduct engineering design for preferred alternative 2. seek implementation funding 3. construction	S.B, Road Foreman	AOT District 5	AOT, HMGP	Spring 2017 - Fall 2020	High

Hazard Mitigation Activities Schedule						
Hazards Mitigated	**Mitigation Action**	**Local Leadership**	**Partners**	**Possible Resources**	**Start & End Date**	**Priority**
Landslide	Murphy Rd. Slump above 353 - French Bk. Undercutting Murphy Rd. 1. commission borings to characterize geologic issues 2. Seek recommendation from River Engineer and AOT District for mitigation strategy	Selectboard, Road Foreman	Rivers Management Engineering, AOT District 5, DEMHS	HMGP	Summer 2019 - Spring 2020	Med
Landslide	Bragg Hill Rd Slump: Step 1: Request collaboration with Waitsfield Step 2: meet with Waitsfield officials and property owners to define options and roles for mitigation Step 3: engineering study to characterize the issues etc.	Selectboard, Road Foreman	ANR Rivers Management Engineering, DEMHS	HMGP, Ecosystem Restoration Program	Step 1: Spring-Fall 2017 Step 2: Fall 2017-Winter 2020 Step 3: Winter 2020-Fall 2021	Med
Landslide	N. Fayston Rd. Slump: Step 1: Continue to investigate mitigation options via DEMHS & State Geologists Office	Road Foreman, Town Clerk	DEMHS, State Geologist, CVRPC	HMGP, State Geologist Technical Assistance	Winter 2017-Winter 2018	Low
Transportation Network & Infrastructure						
Flood/ Fluvial Erosion, Severe Storms	Seek grant funding to upsize culvert on Center Fayston Road (VT Culverts ID# 23040217) 1. request VTrans hydraulic study 2. complete grant application based on hydraulic study recommendations	Road Foreman, Town Clerk, Selectboard	VTrans (VT AOT), ANR	VTrans Town Highways Program, Better Roads	May –Sept. 2017	Med

Hazard Mitigation Activities Schedule						
Hazards Mitigated	**Mitigation Action**	**Local Leadership**	**Partners**	**Possible Resources**	**Start & End Date**	**Priority**
Flood/ Fluvial Erosion, Severe Storms	Replace 18" culvert on North Fayston Road (VT Culverts # 23040303) before road resurfacing scheduled for 2019, if paving grant awarded. Includes requesting hydraulic study.	Road Foreman, Town Clerk, Selectboard	VTrans (VT AOT)	VTrans Town Highways Program, Municipal Budget	May-Sept. 2018	Med
Flood/ Fluvial Erosion	Work w/the landowners on Randall Rd to install a bridge	Road Foreman	Landowners	Town Budget	May-Sept. 2017	High
Flood/ Fluvial Erosion/ Severe Storms	Apply for Better Roads Program Road Inventory & Capital Budget Planning grant to start inventory process toward anticipated Municipal Roads General Permit road stormwater management plan	Road Foreman/ Commissioner, Selectboard	Vtrans, CVRPC	Vtrans Better Roads Program	Feb.- April 2017	Med
Extreme Cold/Winter Storm/Ice Storm						
Extreme Cold/Winter Storm/Ice Storm	Identify contractors in the LEOP that Fayston or emergency response partners/agencies can call upon for assistance with snow, debris clearing and removal during an event; • Use Appendix B5 of the LEOP resources to create and maintain list.	EMD, Road Foreman, Fire Dept.,	Local Contractors, Mutual Aid Partners, DEMHS & State Support Functions	FEMA Public Assistance (after Fed. Declared Disaster)	March – May 2017	Low
Extreme Cold/Winter Storm/Ice Storm	Conduct outreach to vulnerable residents about CARE: Citizens Assistance Registration for Emergencies	EMD, Ambulance, Fire Dept., Clerk's Office	EMD, Ambulance, Fire Dept., Front Office	Local Media, Green Mtn. United Way, VT 211, VT E911, Local Emergency Planning Committee	March 2017. and Annually at March Town Meeting	Low

Plan Maintenance

The Fayston Local Hazard Mitigation Plan will be monitored, and evaluated annually at a September Select Board meeting. This will allow the Selectboard to determine the status of mitigation projects before developing the next fiscal year budget over the course of the fall. The Selectboard will note projects completed and underway, and whether or not the project is meeting the communities' goals for hazard mitigation. The Selectboard will note projects to be continued or started during the next fiscal year. The Capital Budget is also updated over the fall in preparation for March Town Meeting. Looking ahead at the timing of mitigation projects, the Selectboard will also be able to plan ahead for them by adding any appropriate projects into the Capital Budget.

Individual staff or volunteer officials responsible for each project will report at this annual September meeting to the Selectboard on the status of the project(s) and their evaluation of the effectiveness of the project at achieving Fayston's hazard mitigation goals. This status and evaluation will be noted in the meeting minutes, and a copy of the minutes filed with the Local Hazard Mitigation Plan by the Town Clerk.

Review and evaluation by the Select Board will also occur within three months after every federal disaster declaration and as updates to town plan/zoning and river corridor plans and bylaws/regulations come into effect. CVRPC will help with updates or if no funding is available, the Town Clerk and Select Board will update the LHMP.

The process of monitoring and evaluating the plan will include continued public participation through public notices posted on the municipal website and notice in the municipal building inviting the public to the scheduled Select Board (or specially scheduled) meeting(s) to give feedback. Also invited in the future will be the VT Agency of Natural Resources (VT ANR), as they are able to provide assistance with NFIP outreach activities, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard or River Corridor areas, and other applicable initiatives. These efforts will be coordinated by the Town Clerk.

The 5 year update process, will be undertaken by the Town Clerk, Emergency Management Director and appropriate staff and volunteer officials leading up to the expiration of this plan. Ideally, this update and adoption process will begin one year before this plan expires. If priorities for mitigation projects change or new actions are identified in the five year interim period, this can be noted in the Selectboard minutes and attached to the Plan for future reference and incorporation into the next updated plan. During the 5 year period with an approved unexpired plan, the plan can be amended by the Selectboard without FEMA approval. Prior to the expiration of this plan, the plan will be submitted for re-adoption following the update process outlined in the schematic found in the Attachments section.

Integration into Other Planning Mechanisms

Fayston shall also incorporate mitigation planning into other planning processes to reflect and integrate, as appropriate, the goals of this plan. The primary processes will be capital budgeting

and the Town Plan. The LHMP will be integrated into capital budgeting as described above. The Town Plan will be updated in 2019, and includes data and information gathering and goal setting that can incorporate data and goals from the LHMP.

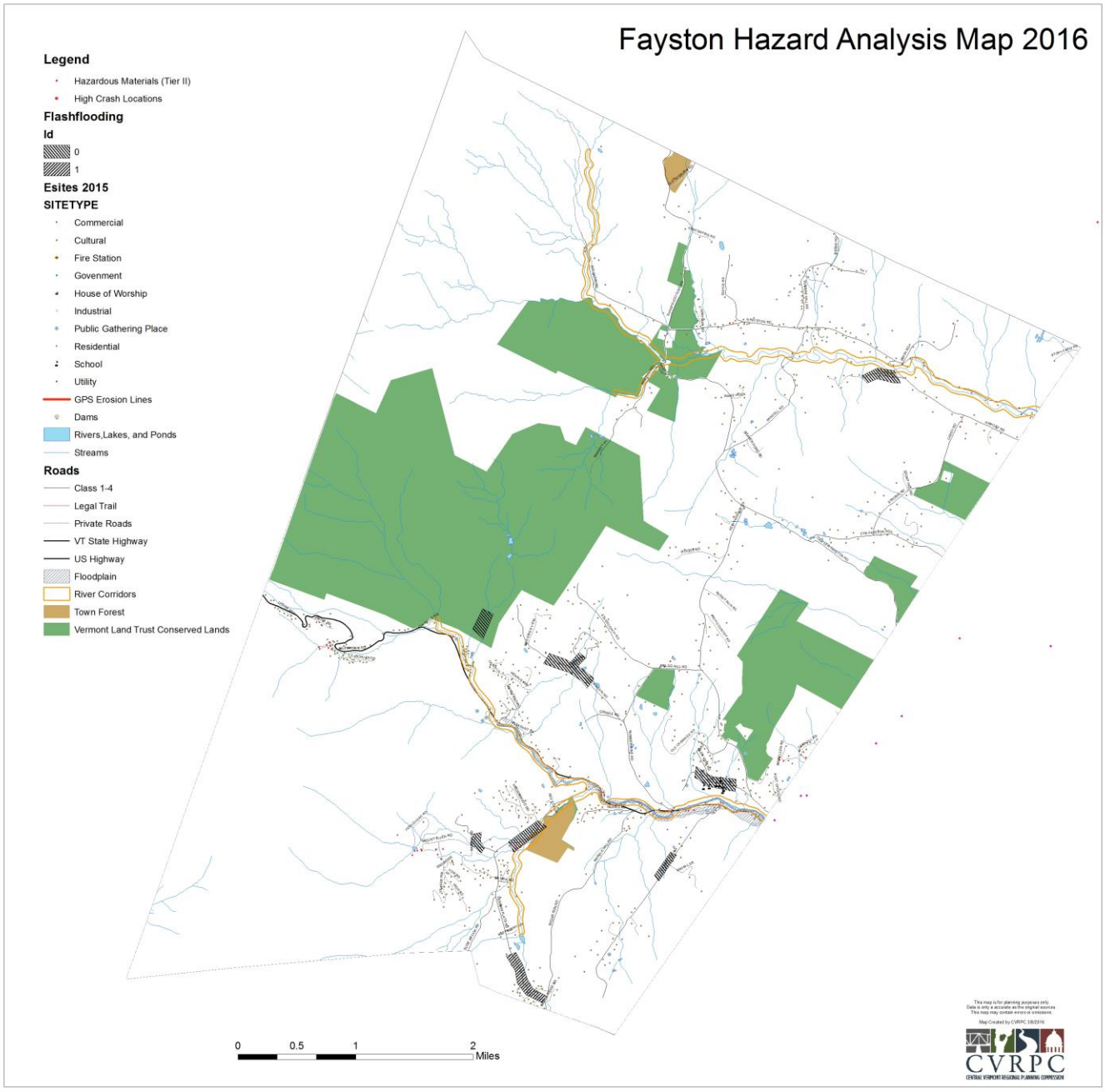
The work of the Mad River Valley Planning District is another key planning mechanism into which Fayston should integrate the LHMP. The MRVPD is undertaking a great deal of flood mitigation planning, such as the Ridge to River stormwater planning project and implementing projects recommended during planning projects following Tropical Storm Irene. They are working to integrate the mitigation concerns of its constituent towns and provide a regional approach. The MRVPD has a staff that can assist Fayston with integrating their plans into MRVPD work.

The Local Emergency Operations Plan (LEOP) is formally updated once a year after Town Meeting and the list of primary contacts is updated to address any appointment of new officers. It identifies important hazard areas to check during an emergency, vulnerable sites and populations, and lists Tier II sites and shelters. The LEOP should reflect the hazards identified in the Local Hazard Mitigation Plan and any review undertaken by the Selectboard, especially at the annual review meeting held in September.

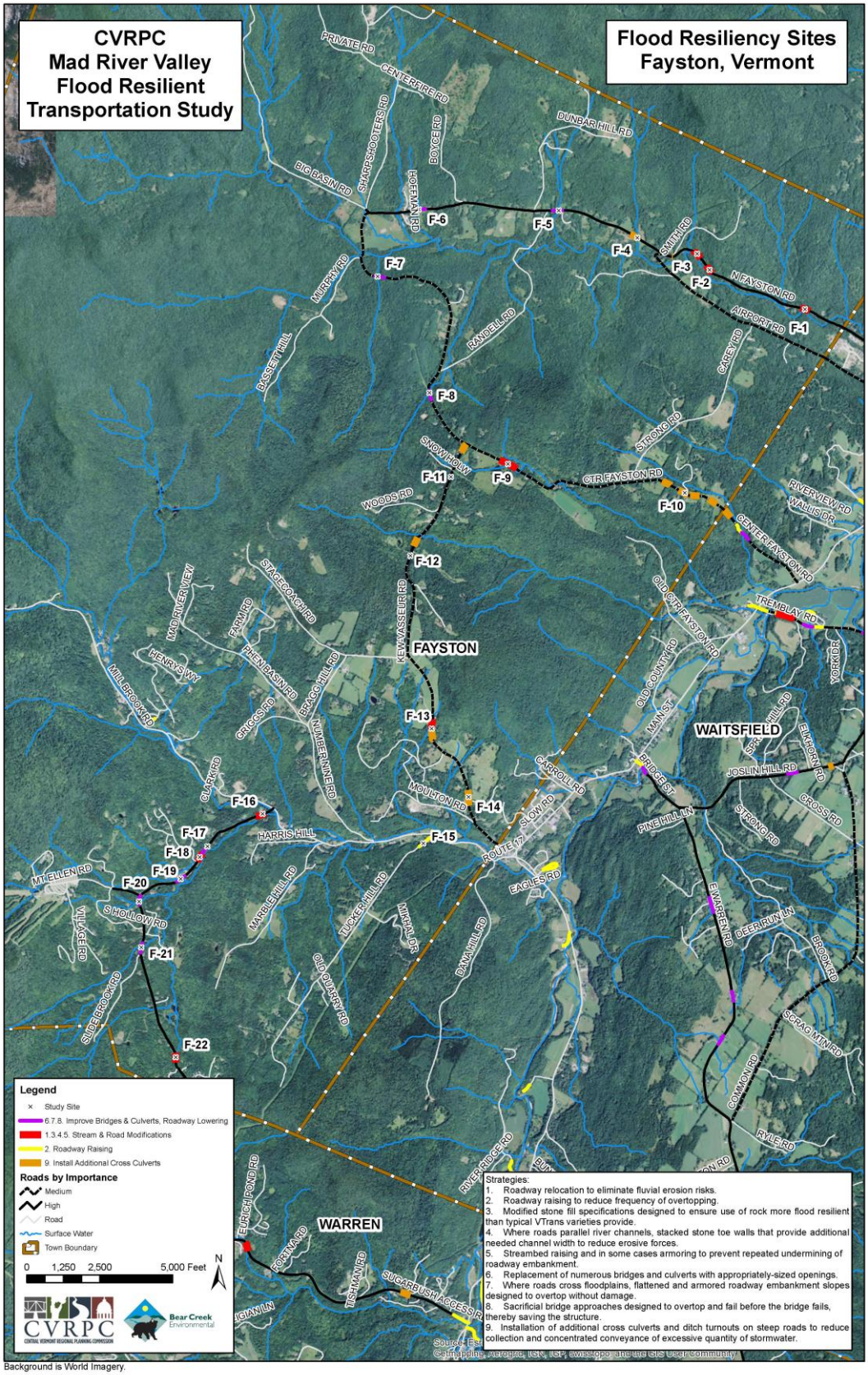
Attachments

- Hazards Analysis Map
- Fayston LHMP Priority Bridge & Culvert Projects
- 2015 Transportation Pilot Study – Results Map & Table for Fayston
- Community Rating System Quick Check
- Emergency Relief & Assistance Fund Eligibility criteria – 17.5% State Share
- Documentation of No NFIP Compliance Issue
- Community Survey and Survey Results
- Documentation of Public Input Opportunities
- Local Mitigation Team Meeting Minutes
- Hazard Profiles: Non-Worst Threat Hazards
- Surficial Geologic Map of the Mad River Valley
- 5 year plan maintenance and review process
- Town Resolution Adopting the Plan

Hazards Analysis Map



2015 Transportation Pilot Study – Results Map for Fayston



Background is World Imagery.

2015 Transportation Pilot Study – Results Table for Fayston

Fayston, Vermont

Mad River Valley Flood Resilient Transportation Study

Central Vermont Regional Planning Commission

4/10/15

Site Number	Road	Road Importance	GIS-Based Category of Potential Flood Resiliency Improvements	Notes from Meeting with Town 9/11/2014	Field Notes 10/30/14	Recommended Mitigation Strategy	Recommendation Notes	Planning-Level Cost Estimate ($)
F-1	N Fayston Road	High	" Stream & Road Modifications	Riprap done	Existing stacked stone wall; large boulders sitting on ledge. Repair is consistent with current flood resilient recommendations.	None	None	--
F-2	N Fayston Road	High	" Stream & Road Modifications	Riprap done	Existing riprapped bank with large rock (3 foot dia.) ; flow into bank; low floodplain on opposite site of brook; wide channel	Embankment Protection: rock slope	Grub, seed, and mulch	<$1,000
F-3	N Fayston Road	High	" Stream & Road Modifications	Riprap done	Existing riprapped bank with large rock (3 foot dia.)	Embankment Protection: rock slope	Grub, seed, and mulch	<$1,000
F-4	N Fayston Road	High	! Additional Cross Culverts	Box culvert	New 4' H x 7'W box culvert; culvert could be wider and deeper; would be better with bed retention sills; BF is 12 to 15 feet; head cut observed about 70 feet above new culvert which will contribute to bank erosion and debris/sediment production; stream is steep; no ditch noted nor need for additional cross culverts.	None	Monitor for debris and sediment at inlet	<$1,000
F-5	N Fayston Road	High	# Bridge & Culvert Improvements; Roadway Lowering	Footings undermined	Box culvert - 5'H x 4'W; wing walls with roof - road widening in 2001; scour hole downstream; recommend guardrail for safety (not flood resiliency); measured BF is 15- 17 feet.	Larger culvert	Replace culvert (Moderate priority)	$109,000
F-6	N Fayston Road	High	# Bridge & Culvert Improvements; Roadway Lowering	No issues	4' dia. CMP in good condition; undersized and potential for debris jams; floodplain available where debris can deposit upstream of culvert; good floodplain access; measured bankfull is 10-12'. Cascade at outfall with effective perch of 4'. Berm below structure on left bank.	Larger culvert	Replace culvert (low priority)	$95,000
F-7	Ctr Fayston Road	Mod.	# Bridge & Culvert Improvements; Roadway Lowering	Deep, hard to work on debris	30" dia. CMP (deformed and 1/3 blocked by sediment); measured bankfull is about 11 feet; nice step-pool bedform above structure. Structure is deep, which is more of an issue in terms of cleaning out debris than flood resiliency. Outlet of structure is perched 2.5 to 3' with an undercut right bank immediately downstream. There is no development within vicinity of structure. Concrete blocks failing at outlet; leakage at outlet. Height to road around 20 feet. Riprap on downstream side suggests repairs following previous overtopping events.	Larger culvert	Replace culvert (Moderate to High priority)	$95,000
F-8	Ctr Fayston Road	Mod.	# Bridge & Culvert Improvements; Roadway Lowering	Undersized	30"dia. bituminous coated CMP; when overtops flow would travel stream left down ditch in road; head cuts in both channels above culvert indicating elevated sediment load. Perch height about 2.5 feet; culvert bottom rusted; bankfull measured to be 7-8.5'.	Larger culvert	Replace culvert (Moderate priority)	$78,000
F-9	Ctr Fayston Road	Mod.	" Stream & Road Modifications	No issues	Erosion along embankment - length about 60 feet; 5 to 7' measured BF channel width; stream layer probably off at upstream end of site (not close to road); flow moderated by upstream pond.	Embankment Protection: toe wall	Riprap road embankment using stacked stone toe wall. Maintain existing grade control at downstream end.	$13,000
F-10	Crt Fayston Road	Mod.	! Additional Cross Culverts	Turnouts used	11 turnouts and 3 cross culverts; nice job with steep road	Roadway drainage improvements	Add one additional cross culvert above Town line	$5,000
F-11	Kew Vasseur Road	Mod.	! Additional Cross Culverts	No issues	No issues observed in area identified in GIS analysis, but there is a long, erosion-prone ditch in the upslope area that warrants attention.	Roadway drainage improvements	Add cross culvert and/or stone line ditch on west side	$10,000
F-12	Kew Vasseur Road	Mod.	! Additional Cross Culverts	Riprap ditch	Ditch needs to be stone lined; site extends to south of that shown on GIS layer (from culvert to height of land).	Roadway drainage improvements	Add stone in west ditch and add 2-3 cross culverts from W to E side.	$15,000
F-13	Kew Vasseur Road	Mod.	" Stream & Road Modifications ! Additional Cross Culverts	No issues	Stable ditch with some ledge on bottom; water sheets off west side of road; channel does not parallel road.	None None	None	-- --
F-14	Kew Vasseur Road	Mod.	! Additional Cross Culverts	Undersized	Cross culvert density appears adequate, though culverts appear undersized.	Roadway drainage improvements	Selective stone lining of ditch	$5,000
F-15	Tucker Hill Roadd	Low	G Roadway Raising	No issues	FEMA mapping is likely incorrect; no issues. The road is considerably elevated above channel	None	None	--
F-16	German Flats Road	High	" Stream & Road Modifications	No issues	Some erosion on left bank; stream is about 20 feet away from road; some leaning trees, but probably not eminent risk. Good floodplain access.	None	Monitor	<$1,000
F-17	German Flats Road	High	# Bridge & Culvert Improvements; Roadway Lowering		2' dia. CMP, measured bankfull width is about 4.5'; low gradient, small channel; good floodplain for trees to settle on. Perch is about 3.2 feet. Undersized, but perhaps low priority.	Larger culvert	Replace culvert (Low priority)	$70,000
F-18	German Flats Road	High	" Stream & Road Modifications	Riprap done	Big rock at toe of riprap	Embankment Protection: rock slope	Grub, seed, and mulch existing riprap to add additional resistance to erosion.	<$1,000
F-19	German Flats Road	High	# Bridge & Culvert Improvements; Roadway Lowering	Undersized	7.5' (W) x 8.8' (H) ; very steep riffle into structure. Velocity barrier to fish passage. Near Fayston Elementary School. Poor ability to pass debris.	Larger culvert	Replace culvert (Moderate priority)	$134,000

Site Number	Road	Road Importance	GIS-Based Category of Potential Flood Resiliency Improvements	Notes from Meeting with Town 9/11/2014	Field Notes 10/30/14	Recommended Mitigation Strategy	Recommendation Notes	Planning-Level Cost Estimate ($)
F-20	German Flats Road	High	# Bridge & Culvert Improvements; Roadway Lowering	Undersized	6' dia. Aluminum (looks new); 7.5' measured bankfull width	None	None	--
F-21	German Flats Road	High	" Stream & Road Modifications	Horseshoe Road culvert overtopped during TSI	Near Slide Brook Road. Evidence of erosion and riprap repair where overtopping water returned to brook.	Larger culvert	Replace culvert (Moderate priority)	$103,000
F-22	German Flats Road	High	" Stream & Road Modifications	Horseshoe Road culvert overtopped during TSI	Near Horseshoe Road. Ledge in channel bottom prevents incision and keeps German Flats Rd embankment relatively stable. Evidence that culvert under Horseshoe Rd has overtopped and eroded the embankment as it returns to the channel.	Larger culvert	Replace culvert (on Horseshoe Rd, Low priority)	$78,000

Bridge & Culvert Project Development Priorities

Fayston LHMP 2017

Bridge and Culvert
Project Development Priorities

October 3rd, 2016
Updated Feb. 27, 2017

Site	Road	Structure	VTCulverts ID#	Notes	Planning Level Cost Estimate	Aquatic Organism Passage
F-19	German Flats Rd	Culvert		at intersection of school driveway on Chase Brook, could ask for help from Sugarbush b/c culvert discharges to pool for snowmaking pumphouse, during Irene backed up, went down side of road and flooded a house	$134,000	also FMR AOP priority (C.Miller 6/20/16)
F-7	Ctr Fayston Rd	30" culvert	23040278	20" bank of roadbed above intake, hard to clean debris out w/backhoe arm, upsizing would allow more water and debris through so wouldn't need to be cleaned as often and prevent ponding		
f-21	German Flats Rd	culvert		where Lockwood Brook crosses under German Flats RD. First Culvert north of Slide Brook RD. should be upsized but cost is the barrier	$103,000	also FMR AOP priority (C.Miller 6/20/16)
F-5	N.Fayston Rd	Bridge	23040333	state keeps inspecting and determining not ready for replacement yet, but town would like to replace as soon as possible	$109,000	
Additional Project	Randall Road	bridge		damaged severely during Aug. 16, 2016 Storm event. Long term repairs may be beyond municipal scope and may need AOT and/or HMGP assistance	TBD - AOT granted emergency funding	

Based on review of 2015 Mad River Valley Flood Resilient Transportation Study Recommendations Table with Road Foreman, and additional observations and recommendations of Road Foreman 6/30/2016

Community Rating System Quick Check

CRS Quick Check					
Community Name	Fayston	State	VT	BCEGS	10
NFIP Number	500326	FIRM Effective Date			
Population	1,353	Current FIRM Date			
Application Date		County	Washington		
	Chief Executive Officer	CRS Coordinator			
Name					
Title					
Address					
Address					
	CRS Coordinator's phone		Fax		
	CRS Coordinator's e-mail				

Section		Prerequisites	Met	Can Meet	Enter
211	a(2)	Have you had a Community Assistance Visit that concluded you are in full compliance with the NFIP?			
	a(4)	How many repetitive loss properties are there in your community?			
	a(4)	What is your repetitive loss category? (A = no rep losses, B = 1 - 9, C = 10 or more)			
	a(5)	Have you maintained flood insurance policies on all buildings that have been required to have one?			
213	a	How many buildings are in your community's Special Flood Hazard Area?			
	a	How large is your community's Special Flood Hazard Area (in acres)?			

		CRS Activities and Elements	Now	Could	Credit	Max
310	a	Will you keep FEMA Elevation Certificates on all new buildings and substantial improvements in the SFHA?	38		38	38
	b	Do you have FEMA Elevation Certificates on buildings built before your CRS application?			12	48
320	a	Are you willing to publicize that you will read FIRMs for inquirers and keep a record of what you told them?		30	30	30
	b	Do you provide inquirers with other non-insurance related information that is shown on your FIRM?	0		20	20
	c	Do you provide information about flood problems other than those shown on the FIRM?	0		20	20
	d	Do you provide information about flood depths?	0		20	20
	e	Do you provide information about special flood-related hazards, such as erosion, subsidence, or tsunamis?	20		20	20
	f	Do you provide information about past flooding at or near the site in question?	0		20	20
	g	Do you provide information about areas that should be protected because of their natural floodplain functions?		20	20	20
330	a	Enter 2 points for each flood-related informational brochure, flyer, or other document that is set out for the public to pick up.	0			200
	a	Enter 4 points for each flood-related newsletter, presentation, or other outreach project that is implemented every year.	0			
340	a	Do real estate agents actively advise house hunters if a property is located in a Special Flood Hazard Area?	0	25	25	35
	b	Are there state or local requirements that sellers must disclose whether a property has been flooded?	15		15	25
	c	Do real estate agents give house hunters a brochure or handout advising them to check out the flood hazard before they buy?	0		8	12
350	a	Do you have any flood-related references in your public library?			5	20
	c	Do you have flood-related information or links on your community's website?	15		15	105
360	a,b	Do you visit homes and help people determine how they could reduce their flooding or drainage problem?		25	25	85
	c	Do you talk to people about sources of financial assistance for flood or drainage protection measures?		5	5	15
370		Have you reviewed all your community's flood insurance policies and analyzed where coverage should be improved?			15	110
410	a	Have you conducted your own flood studies and do you use the data when regulating new development?			50	290
	a	Do you provide (or require the developer to provide) base flood elevations in approximate A Zones?			50	100
	b	Did your community contribute to the cost of a Flood Insurance Study (e.g., provided cash or a base map with better topography)?			20	200
420	a	What percentage of your Special Flood Hazard Area is kept as park or other publicly preserved open space?	0%	0%	0%	100%
		The percentage is multiplied by 1,450 to obtain the score.	0	0	0	1,450
	c	Are some of those parks or other publicly preserved open spaces preserved in or restored to their original natural state?	15		15	350
	e	Does your community have density transfers or other regulations to encourage developers to keep the SFHA as open space?			15	250
	f	What percentage of your SFHA is zoned for minimum lot sizes of 5 acres or larger?	0%	0%	0%	100%
		The percentage is multiplied by 300 to obtain the score.	0	0	0	600
430	a(1)	Does your community prohibit filling or require compensatory storage in all or parts of the SFHA?	100		100	280
	a(2)	Does your community prohibit certain types of buildings from all or parts of the SFHA?	100		100	1,000
	a(3)	Does your community prohibit or limit the storage of hazardous materials from all or parts of the SFHA?	10		10	50
	b	Does your community have a freeboard requirement?	80		80	500
	c	Do you have compaction and erosion protection requirements for fill that is used to support buildings?	0		30	80
	d	Do you track building improvements and repairs cumulatively and add the values up to reach the 50% threshold?	0		40	90
	d	Do you define substantial damage to include two floods in 10 years with average damage at 25% of the building's value?	0		20	20
	f	Do you require critical facilities to be protected to the 500-year flood level?	0		20	80
	g	Do you require a nonconversion agreement signed by the permit applicant for an elevated building?	0		30	240
	h	Does your community enforce the International Building and Residential Codes (IBC and IRC)?	40		40	50
		If your BCEGS class is 5/5 or better, your BCEGS credit is calculated automatically.	0		0	50
	i	Do you have regulations that ensure that every new building will be built to be protected from local drainage flooding?	10		10	120
	o	Enter 5 points for every CFM or graduate of an EMI NFIP course, up to a maximum of 25 points.	?		0	25
	o	Do you keep paper records at a secure offsite storage site or scan them and back up the files?	?		5	5
440	a	Is your FIRM on a local geographic information system (GIS) layer and does the GIS also show streets and parcels?	0		50	160
	b	Have you kept copies of all your old FIRMs?	10		10	15

CRS Quick Check

		Community Name	Fayston	State	VT		BCEGS	10	
	c	Use the handout, "CRS Credit for Benchmark Maintenance," to see if there are any qualifying benchmarks in the National Spatial Reference System.					5	27	
450	a	Do you require new developments to build stormwater retention or detention basins?			30		30	380	A_i
	c	Do you have permit records that show that you require new developments to control erosion from construction projects?			10		10	40	A_i
	d	Do you have permit records that show that you require new stormwater facilities to include water quality provisions?			20		20	20	A_i
510	a	Have you adopted a floodplain management or hazard mitigation plan that has been approved by FEMA?			50		50	382	A_i
	c	Have you adopted a plan to protect aquatic or riparian species or other natural floodplain functions?			15		15	100	A_i
520		Enter 3 points for every building that has been cleared out of the floodplain up to a maximum of 190 points.			?		N/A	2,250	
530		Enter 2.4 points for every pre-FIRM building that has been elevated voluntarily, up to a maximum of 160 points.			?		N/A	1,600	
540	a	Do you have a program to regularly inspect streams, ditches, and other channels and to remove debris when found?			40		40	200	A_i
	c	If you have credit for 540.a, do you have a capital improvements program for drainage improvements?				30	30	70	A_i
	d	If you have credit for 540.a, do you have an ordinance the prohibits dumping debris, junk, grass, etc., in drainageways?			0		15	30	A_i
	e	If you have credit for 450.a, do you have a program to regularly inspect storage basins and to remove debris when found?			0		25	120	
610	a - d	Do you have a system for getting notification when flooding is expected (more than listening to the radio)?					25	340	A_i
		Do you have a flood response plan (or flood annex to the emergency plan) that specifies what to do after a flood notification?			0				
		Do you have a master list of critical facilities in the floodplain and arrangements for special warnings to them?			0				
	e, f	Are you a StormReady or TsunamiReady community? (see www.stormready.noaa.gov).			0		25	25	
620	a - e	Do you have a levee, a levee maintenance program, and a levee failure warning and response plan (similar to 610 a-d)? Is there an annual outreach project sent to properties in the area that would flood if the levee were overtopped?			0		50	235	
630	a	Is your community threatened by a failure of an upstream dam? If so, enter the credit for the state's dam safety program. i.e., the value for "SDS" from the "Dam Safety Scores" tab in this Excel file.			0		0	45	
	b - e	Do you have a dam failure warning and response plan (similar to 610 a-d)? Is there an annual outreach project sent to properties in the area that would be flooded if the dam failed?			0		25	115	
710		Enter your county's growth rate, i.e., the value for "CGA" from the right column on the "Growth Rates" tab in this Excel file.			1.03		1.03	1.00	1.50
							Now	**Could**	
				Total	631			135	
				Total "Now" + "Could"				766	
				Product	1.26			1.53	
				Potential CRS Class	9			9	

Emergency Relief & Assistance Fund Eligibility Criteria – 17.5% State Share

BACKGROUND:

The Emergency Relief and Assistance Fund (ERAF) rule was amended in September 2012, which created a sliding scale framework for cost share on the non-federal match requirements for FEMA Public Assistance Grants. The new ERAF rule took effect in October 2014. To qualify for the maximum state cost share of 17.5%[1] of the non-federal match, municipalities have two options; 1) Enroll in the National Flood Insurance Program Community Rating System and adopt a bylaw that prohibits new structures in the Flood Hazard Area, or 2) Adopt River Corridor protection standards that meet Agency of Natural Resources (ANR) criteria.

DEFINITIONS:

Administrative Officer means a person appointed by the community's legislative body for a term of three years to administer the bylaws literally and shall not have the power to permit any land development that is not in conformance with the community's bylaws. Please see 24 V.S.A. §4448 for the appointment and powers of administrative officer.

Appropriate Municipal Panel means a planning commission performing development review, a board of adjustment, a development review board, or a legislative body performing development review, as that term is defined in 24 V.S.A. §4303.

Flood Hazard Area means the land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year and shall have the same meaning as "area of special flood hazard" under 44 C.F.R. § 59.1.

River Corridor means the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition, as that term is defined in 10 V.S.A. §1422, and for minimization of fluvial erosion hazards, as delineated by the Agency in accordance with the ANR Flood Hazard Area and River Corridor Protection Procedures[2].

[1] To qualify for at the 17.5% state match level, communities must adopt one of the 17.5% options in this document, in addition to the four basic ERAF mitigation measures to qualify at the 12.5% level.
[2] Available at: http://watershedmanagement.vt.gov/rivers/docs/FHARCP_12.5.14.pdf

River Corridor Protection Area [3] means the area within a delineated river corridor subject to fluvial erosion that may occur as a river establishes and maintains the dimensions, pattern, and profile associated with its dynamic equilibrium condition and that would represent a hazard to life, property, and infrastructure placed within the area. The river corridor protection area is the meander belt portion of the river corridor without an additional allowance for riparian buffers.

Streams/Rivers: The state will use the most current "Vermont Hydrography Dataset" (VHD) for defining streams/rivers within a community.

Option 1 - Community Rating System

Eligibility to receive the 17.5% state share under this option has two requirements: Enrollment in the Community Rating System (CRS), as well as specific CRS Activity requirements.

Enrollment in the Community Rating System (CRS) is done through FEMA Region 1. As a first step, communities need to conduct a *CRS quick check* self-assessment and close out a successful Community Assistance Visit (CAV) with FEMA Region 1. ANR Regional Floodplain Managers are available to assist communities and serve as a liaison with FEMA. Please note that enrollment in the CRS program typically takes 12-18 months to complete.

In addition to enrollment in CRS, communities must be receiving credit under Activity 430 (Higher Regulatory Standards) for having a flood hazard bylaw that prohibits new structures in their FEMA-mapped Flood Hazard Areas. Model bylaws prohibiting new structures in the Flood Hazard Area are available here: http://watershedmanagement.vt.gov/rivers/htm/rv_floodhazard.htm.

Option 2 – River Corridor Protection

A. To qualify under the River Corridor Protection option, a community must:
   i. Adopt a River Corridor or River Corridor Protection Area overlay for all streams and rivers draining greater than two square miles.
   ii. Adopt a small streams setback as part of their flood hazard/river corridor bylaws. The setback must be a minimum of 50' from top of bank for streams with a watershed area less than two square miles. The setback shall be regulated as the River Corridor for streams draining less than 2 square miles.
   iii. Adopt a minimum regulatory requirement for River Corridors or River Corridor Protection Areas consistent with the Flood Hazard Area & River Corridor Protection

[3] The River Corridor Protection Area is synonymous with Fluvial Erosion Hazard (FEH) Area.

Procedure[4] or be at least as restrictive as those outlined in the ANR Municipal Guide to Fluvial Erosion Hazard Mitigation.

B. Communities that adopted partial[5] River Corridor Protection Area standards prior to the ERAF rule going into effect on October 23, 2014 have enjoyed an early adopter status. To retain the 17.5% state share, communities will need to do the following within two years of ANR publishing a statewide river corridor map updated to include existing Phase 2 Stream Geomorphic Assessment (SGA) data[6].
   i. Adopt a River Corridor or River Corridor Protection Area overlay for all streams and rivers draining greater than two square miles.
   ii. Adopt a small streams setback as part of their flood hazard/river corridor bylaws. The setback must be a minimum of 50' from top of bank for streams with a watershed area less than two square miles. The setback shall be regulated as the River Corridor for streams draining less than 2 square miles.
   iii. Adopt a minimum regulatory requirement for River Corridors or River Corridor Protection Areas consistent with the Flood Hazard Area & River Corridor Protection Procedure or be at least as restrictive as those outlined in the ANR Municipal Guide to Fluvial Erosion Hazard Mitigation.

[4] The Flood Hazard Area & River Corridor Protection Procedure provides exceptions to the No Adverse Impact river corridor requirement and accommodates infill, redevelopment, and existing development within river corridors – see section VII(2)(B): http://watershedmanagement.vt.gov/rivers/docs/FHARCP_12.5.14.pdf. The infill/redevelopment river corridor exceptions shall also apply to the small streams setback area.

[5] A number of communities have adopted regulations for a subset of their watercourses (buffer setbacks, Phase 2 data-generated FEH overlays, or avoidance-based Flood Hazard Areas) prior to the ERAF Amendments taking effect in October, 2014.

[6] Upon written request from the Selectboard, ANR may allow for an extension to accommodate the municipal planning cycle. ANR anticipates publishing a statewide river corridor layer, updated with Phase 2 data, in calendar year 2016.

Communities interested in adopting river corridor protection standards should contact the ANR Regional River Scientist to determine data availability, applicability of existing municipal regulations, and options available to the community. ANR, VLCT, and regional planning commission staff will provide technical assistance to interested towns in qualifying for increased state cost share under the new ERAF rule under the River Corridor criterion.

Regional River Scientists (http://watershedmanagement.vt.gov/rivers/docs/rv_scientistregions.pdf)

Staci Pomeroy (Northern Region): Staci.Pomeroy@state.vt.us

Gretchen Alexander (Central region): Gretchen.Alexander@state.vt.us

Shannon Pytlik (Southern Region): Shannon.Pytlik@state.vt.us

Milly Archer, Vermont League of Cities and Towns; marcher@vlct.org

Regional Planning Commission Contacts: http://www.vapda.org/

Additional Resources:

ERAF:

http://floodready.vermont.gov/find_funding/emergency_relief_assistance

CRS:

http://www.fema.gov/media-library-data/20130726-1708-25045-7720/99032_nfip_small_brochure.pdf

https://www.fema.gov/national-flood-insurance-program-community-rating-system

http://crsresources.org/

River Corridors:

http://floodready.vermont.gov/flood_protection/river_corridors_floodplains

http://floodready.vermont.gov/flood_protection/river_corridors_floodplains/river_corridors

http://floodready.vermont.gov/RCFAQ

River Corridor Mapping:

http://floodready.vermont.gov/assessment/vt_floodready_atlas

http://anrmaps.vermont.gov/websites/anra/

Documentation of No NFIP Compliance Issue

From: Swanberg, Ned
To: Gail Aloisio;
Subject: RE: Fayston 2011 NFIP compliance issue?
Date: Friday, June 24, 2016 11:16:13 AM

Hello Gail, I have checked all my sources and I have not been able to find any records of a compliance issue in Fayston.

- The FEMA NFIP Community Information System does not show any compliance issues.
- There are no compliance concerns recorded with the VT DEC NFIP office.
- The River Management Engineer who covered post-Irene efforts in Fayston has no knowledge of a compliance issue.

I hope this is helpful.

Best wishes,

Ned

Ned Swanberg, Central Vermont Floodplain Manager, CFM
DEC River Corridor and Floodplain Protection Program
ned.swanberg@vermont.gov 802.490.6160
dec.vermont.gov/watershed/rivers
www.floodready.vermont.gov

From: Swanberg, Ned
Sent: Wednesday, June 22, 2016 2:26 PM
To: 'Gail Aloisio' <aloisio@cvregion.com>
Subject: RE: Fayston 2011 NFIP compliance issue?

Hello Gail, I'm still trying to see what I can find.

Is this the text that you are trying to illuminate?

NFIP Compliance Work with elected officials, the State and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through P.C, ANR, S.B, Road Foremen Med Town, USDA 2-3 years

What about approaching the LHMP committee?
Perhaps: Carol Chamberlin – Zoning Administrator ?

I suspect this was something of note to the community. Perhaps (looking at the constellation of suggested resource people) it was at the intersection of a Farm and Road. Maybe related to non-permitted bank armoring or post-Irene berming?

I will keep looking here.

Ned

Ned Swanberg, Central Vermont Floodplain Manager, CFM
DEC River Corridor and Floodplain Protection Program
ned.swanberg@vermont.gov 802.490.6160
dec.vermont.gov/watershed/rivers
www.floodready.vermont.gov

From: Swanberg, Ned
Sent: Thursday, June 16, 2016 8:24 AM
To: 'Gail Aloisio' <aloisio@cvregion.com>
Subject: RE: Fayston 2011 NFIP compliance issue?

Good morning Gail, I will see what I can find. So far...nothing.

Best wishes,

Ned

Ned Swanberg, Central Vermont Floodplain Manager, CFM
DEC River Corridor and Floodplain Protection Program
ned.swanberg@vermont.gov 802.490.6160
dec.vermont.gov/watershed/rivers
www.floodready.vermont.gov

From: Gail Aloisio [mailto:aloisio@cvregion.com]
Sent: Wednesday, June 15, 2016 4:36 PM
To: Swanberg, Ned <Ned.Swanberg@vermont.gov>
Subject: Fayston 2011 NFIP compliance issue?

Hello Ned,

I'm working on finding out if the Town of Fayston had an NFIP compliance issue around 2011, that has since been brought into compliance. Might you have any records regarding this? I am updating Fayston's 2011 LHMP, and the Plan at that time indicated there was a compliance issue to resolve. The current ZA, hired after 2011, states that there are no outstanding compliance issues, so I have concluded the issue must have been resolved.

I believe I'll need to document for FEMA that the alluded issue was resolved, or never existed in the first place. Thank you for any assistance you can provide.

Best,

Gail Aloisio
Assistant Planner
Central Vermont Regional Planning Commission
29 Main St., Suite 4
Montpelier, VT 05602
Phone:(802) 229-0389
Fax: (802) 223-1977
mailto:aloisio@cvregion.com

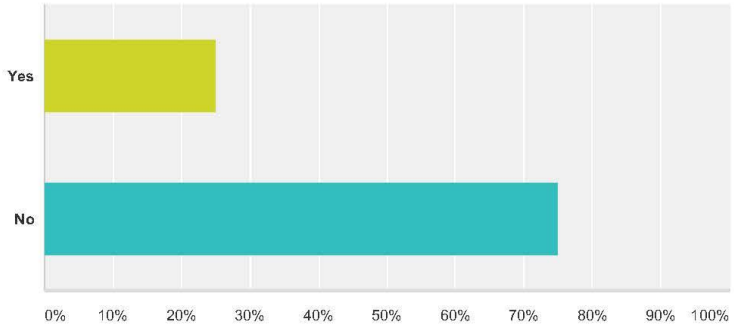
CVRPC's Brownfields Program is now accepting applications! Please contact me to find out more about redevelopment of properties affected by environmental contamination.

Community Survey Results – Fayston Local Hazard Mitigation Plan

Fayston Hazard Mitigation Plan -- Community Survey

Q1 Have you ever been impacted, physically or financially, by a natural disaster in Fayston?

Answered: 16 Skipped: 0



Answer Choices	Responses	
Yes	25.00%	4
No	75.00%	12
Total		16

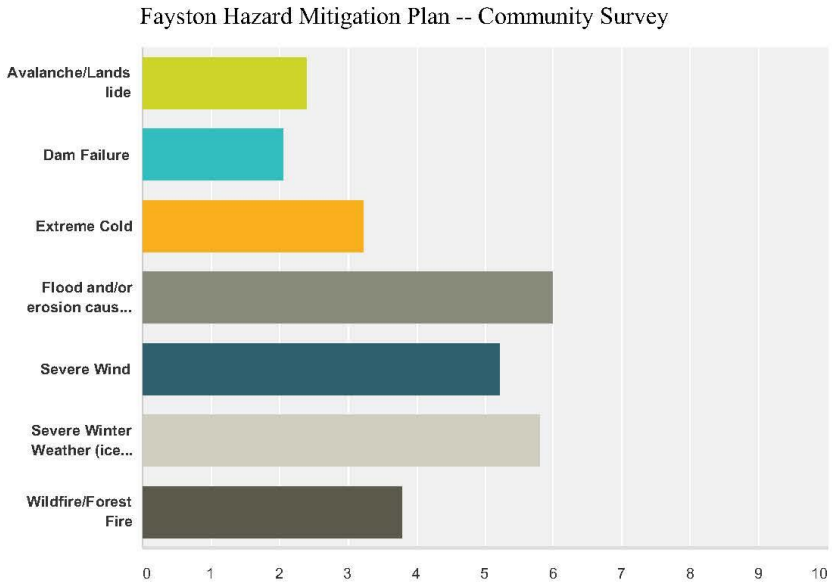
Q2 What type of hazard was the cause of the disaster you experienced? What happened?

Answered: 6 Skipped: 10

#	Responses	Date
1	A major change in the topography and drainage of land to construct a road 1/2 mile long.	7/31/2016 11:57 PM
2	flooding of Mad River impacted several Bridge Street business that I patronize. They were out of business for several months following Irene.	5/25/2016 6:01 PM
3	Road flooded and was unable to get off our hill.	5/17/2016 2:57 PM
4	This barely counts, but our power was out for three days in December 2014 due to ice storm. It was a challenge to keep the house heated and some food was lost.	5/17/2016 11:23 AM
5	Not applicable	5/17/2016 7:33 AM
6	Tropical Storm Irene. German Flats Road washed out due to a clogged culvert near the school. Private Property on German Flats was severely impacted.	5/16/2016 8:02 PM

Q3 Please rank the following hazards from the one that concerns you the most to the one that concerns you the least.

Answered: 16 Skipped: 0

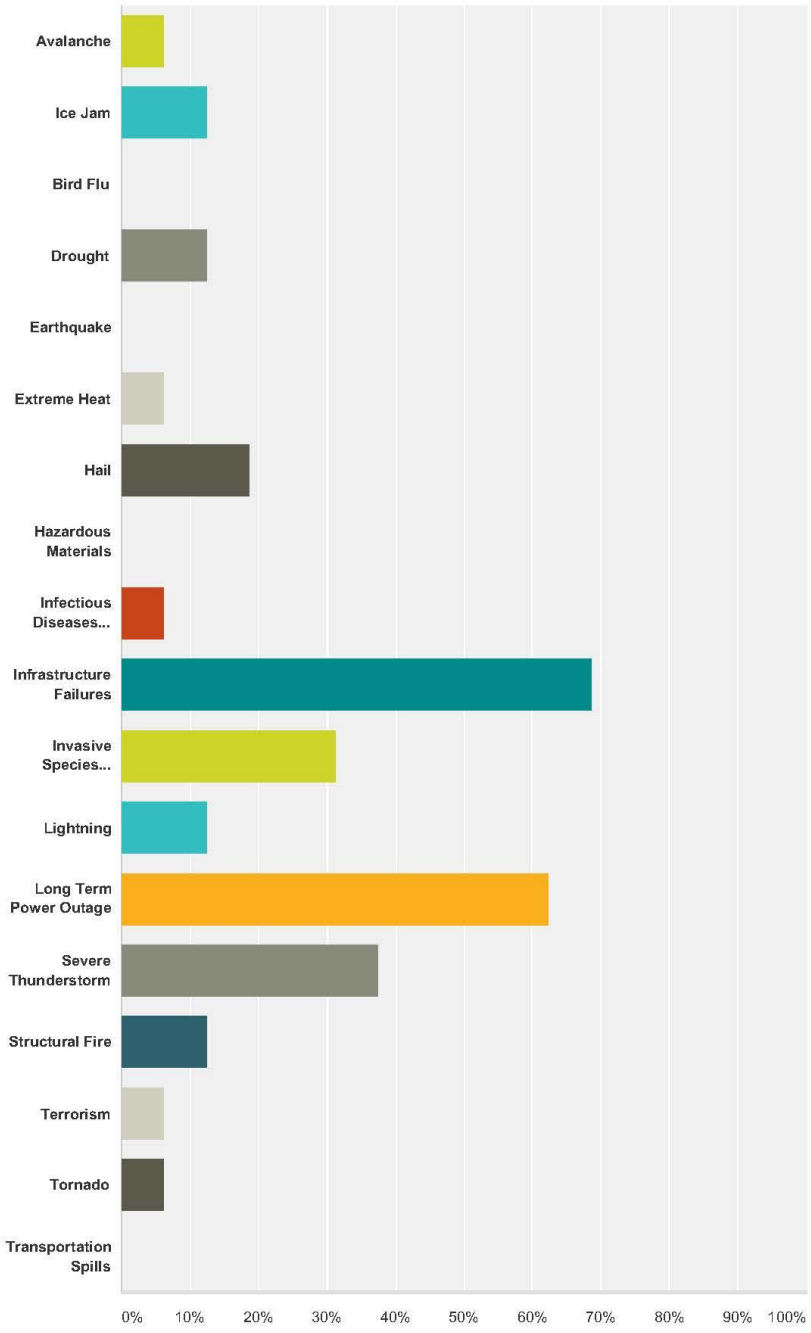


	1	2	3	4	5	6	7	Total	Score
Avalanche/Landslide	6.67% 1	0.00% 0	6.67% 1	0.00% 0	6.67% 1	60.00% 9	20.00% 3	15	2.40
Dam Failure	0.00% 0	0.00% 0	0.00% 0	14.29% 2	28.57% 4	7.14% 1	50.00% 7	14	2.07
Extreme Cold	0.00% 0	0.00% 0	23.08% 3	15.38% 2	38.46% 5	7.69% 1	15.38% 2	13	3.23
Flood and/or erosion caused by streams or runoff	56.25% 9	12.50% 2	6.25% 1	25.00% 4	0.00% 0	0.00% 0	0.00% 0	16	6.00
Severe Wind	28.57% 4	21.43% 3	21.43% 3	7.14% 1	14.29% 2	7.14% 1	0.00% 0	14	5.21
Severe Winter Weather (ice storms, snowstorms)	13.33% 2	60.00% 9	20.00% 3	6.67% 1	0.00% 0	0.00% 0	0.00% 0	15	5.80
Wildfire/Forest Fire	0.00% 0	7.14% 1	28.57% 4	28.57% 4	14.29% 2	14.29% 2	7.14% 1	14	3.79

Q4 Which of the following hazards also concern you for Fayston? Please choose the top three.

Answered: 16 Skipped: 0

Fayston Hazard Mitigation Plan -- Community Survey



Answer Choices	Responses	
Avalanche	6.25%	1

Fayston Hazard Mitigation Plan -- Community Survey

Ice Jam	**12.50%**	2
Bird Flu	**0.00%**	0
Drought	**12.50%**	2
Earthquake	**0.00%**	0
Extreme Heat	**6.25%**	1
Hail	**18.75%**	3
Hazardous Materials	**0.00%**	0
Infectious Diseases Outbreak	**6.25%**	1
Infrastructure Failures	**68.75%**	11
Invasive Species (Emerald Ash Borer)	**31.25%**	5
Lightning	**12.50%**	2
Long Term Power Outage	**62.50%**	10
Severe Thunderstorm	**37.50%**	6
Structural Fire	**12.50%**	2
Terrorism	**6.25%**	1
Tornado	**6.25%**	1
Transportation Spills	**0.00%**	0
Total Respondents: 16		

Q5 Which community assets are most important to protect from disaster damage? (for example, roadways, utility infrastructure, telecommunications, soils, surface or groundwater, forests, agriculture, church, historic buildings, recreational resources, or other)

Answered: 16 Skipped: 0

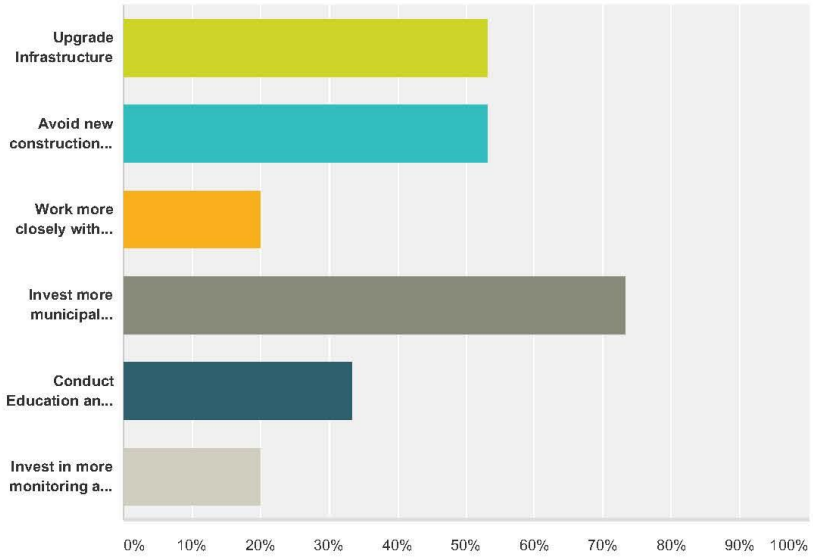
#	Responses	Date
1	Roadways, telecommunications, soils and agriculture	8/29/2016 4:19 PM
2	soils, surface or groundwater, forests, roadways	7/31/2016 11:57 PM
3	ROADWAYS, potable water supplies, electrical infrastructure,	6/16/2016 1:40 PM
4	Roadways, telecommunications	6/2/2016 3:46 PM
5	roadways, utilities, surface/groundwater, soils	5/25/2016 6:01 PM
6	Utility Infrastructure: Power and internet lines, and cell phone service. Buildings and recreational locals can be protected by insurance, so don't waste Town time or money on them.	5/18/2016 1:04 PM
7	Roads, bridges, culverts, forests	5/17/2016 2:57 PM
8	Utilities, roads, telecommunications	5/17/2016 2:11 PM

Fayston Hazard Mitigation Plan -- Community Survey

9	surface or groundwater, soils, roads, telecommunications	5/17/2016 11:29 AM
10	* surface and groundwater * keep forests as forests! * road infrastructure - but I don't think we should protect all road infrastructure as it is; I think we should make sure roads are NOT in locations that will consistently be costly/resource intensive/environmentally harming to maintain; I think we should make sure we invest in long-lasting infrastructure (and green infrastructure!); I think we should ensure that our maintenance practices serve to protect the road from eroding down the hill.	5/17/2016 11:23 AM
11	roads, utilities,communications	5/17/2016 8:08 AM
12	Roadways and infrastructure	5/17/2016 7:33 AM
13	forests, wildlife, habitat	5/16/2016 9:11 PM
14	Utility infrastructure, roadways	5/16/2016 8:02 PM
15	Hard to pick. All are important to the town but the town should take no responsibility for a church.	5/16/2016 6:53 PM
16	Roadways are my #1 concern in fayston. It affects my business and my vehicles drastically	5/16/2016 5:54 PM

Q6 In your opinion, which of the following strategies are the most effective investments to reduce the risk of future hazard damage?

Answered: 15 Skipped: 1



Answer Choices	Responses	
Upgrade Infrastructure	53.33%	8
Avoid new construction in areas prone to damage	53.33%	8
Work more closely with private property owners	20.00%	3
Invest more municipal resources in preventative maintenance	73.33%	11
Conduct Education and Awareness Programs	33.33%	5

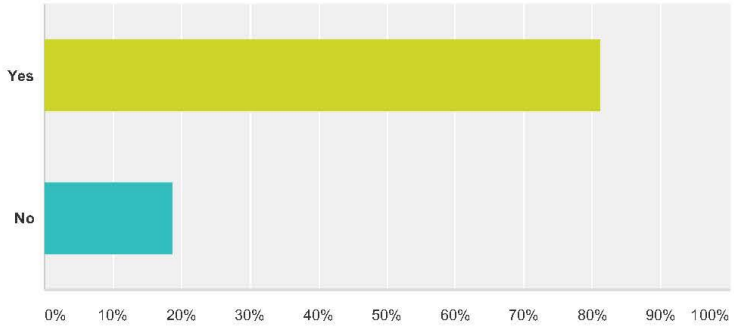
Fayston Hazard Mitigation Plan -- Community Survey

Invest in more monitoring and planning for protection of community assets	**20.00%**	3
Total Respondents: 15		

#	Other (please specify)	Date
1	Any changes in topography should have the approval of a hydrologist	7/31/2016 11:57 PM
2	Don't make any more regulations. We have so many now that we are losing our rights.	5/18/2016 1:04 PM
3	Upgrade the Roads. Use better materials or anything else possible to keep them in better shape	5/16/2016 5:54 PM

Q7 Are you a Fayston resident, or do you pay property taxes there?

Answered: 16 Skipped: 0



Answer Choices	Responses	
Yes	**81.25%**	13
No	**18.75%**	3
Total		**16**

Q8 Is there any other information you would like to share?

Answered: 6 Skipped: 10

#	Responses	Date
1	Selectmen should be held responsible for any violation of Town and State Statutes	7/31/2016 11:57 PM
2	I appreciate the opportunity to provide feedback!	5/25/2016 6:01 PM
3	The biggest problem in our town right now is the horrible deterioration of Millbrook Road - STATE route 17, yet I never hear or read about our town officials trying to get the state to do anything about it. All our officials seem to want to do is waste money on Fayston Elementary, which should have been closed years ago, and raise our taxes so more town administrators can be hired and overpaid. We are a small town. Let's get back to basics and let the residents remain independent and self-sufficient.	5/18/2016 1:04 PM
4	We own land in Fayston but are not residents yet.	5/17/2016 2:11 PM

Fayston Hazard Mitigation Plan -- Community Survey

5	As you think of hazards, please keep in mind that land use in Fayston can positively or negatively impact the scale and scope of hazards in other towns. As the upper headwaters of the Mad River watershed, we have a responsibility to do our best to keep our rain and snow on our ground and not send it immediately (and full of sediment and pollutants) to Waitsfield, Duxbury and Moretown.	5/17/2016 11:23 AM
6	Please work on the roads. The road material on Center Fayston is incredibly slippery when wet. And We cant get home in mud season. Vehicle damage and extra maintenance has costed us a lot of money over the past few years .	5/16/2016 5:54 PM

Central Vermont Regional Planning Commission

October 5, 2016

David Harrison
Emergency Management Director
Town of Lincoln
62 Quaker St.
Lincoln, VT 05443

Greetings, Emergency Management Director,

The Town of Fayston would like to invite your comment on its Draft 2016 Local Hazard Mitigation Plan. A copy of the plan is enclosed. As the policies and programs pursued by Fayston have the potential to affect neighboring communities, Fayston would like to invite your feedback. Fayston has identified projects that will help prevent future damage and losses due to flooding, severe storms, severe winter weather, landslides, and wildfire. Highlights from the projects identified in the plan include:

- Conduct analysis and community outreach to determine if the community would like to regulate River Corridors in addition to the Flood Hazard Overlay District
- Continue work toward engineering and/or mitigation solutions for slumping affecting Number Nine Road, Murphy Road, Bragg Hill Road and North Fayston Road
- Apply for funding to start the inventory and capital budgeting process in preparation for eventual development of a road stormwater management plan

Your comments may be submitted to myself at Central Vermont Regional Planning Commission, at 802-229-0389 or aloisio@cvregion.com. We have also electronically copied your Selectboard Chair.

Thank you very much for your input.

Gail Aloisio
Assistant Planner

29 Main Street Suite 4 Montpelier Vermont 05602
802-229-0389 E Mail: CVRPC@CVRegion.com


Local Hazard Mitigation Plan D...
fayston local hazard mitigation plan
Town of Fayston VT
Official Municipal Website
Search
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News & Notices
Town Offices Calendar
Agendas & Minutes
Documents & Forms
Contact Us
About Fayston
NEWS & NOTICES
Local Hazard Mitigation Plan DRAFT
Warning for Town Plan Amendment PC Hearing
Hazard Mitigation Survey
Notice of Grievances
Request for Bids, Roadside Mowing
NEWS CATEGORIES
Elections (1)
Fayston Happenings (1)
Listers Office (2)
Personal and Professional Highlights (3)
Roads (4)
Town Business (14)
Town Clerk Activities (1)
Posted on October 5, 2016 by faystonvt
← Previous
Local Hazard Mitigation Plan DRAFT
draft-fayston-lhmp-2016-update-draft-2
Posted in Uncategorized
Outreach
2016.11.26-12.2 G...
2016.8.19 Fayston ...
DRAFT Fayston L...

Local Mitigation Team Meeting Minutes

Fayston Local Hazard Mitigation Plan

Re-Evaluation Kick Off Meeting
May 11th, 2016
9:30 am – 10:45 pm
Robert Vasseur Town Hall

MINUTES & NOTES

In Attendance: Allen Tinker – Emergency Mgmt. Director Polly McMurtry – Planning Commission Patti Lewis – Town Clerk/Treasurer Jared Cadwell – Selectboard Robert Vasseur – Road Commissioner Chuck Martel – Selectboard	John Weir – Zoning Admin., Town Health Officer, E-911 Coord. Gail Aloisio – CVRPC Assistant Planner **Not In Attendance:** Ed Read – Selectboard Stuart Hallstrom – Road Foreman

Meeting Commenced at 9:40 am

There are four components to re-evaluate before deciding on Mitigation Projects. They are:

Community Capacities – Hazards – Community Assets – Vulnerabilities

Team members volunteered to complete tasks to assist with the Plan re-evaluation process. Assignments are as follows:

Jared Cadwell – with Selectboard

- Review the recommendations of the Flood Resilient Transportation Pilot Study with the Selectboard at the Monday, the 16th meeting. Determine if there are recommended projects to include in the LHMP for potential Hazard Mitigation Grant Funding. Recommendations can also be broken down into phases, or alternative projects proposed, for inclusion in the LHMP.
- Contact Valley Reporter for follow up on slumping & publicizing Hazard Mitigation process
- One paragraph description of municipal budgeting process, including capital budgeting process
- update the **Status of 2011 Mitigation Projects** in coordination w/Chuck & Selectboard (Gail will send table in Word format).

Patti Lewis – Town Clerk

- start Local Capacities Worksheet & collect info from town officials as necessary
- meet with Gail & John to plan an approach for completing the NFIP Community Rating System Quick Check and ACCD Flood Resilience Checklist
- With Jared, look for Town Reports since 2011 that include a summary of hazard damage or costs,

etc., such as in the Selectboard Report/Letter or other descriptions

- check with Fayston Natural Resources Committee about any summer events for Info Booth

Allen Tinker - EMD

- search Newspaper articles describing damaging events or ongoing severe hazards (like cold, drought, disease outbreak, etc.) affecting Fayston since 2011

John Weir – Zoning Admin.

- update list of permit applications for the records that are missing the Reason for applying & send to Gail
- send the complied Zoning revisions to Gail, once the various revisions are complied into one document

After all of this information has been gathered and CVRPC has completed additional research, the Team will prioritize the hazards that are of greatest threat to Fayston. They will then identify the community assets that are vulnerable to those hazards, and start brainstorming mitigation projects to prevent those vulnerabilities.

The Team would like to learn more about the benefits adopting River Corridor regulations into the Zoning Regulations would provide for preventing future flooding erosion losses. The State Floodplain Manager is available to make presentations to communities about this option.

The Team designed an opening outreach activity to garner input from Fayston residents and the public. News of the coordination of the slumping issues on Hill #9 & Bragg Hill Roads with the Hazard Mitigation Plan will be provided to the Valley Reporter. The Selectboard will seek feedback from residents on this issue and other hazard issues of concern for Fayston. Residents will be able to provide their feedback via an online survey, as well as Front Porch Forum.

Key stakeholders for the LHMP process were also identified and are listed on the next page. The Team requested that the Mad River Valley Planning District attend the next LHMP meeting.

The slumping issues were discussed further. CVRPC recommends that the Town reach out to the AOT Technician to start documenting the issues. Once initial photos and a description of the problem are available, this can be shared with the Dept. of Emergency Management to look into feasibility of Hazard Mitigation Funding.

Next Steps:

- Next meeting to be held **Wednesday, June 15th** from **9:30 am to 11:30 am** at the Municipal Offices
- In preparation for the next meeting Team members are asked to review the Plan copy that was handed out and add their comments.
- Gail to contact the State Floodplain Manager to assist the Planning Commission with learning about River Corridor regulations.

Key Community Stakeholders

Fayston Natural Resources Committee Friends

of the Mad River

Sugarbush Mad

River Glen Mad

River Path

Mad River Riders – Bicycling group

Local Contractors/Excavators (approx. 10)

Local Civil Engineers – Shane Mullen on Planning Commission & Gunner McCain

Potential Events for Information Booth

Mad River Valley Farmer's Market – Saturday's 8:30-11 am Fayston
Natural Resource Committee
Friends of the Mad River – Ridge to River events? MRVPD
events

Fayston Local Hazard Mitigation Plan

Hazards Ranking and Project Brainstorming Meeting
June 15th, 2016
9:30 am – 10:45 am
Robert Vasseur Town Hall

MINUTES & NOTES

In Attendance: Allen Tinker – Emergency Mgmt. Director Patti Lewis – Town Clerk/Treasurer Jared Cadwell – Selectboard Robert Vasseur – Road Commissioner Chuck Martel – Selectboard	John Weir – Zoning Admin., Town Health Officer, E-911 Coord. Gail Aloisio – CVRPC Assistant Planner

Meeting Commenced at 9:30 am

The team reviewed a proposed hazard risk assessment based on research conducted by CVRPC.

The team identified the following as the worst threat hazards facing Fayston:

- Flash flood/Flood/Fluvial Erosion
- Hurricane/Tropical/Severe Storms, incl. High Wind or Hail
- Land/Rockslide/Debris Flow
- Invasive Species
- Wildfire/Forest Fire

Potential mitigation projects such as inventorying trees susceptible to invasive pests and joining in a regional Wildfire Risk Reduction project were discussed.

No actions were taken.

Next Steps:

- Next meeting to be held **Wednesday, August 10th** from **9:30 am to 11:30 am** at the Municipal Offices

Fayston Local Hazard Mitigation Plan

Community Feedback & Mitigation Idea Development Meeting
August 10th, 2016
9:30 am – 11:30 am
Robert Vasseur Town Hall

MINUTES & NOTES

In Attendance: Allen Tinker – Emergency Mgmt. Director Polly McMurtry – Planning Commission Jared Cadwell – Selectboard Chuck Martel – Selectboard	Stuart Hallstrom – Road Foreman Gail Aloisio – CVRPC Assistant Planner

Meeting Commenced at 9:30 am

The team reviewed the results of the Survey Monkey mitigation survey conducted in late spring and over the summer. The team determined they would like to conduct more outreach and discussed publicizing the survey via the next Selectboard meeting and a press release.

CVRPC staff presented various ideas for mitigation projects to address severe winter weather. The team discussed some that the community undertakes already, others that could be reinstated, and a couple of new strategies that would be useful to adopt.

Meeting Concluded at 11:40 am

Next Steps:

- Next meeting to be held **Wednesday, September 21st** from **9:30 am to 11:30 am** at the Municipal Offices

Fayston Local Hazard Mitigation Plan

Mitigation Project Finalization Meeting
September 21st, 2016
9:30 am – 11:30 am
Robert Vasseur Town Hall

MINUTES & NOTES

In Attendance: Polly McMurtry – Planning Commission Jared Cadwell – Selectboard Robert Vasseur – Road Commissioner Chuck Martel – Selectboard	John Weir – Zoning Admin., Town Health Officer, E-911 Coord. Gail Aloisio – CVRPC Assistant Planner

Meeting Commenced at 9:30 am

CVRPC staff outlined the schedule for completion of the Local Hazard Mitigation Plan.

The team analyzed the list of potential mitigation project that has been developed over the course of the project. Weighing the costs, benefits and other important factors of each project, the team selected those that will be pursued over the next 5 years as part of the LHMP.

Meeting Concluded at 11:40 am

Next Steps:

- Next meeting to be held **Wednesday, November 9th** from **9:30 am to 11:30 am** at the Municipal Offices

Hazard Profiles: Non Worst Threat Hazard Profile

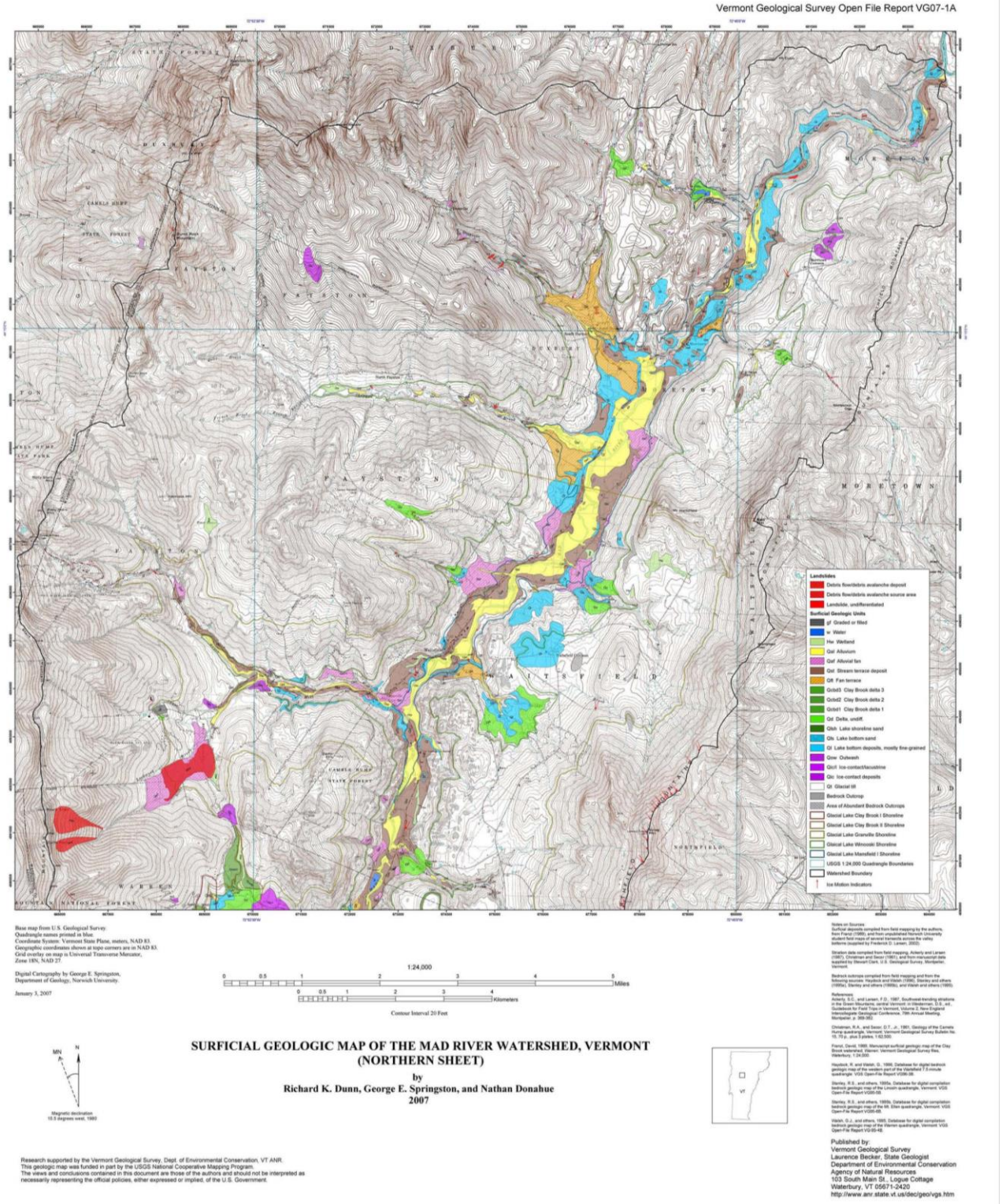
Dam Failure

Dam failure is when a dam is breeched and possibly causes inundation of downstream properties. There are no major State dams located in Fayston. The Town is primarily concerned with smaller private pond dams, which could flood adjacent neighboring landowners.

A dam failure on Old Mansfield Rd has washed out the road in the past. Damage costs are unknown. Additional private Dams are located on Center Fayston Rd, Otton's Mine, Livingston Rd, Fenn Rd, and Foldger's Pond. No dams in Fayston have been inspected under the Vermont Dam Safety Inspection Program. The inspection program is voluntary on the part of the dam owners, and the owner may deny inspection. The Program's current policy is to inspect only those dams that are capable of impounding more than 500,000 cubic feet. The Program does not evaluate the condition of the dam, or the likelihood that it will fail, only the severity of impacts that could occur were the dam to fail.

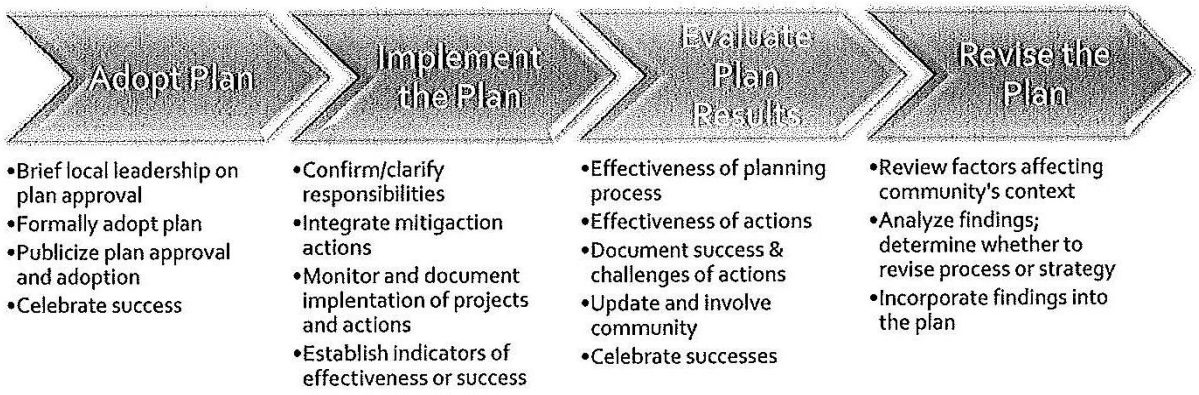
Hazard	Location	Vulnerability	Extent	Impact	Probability
Dam Failure	Old Mansfield Rd, Center Fayston Rd, Otton's Mine, Livingston Rd, Fenn Rd, Foldger's Pond	Private property	Depends on size of dam. Most private dams are fairly small	Depends on size of dam and if severe storms occur	Medium

Surficial Geologic Map of the Mad River Watershed – Northern Sheet (2007)

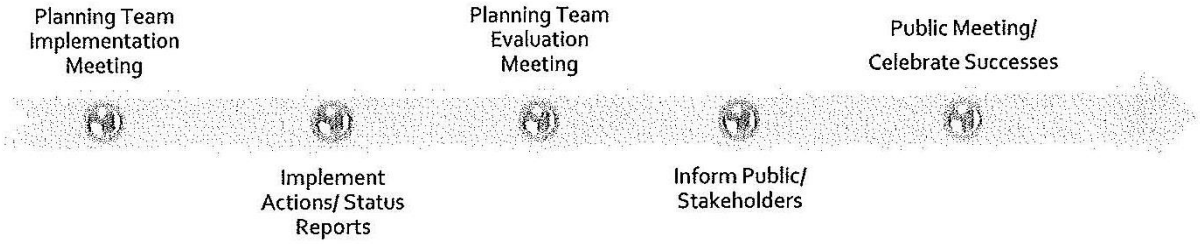


5 Year Plan Review/Maintenance

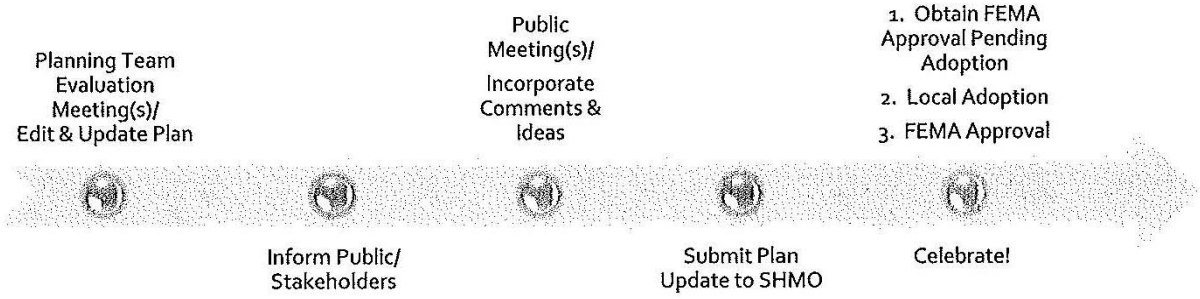
5-Year Plan Review/Maintenance



After Plan Adoption-Annually
Implement and Evaluate



Fifth Year, and After Major Disaster
Evaluate and Revise



Certificate of Adoption

The Town of Fayston
Select Board
A Resolution Adopting the Local Hazard Mitigation Plan
May 15, 2017

WHEREAS, the Town of Fayston 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

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

WHEREAS, a duly-noticed public meeting was held by the Town of Fayston Select Board on May 15, 2017 to formally adopt the Fayston Local Hazard Mitigation Plan;

NOW, THEREFORE BE IT RESOLVED that:

1. The Fayston Select Board adopts the Fayston Local Hazard Mitigation Plan.

2. The municipal officials identified in the Hazard Mitigation Activities Schedule (page 32) of this Plan are hereby directed to pursue implementation of the projects assigned to them.

_____
Chair of Select Board

_____
Member of Select Board

ATTEST

_____

Fayston Clerk