# Town of Fairfax, Vermont
# HAZARD MITIGATION PLAN 2017*


***Photo & Text courtesy Mike and Margie Caine***

**FEMA Approved Pending Adoption: 10/31/2017**
**Approved by the Town of Fairfax Selectboard: 12/8/17**
**FEMA Final Approval: 12/17/2017**

**2017 RESOLUTION**

Whereas, natural and man-made disasters may occur at any time, we recognize that to lessen the impacts of these disasters we will save resources, property and lives in the Town of Fairfax, Vermont;

And whereas, the creation of the Fairfax Hazard Mitigation Plan is necessary for the development of a risk assessment and effective mitigation strategy;

And whereas, the Town of Fairfax is committed to the mitigation goals and measures as presented in this plan;

Therefore, the Town of Fairfax Select Board hereby adopts the 2017 Fairfax Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

Selectboard Chair

Selectboard Vice-Chair

Selectboard

Selectboard

Date: 12/18/2017

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**ACKNOWLEDGEMENTS**

Project Steering Committee:

Tom Fontaine - Fairfax Select Board

Steve Bessette – Fairfax Emergency Management

D.J. Leach – Fairfax Road Foreman

Peter King - Fairfax Selectboard (former)

Randy Devine – Selectboard, Fairfax Water and Sewer Department\

Dave Raymond – Health Officer/Fairfax Fire Department

Project Coordinator:

Shaun Coleman – Northwest Regional Planning Commission

Project Participants:

Town of Fairfax Select Board
Town of Fairfax Highway Department
Fairfax Water and Sewer Department
Northwest Regional Planning Commission
Local Emergency Planning Committee (Franklin County)
Fairfax Fire Department
Fairfax Rescue
Vermont Agency of Transportation District 8
Vermont Division of Emergency Management and Homeland Security
Vermont Agency of Natural Resources
Vermont Fire Academy
Northeast States Emergency Consortium
Federal Emergency Management Agency
National Weather Service
Vermont Geological Survey

This plan should be considered a plan in work due to the continual changing environment in which hazards present themselves. This plan must also be reviewed and adjusted as growth in population, industry, and overall community demographics change.

## 1. INTRODUCTION

This Plan is an update to the 2008 FEMA approved and Town adopted Hazard Mitigation Plan for the Town of Fairfax, VT.

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 Town of Fairfax within Franklin County, Vermont more disaster resistant.

*Photo & Text Courtesy of Henry Raymond*
*January 6, 2007, the River Road Bridge takes the previous night's heavy rains in stride.*

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 Mitigations 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 stopping or limiting development and could include projects such as:

- Flood-proofing structures
- Tying down propane/fuel tanks in flood-prone areas
- Elevating furnaces and water heaters
- Identifying & modifying high traffic incident locations and routes
- Ensuring adequate water supply
- Elevating structures or utilities above flood levels
- Identifying & upgrading undersized culverts
- Proactive land use planning for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Buyout & relocation of structures in harm's way
- Establish & enforce appropriate building codes
- Public information

## 2. PURPOSE

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

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

The 2017 Town of Fairfax Local Hazard Mitigation Plan is an update of the 2008 plan. Sections of the plan have been updated including:

- Plan Update Process
- Updates of hazard identification and risk assessment since 2008
- Community profile information updates
- Map updates
- Status updates of 2008 mitigation strategies
- Identification of new mitigation strategies

Previously identified hazards include:

| | | |
|---|---|---|
| Structure Fire | High Winds | Terrorism / WMD |
| Loss of Electrical Service | Flooding | Earthquake |
| Thunderstorm/Lightning | Major Fire - Wildland | Hazardous Materials |
| Drought | Fluvial Erosion/Landslide | Loss of Sewer Service |
| Loss of Water Service | Hail | Tornado |
| Severe Winter Storm (Ice Storm) | Telecommunications System Failure | |

## 3. METHODOLOGY

Incorporation of Existing Plans, Studies, Reports and Technical Information

Mitigation plans from around the country, current State Mitigation Plans, FEMA planning standards, the FEMA Flood Mitigation Assistance Program requirements and the National Flood Insurance Program's Community Rating System were examined. Other materials examined consisted of community plans, including:

• Town of Fairfax, Vermont Town Plan 2013
• Town of Fairfax, Vermont Zoning Bylaws and Subdivision Regulations 2014
• State of Vermont Hazard Mitigation Plan 2015
• Town of Fairfax, Local Emergency Operations Plan 2015
• Town of Fairfax Flood Insurance Study, 1980
• Town of Fairfax Flood Insurance Rate Maps 1980
• Northwest Regional Planning Commission Regional Plan 2015

A complete list of references may be found in Attachment G.

Planning Process

This is an update to the 2008 Town of Fairfax, Vermont Hazard Mitigation Plan. The Plan was originally adopted by the Town on October 20, 2008 following notice from FEMA Region 1 that the plan was "Approved Pending Adoption". NRPC staff has worked with the Town to update the Plan.

The Northwest Regional Planning Commission (NRPC) coordinated the Fairfax Local Hazard Mitigation Plan update process. During the process, municipal officials were interviewed including the Emergency Management Director, Tom Fontaine, The Emergency Management Coordinator, Steve Bessette, Highway Foreman DJ Leach, and Health Officer/Fire Department Member Dave Raymond. The interviews identified commonalities related to natural, man-made hazards and identified key long and short-term strategies/activities to reduce risks from these hazards. Preparation of the meeting included a review of the Fairfax Municipal Plan and Development Regulations, the Fairfax Hazard Mitigation Plan and Geomorphic Assessment along the Lamoille River. Information from these sources is incorporated into the various sections of this plan.

A meeting was held with the Selectboard was held on February 16, 2015 to discuss hazard mitigation planning, disaster resilience initiatives and economic resilience initiatives. Outcomes included the types of hazards the town was subjected to and what they believed the top hazards would be, identification of mitigation projects and strategies for implementation. SB meetings were open to the public and publicly warned. No one from the public attended and no public comment was received at this meeting.

Meetings of the Hazard Mitigation Committee was held at the Town Emergency Services Building on March 12, 2015, January 14, 2016, and August 3, 2016 and included the Town Highway Foreman DJ Leach, Selectman Peter King, former Selectman and Water/Waste Water Department Supervisor Randy Devine, Selectboard Chair, Local Emergency Management Director Tom Fontaine, Emergency Management Coordinator Steve Bessette, Town Health Officer and Fire Department staff Dave Raymond, and NRPC staff member Shaun Coleman. The meetings were publicly warned and open to the public. No one from the public attended either meeting and no public comment was received. The meeting discussion focused on assessing past mitigation projects, identifying new or reduced hazards and community vulnerabilities, and identifying hazard mitigation strategies and projects.

Members of the Selectboard provided verbal input regarding recent hazardous events including the severe weather in the spring and summer of 2011 and the December 2013 and December 2014 ice storms, new community vulnerabilities such as and progress regarding previously identified mitigation projects. The Road Foreman provided verbal input regarding priority culvert and bridge replacements or upgrades and a recently completed culvert inventory. NRPC staff discussed river corridor issues along the Lamoille River. The Water/Waste Water Supervisor discussed the state of the village water system and vulnerabilities to sustained freezing temperatures that may impact the system. The emergency management coordinator and emergency management director reviewed and discussed the Saint Albans City's recently updated spill response plan and discussed the risk other small water impoundments and beaver dams may pose on road infrastructure. The group agreed such risks were negligible. The meeting indicated the Town continues to be most vulnerable to flooding, severe winter storms (ice storm) and high winds.

Updates to the plan were provided to the Local Emergency Planning Committee on October 20, 2014, and November 17, 2014, May 18, 2015, March 12, 2016, and May 16, 2016 and members were asked to provide comments. No comments of relevance were received. The LEPC meetings were publicly warned and open to the public. No one from the public attended these meetings and no public comments were received.

- Copies of the draft plan were made available to the public at the Town Office from June 1, 2016 to July 30, 2016 for review and comment.
- The public was invited to comment on the draft plan update via a public notice that was circulated in the local newspaper County Courier, the Town's website, the NRPC newsletter and NRPC website from June 1, 2016 to July 30, 2016. This opportunity served to make the public aware where they can find hard copies to review or request either hard copies or digital format.

Instructions were provided to send comments by mail to Northwest Regional Planning Commission ATTN: Shaun Coleman, 75 Fairfield St., Saint Albans, VT 05478 or by email scoleman@nrpcvt.com or by phone at (802) 524-5958.

- The draft plan update was circulated via email from NRPC to the Planning Commission and Selectboard for review and comment.
- Copies of the draft plan update were sent to the Town Clerk's in Cambridge, Georgia, Fairfield, Fletcher and Westford for review and comment with instructions as above. The plan was also sent to the Georgia Town Administrator. A copy of the plan was also sent to Vermont State Hazard Mitigation Officer for review.

The Fairfield Town Clerk, Fletcher Town Clerk and Georgia Town Clerk acknowledged receipt of the plan but that was all. Very few public comments were received and those comments were either in favor of the plan or found the hazards history interesting or were pleased of the efforts by leaders to make the community more resilient. None of the comments suggested new material to the plan.

The draft was then finalized and submitted to Vermont Division of Emergency Management and Homeland Security (DEMHS) and FEMA for review. After receiving FEMA's "Approval Pending Adoption", the plan will go before the Selectboard for adoption.

The Steering Committee recognizes the need for greater public involvement in future updates of the plan. Notices of specific Hazard Mitigation Steering Committee meetings will be warned in local newspapers, websites, etc.

Additionally, continuing efforts will be made to outreach to businesses, nonprofits and other interested parties. Such groups will be encouraged to become involved in the planning process. The Local Emergency Planning Committee (LEPC) for Franklin County is comprised of representatives from these groups. Based on demographics of the county, outreaching to the LEPC would be a logical step. During future plan updates, The LEPC will be briefed during their regularly scheduled meetings and asked to provide comments on the plan. In order to gain greater participation from neighboring communities during future updates of the plan, copies will be made available at the Town Offices of neighboring communities with an open 30-day comment period and neighboring community planning commissions will be asked to review and submit comments to the plan.

Below is a list of revisions that have been made from the past plan and the appropriate sections for reference.

- General reorganization and structuring of the plan
- Update of all data and statistic using 2010 US Census Data and the 2013 Town Plan and Grand List data.
- Status table of previously identified projects, priorities, schedule and strategies – See Existing Mitigation Programs, Projects and Activities Section (section 7 below).
- Updated Hazard Identification and Risk Assessment table in Appendix A
- Updated Hazard History with associated location/vulnerability/extent/impact /likelihood for all hazard events since 2008.
- Updated community profile information based on the 2015 Municipal Plan
- Added additional vulnerable sites to hazard mitigation map.

Progress Since 2008

The following table provides and overview of Fairfax' proposed 2008 hazard mitigation actions along with their current status.

| Mitigation Action | Status |
|---|---|
| TH41 (Chaffee Road) Culvert Replacement | **Completed**: In 2014 with installation of bridge. |
| Emergency response training for first response personnel | This is an on-going "Preparedness" activity and not a "Mitigation" action and has been removed from the plan. |
| Upgrade Bridge 23 – TH24 (Boissoneault Road) | **On-going**: The Town sought grant assistance for this village bypass route from that state during upgrades to State Route 104/Main Street. The project remains unfunded but is still a priority for the town. |
| Safe Routes to School Crosswalk installation and signage | The Town is continuing with a three-phase sidewalk project. The State rejected the cross-walk project across State Route 104/Main Street. |
| Procure and install civil defense siren at Public Safety Building | The Town decided to remove the project from the list as the current siren still works. |
| VT104A (Valley Corner) road upgrade | **Completed:** State Project. State installed a box culvert in 2012. |
| Procure and install stationary generator and automatic transfer switch at Public Safety Building | **Completed:** The Town has PTO generator used for the Public Safety Building. |
| TH22 (Rocky Ridge Road) and VT104 Intersection improvements | **Completed:** State project. Improved signage installed. |
| TH28 (Swamp Road) and TH2 (Fletcher Road) Intersection Improvements | **Completed:** In 2017, intersection improvements were completed to improve line of site issues. |
| Intersection of VT104/VT128 improvements | State project. The Town is continues to work with state officials and private landowners to improvement safety issues at the intersection. |
| Sidewalk maintenance | **On-going:** This is not a mitigation activity. The Committee decided to drop from mitigation list. The town is currently upgrading sidewalks. |

Hazard Specific Research

The project coordinator collected data and compiled research on nineteen hazards: severe winter storm (ice storm), flooding, fluvial erosion/landslide, thunderstorms/lightning, high winds, dam failure, loss of electrical service, structure fire, hazardous materials, hail, drought, water service loss, sewer service loss, telecommunications systems failure, tornado, earthquake, major fire – wildland, civil disturbance, terrorism/WMD. Research materials came from local, state and federal agencies including


*Photo courtesy of Henry Raymond*

*August 29, 2004~Flooding closes the Fanton Road.*

FEMA, NOAA, and DOT. Research was also conducted by referencing historical local newspapers, texts, interviewing residents, and scientific documents. Internet references were widely utilized in historical research. Current mitigation activities, resources, programs, and potential action items from research materials and stakeholder interviews were also identified.

## 4. COMMUNITY PROFILE

The Town of Fairfax is located in the western foothills of the Green Mountains (73°01'W 44°40'N). It is the southernmost Town in Franklin County sharing its southern border with the Town of Westford in Chittenden County. On the west, it is bordered by Georgia, on the north by Fairfield, and on the east by Fletcher and Cambridge, and is proximate to the Towns of Milton, Underhill and St. Albans. Fairfax currently covers a 41.7 square mile area equivalent to 26,688 acres. It is characterized by irregular terrain consisting of open farmland and wooded slopes with panoramic views of Mt. Mansfield and the Lamoille River. The dominant land uses in Town continue to be agricultural and forest lands (82%). In contrast the existing village is the most significant concentration of residential and commercial uses in the Town, although smaller settlements have emerged. There are zoning regulations in place, including flood hazard regulations.

Population

The US Census estimates that the population of Fairfax was 4,285 in 2010 and 5,049 in 2015. According to 2010 Census figures, there are 1,591 housing units in Fairfax that are occupied throughout the year, up from 1222 in 2000. This averages to 2.7 persons per dwelling, compared to 2.6 for Franklin County. On average, 29 new single family houses were built per year from 2001 to 2011 and 13 multi-family homes during the same period. The median value of a home in the Town of Fairfax is $126,500 according to the 2000 Census[1].

Existing Land Use

The dominant land cover in the Town of Fairfax continues to be agricultural and forest lands (82%). Dispersed within agricultural and forest lands are pockets of residential development, with the existing Village as the most significant concentration of residential and commercial uses in the Town.

*Photo courtesy Henry Raymond*

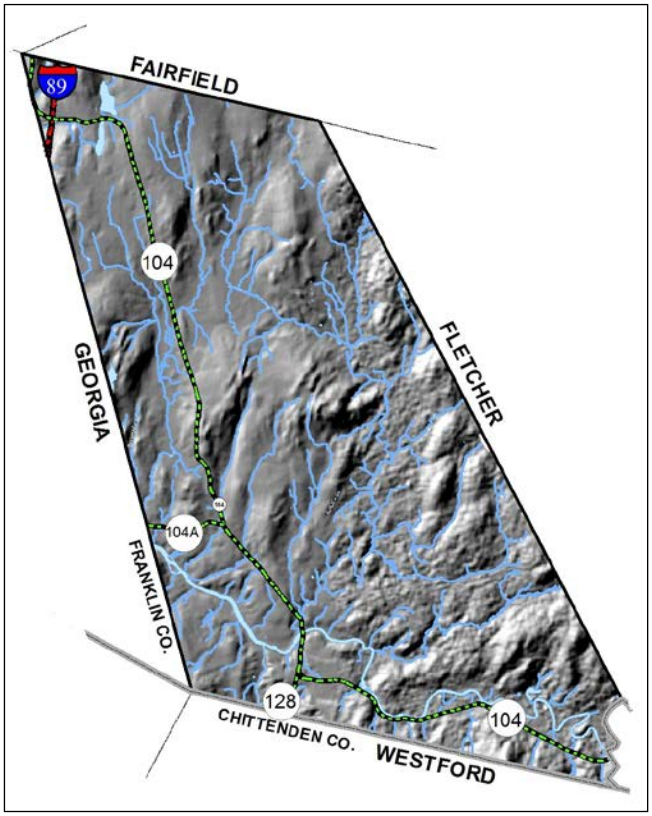
*October 2007~ Forested hills and open pasture lands in Fairfax.*

:· *Agriculture*

Culturally, agriculture has defined the historic rural character of Fairfax. The continuation of this trend to the present day is evidenced by the amount of total land area still in agricultural production. Farming has long contributed to the local and regional economy, and has created the "scenic infrastructure" which is attractive to visitors and residents alike.

[1] May not fully reflect current median home values. In the event of a hazard incident, a current home value data should be used to estimate losses.

Other forms of agriculture, including "niche farming", vegetable growing, and landscape nurseries are also present in Fairfax. While these agricultural land uses do not represent a significant acreage in comparison to hay, corn, and dairy farming, they still contribute to the local economy and culture of the area.




:· *Forests*

Approximately 43% of Fairfax is covered by forest. About 37% of all forest lands are in mixed broadleaf and conifer forests. Another 34% are coniferous, with the balance consisting of scattered stands of broadleaf forests. Diversity in land ownership patterns moderates the current potential for large scale forest products industry. Fairfax's forests may be well-suited for use as small woodlots, low impact recreation, as well as some limited opportunities for larger scale forest industries.

:· *Current Use Program*

In an effort to encourage conservation and sound management of farm and forestlands, the State instituted the current use program where enrolled parcels are taxed according to the use rather than fair market value. Through this program, the state reimburses municipalities for the balance in tax revenue, negating any fiscal municipal impacts for conserving the Town's undeveloped natural resource lands.

:· *Residential Uses*

Residential land use is concentrated within the existing village area in a network of streets, where water and sewer infrastructure exists. However, recent trends (within the past few decades) have shown an increase in scattered residential development outside the Village area. Given Fairfax's high residential growth rate, in part due to affordable housing shortages in Chittenden County and volatile market pressures that make it difficult for farmers to stay in business, continuation of scattered residential development will impose changes in the rural, agricultural landscape of Fairfax. Encouraging the majority of development in the Village area and balancing the rights of individual landowners with aesthetic and cultural considerations in the rural areas are important challenges for town planners. Creative approaches in subdivision and site design, including encouraging the clustering of residences to prevent strip development and the parcellation of agricultural, forestry, and meadow lands, and flexible zoning that allows for development of building sites that respects natural resources and aesthetic qualities of the land should be incorporated into development review and approval processes.

:· *Commercial Uses*

The majority of commercial uses in the Town are concentrated within the existing village, and across the Lamoille River near the intersection of Route 104 and Route 128. Most commercial development in Fairfax is service-oriented, including restaurants, shops, gas stations and convenience stores. Centrally located, small-scale service-oriented commercial development will likely be the trend in the future. It is important to note that until there is additional capacity for municipal sewer and water service or other alternatives for neighborhood/community scale wastewater treatment, little to no additional commercial development will have the opportunity of locating in the Village area.

Future Land Use

The Fairfax Town Plan 2013 states the following future land use goals:

- Cluster future growth in patterns, densities, and locations which respect the natural carrying capacity of the land.
- Cluster future growth in patterns, densities, and locations which respect traditional patterns of development, and which do not compromise the integrity of historic and cultural resources.
- Protect the traditional working landscape of farms and forestry uses.
- Maintain the Town's rural character and sense of place through growth in appropriate patterns and scale.

Proposed land use designations have been divided into the following categories:

- *Growth Center:* In keeping with Vermont tradition, the people of Fairfax have expressed a strong desire for the higher densities of future growth to occur in designated growth areas, with the remaining land being kept in uses such as agriculture, open space, forestry, and some low density rural residential development. In pursuit of this desire, a high density, mixed use growth center has been defined in the environs of the existing village. This growth area is intended to accept the majority of future growth in the Town, and will include a mixture of residential, multi-family and commercial land uses on smaller building areas than are allowed in other parts of town. In short, the Growth Center represents "North Village", with the typical amenities which downtowns have traditionally offered: pedestrian friendly streets, "neighborhood" living, an integrated street network, shops, government services, schools, parks and playgrounds.

- *Mixed Use:* An area intended for mixed use development has been designated near the junction of Route 128 and Route 104. This area will be limited in scope and due to its lack of municipal water and sewer infrastructure, is not intended for an intensity of uses comparable to the Growth Center. The Mixed-Use District is intended to maintain the small-scale commercial, residential, and recreational uses currently in existence, while complementing and providing connection to the Village. Pedestrian accessibility should be considered in future development applications to promote walkable, village scale development. Community wastewater treatment should be required for any new development to encourage density and clustering of uses. Safe pedestrian connection to the Village should be considered through sidewalks or other pedestrian paths.

- *Residential District:* The area east and south of North Village has been designated for future low density residential development beyond what is accommodated by the Growth Center. Agriculture and significant forestland does not dominate in this district and soils are generally suitable for on-site septic systems. Clustering of building lots and planned unit developments are recommended in these areas in order to preserve tracts of open land, tracts of forestland, and rural character. Development Regulations should discourage linear strip residential development.

- *Conservation District:* The Conservation District includes areas generally not physically suited for development, or which should be protected for their inherent value as significant wildlife habitat and forestland. These areas include deer wintering areas; bear habitat; locations of rare, threatened, or endangered species or significant natural communities; or the existence of development constraints such as steep slopes and poor development soils. Development and subdivision should be limited in conservation areas. Fairfax Development Regulations reflect this intent through appropriate land use restrictions, dimensional standards, and development review standards, including the use of planned unit developments.

- *Rural District:* The Rural District consists of areas with significant prime agricultural soils, areas in current agricultural use, significant forestland not included in the Conservation Lands, and the remaining areas of Town not otherwise identified as the Growth Center, Mixed Use, Residential, Recreation or Conservation Lands. Agriculture and forestry should remain a dominant land use and the landscape of rural open countryside and forestland should be maintained. The importance of Agriculture to the local culture and economy continues today. Consequently, provisions should be made to encourage the long-term viability of agricultural uses into the future by providing restrictions on the potential encroachment of non-agricultural forms of development. In addition, the intention of this designation is to encourage viable forest practices within the Town, and to protect these areas from incompatible forms of development.

- *Recreation District:* Recreation lands are those areas (owned by the Town) which have been set aside for future development as sites for public recreation. Potential construction in these areas will be limited to necessary public facilities associated with these recreation areas. With this exception, recreational lands will essentially remain in their present condition as forested areas and open land for public recreation.

- *100-Year Flood Zone Overlay:* The purpose of this overlay is to prevent increases in flooding caused by development in flood hazard areas, to minimize future public and private losses due to flood, and to promote the public health, safety, and general welfare. Designation of this area is also required for continued participation in the National Flood Insurance Program (NFIP) and is regulated under the Town's Flood Hazard Regulation Ordinance. Included are all areas in Fairfax identified as areas of special flood hazard on the National Flood Insurance maps.

Emergency Services

*Fire Department:* The department operates out of one station located on Goodall St. providing services to the citizens of Fairfax as well as contract fire protection to the Town of Fletcher. The Department is also entered into a formal mutual-aid contract with Franklin County, where we both give and receive aid to/from neighboring communities per request.

The current equipment inventory and capabilities of the fire department include:

- Engine 1 – 2004; 1250-gal/min pump, 5-person cab set up for structural firefighting.
- Engine 2 – 1995; 1250-gal/min pump, 2-person cab set up for auto accidents, water supply, and structural firefighting
- Ladder 1 – 1982; 100-ft rear-mount aerial, 5-person cab set up for all nature of calls
- Tanker 3 – 2010; 2000-gal tanker, 3-person cab set up for rural water supply delivery, and for urban/wild land interface.
- Tanker 1 – 1995; 2000-gal tanker, 2-person cab set up for rural water supply delivery and set-up
- Rescue 1 – Chevy 2500 (2006); 2-person cab with rescue body set up for daily use and used in support of a variety of calls
- Rescue Trailer – Equipped with a 2005 Yamaha Grizzly 660 4-wheeler and rescue sled/wagon for all off-road and trail rescues, as well as serving needs for wildfires
- There are 33 fire hydrants in Fairfax which are for immediate response to fires and not for extended use due to capacity limitations. The Fire Department has a map of other water sources available in the case of a fire, including numerous fire ponds.

*Fairfax Rescue:* Ambulance and emergency rescue service in town is currently provided by Fairfax EMS Inc. (dba Fairfax Rescue), a 503(c) 3 charitable corporation. Fairfax EMS Inc. is licensed by the State of Vermont to provide emergency medical care and transport at the Advanced Life Support level. Fairfax Rescue serves as primary provider for the towns of Fairfax, Fletcher, and northern Westford, Vermont. It

also provides backup service to southern Westford, Milton, Georgia, St. Albans, Fairfield, Cambridge, and Essex. Fairfax Rescue is staffed by 34 members, mostly volunteer, from Fairfax and surrounding communities.

Currently Fairfax Rescue operates a 2009 ambulance as well as a 1999 ambulance. It is funded primarily through billing for ambulance service. Additional funding is through the use of a subscription plan, fundraising, donations, and from the voters of Fairfax, Fletcher, and Westford. Request for ambulance service has risen steadily by about 3 to 5% per year over the past 5 years. It is expected that this trend will continue as more people move into the area, and as the population ages.

Fairfax Rescue continues to have a difficult time recruiting and retaining sufficient volunteer members. To remedy this, it retains a few paid staff members to fill shifts that cannot be covered with volunteers. It also hired one full-time person who manages its business interests as well as covering as the daytime crew chief on the ambulance, and as training officer, assuring that all members have access to quality training to maintain their skills and certifications. There is an active quality assurance program, and response times, generally within 5 minutes of the time the first call is received, are one of their key indicators.

*Law Enforcement:* Law enforcement is primarily provided by the Franklin County Sheriff's Office through a contract with a deputy sheriff for 56 hours a week. In addition to coverage provided by the Sheriff's Office, the Vermont State Police provide law enforcement to Fairfax, although their presence has decreased in recent years due to budget cuts.

Energy

Two power companies serve the Town of Fairfax: Green Mountain Power and the Vermont Electric Co-Op. Fuel oil and kerosene heat nearly 60% of all occupied housing units in the Town, compared to 47% in Franklin County. This difference may be explained by the lack of utility gas available in Fairfax, which is used in 21.9% of all homes in the county. Despite the lack of available utility gas in town, it accounts for 1.2% while 22.9% use bottled or liquid propane gas for home heating.

Water and Wastewater Facilities

The Fairfax Water Department distributes water to the village population through a system which was updated in 1999. The system currently serves approximately 289 connections, including the school. The Town recognizes. An additional water source is needed to expand capacity and as a backup source of water in the case of contamination or another emergency.

The State of Vermont has delineated a Source Protection Area (SPA) around the Village's drinking water supply well of just under 120 acres. SPA's are defined as "surface or subsurface areas from or through which contaminants are reasonably likely to reach a public water system source". Fairfax is required to have a Source Water Protection Plan that delineates the boundaries of the protection area, inventories the potential contaminants of concern to the area, assesses the susceptibility of the drinking water source to contamination, a management plan for potential risks, and a contingency plan in case of an emergency. There were ten residences and one industry located within the Source Protection Area in 2008.

All other drinking water in Fairfax is supplied by private on-site wells, except for those residences living in North Fairfax whose properties are crossed by the St. Albans City Water System, which have the option of getting their water from the City of St. Albans.

A village sewer system and treatment plant was installed in Fairfax in 1982. The present system is capable of discharging 78,000 gallons of treated waste per day. The system continues to discharge an average of 42,000 gallons of treated waste a day or 53% of capacity. The Town reserves ten percent of capacity for municipal use and an additional 17,828 gallons per day have been allocated to planned or

recently approved development. This puts the system at near capacity (as of early 2013) and able to serve only limited future wastewater management needs within the Village.

Transportation

There are 16.2 miles of Vermont State Highway that pass through the Town of Fairfax, including 14.19 miles of VT104, 0.79 miles of VT128, and 1.17 miles of VT104A. Interstate 89 extends through Town for 1.2 miles. The Town maintains a total of 66.54 miles of highway, including 11.32 miles of class 2 highways, 50.12 miles of class 3 highways and 5.10 miles of class 4 highways. The Town currently participates in the Road Surface Management System (RSMS); a program to inventory, evaluate and monitor road surfaces and road infrastructure such as culverts and signs. All roads having more than one dwelling have been measured, renamed, and marked in conjunction with the state-wide E911 emergency system, and 24 VSA, Chapter 61.

The Town of Fairfax has identified four hazardous intersections. The first three intersections include TH29 (Wilkins Road) and TH2 (Fletcher Road). Site distances due to topographic conditions coupled with increased traffic in these areas have contributed to accidents in these locations. The Town has placed traffic safety signs along the approach to the intersections to ease conflicts.

The remaining two hazardous intersections are located onVT104. TH22 (Rocky Ridge Road) and VT104 intersection needs improvement due to a nub near the point of intersection. The Town's recommendation is to raise a 100-foot-long section up to 0% grade with VT104. The Intersection of VT104 and VT128 is also problematic again to due site distance and points of access. An intersection realignment study was conducted in 2006 with a recommendation to close the northern intersection access point.

The Town updates its culvert and bridge inventory on a semi-annual basis. The inventory identifies culvert locations and classifies conditions following the Vermont Agency of Transportation bridge and culvert standards. The Town will be conducting a municipal road stormwater erosion inventory in 2017.

## 5. RISK ASSESSMENT ~ Identifying hazards, profiling hazards and assessing vulnerability

*Improved River Road Bridge, by Henry Raymond*

In the last LHMP for the Town of Fairfax, the NRPC emergency planner and Town of Fairfax EMD and EMC collected data and compiled research on hazards including: severe winter storm /ice storm, flooding / fluvial erosion, thunderstorms (high winds, lightning, hail), loss of electrical loss of water and wastewater service, structure fire, hazardous materials, drought, telecommunications systems failure, tornado, earthquake, major fire – wildland, civil disturbance, terrorism/WMD. Research materials came from local, state and federal agencies including FEMA, NOAA, NCDC and DOT. Research was also conducted by referencing historical local newspapers, texts, interviewing residents, and scientific documents. Internet references

were widely utilized in historical research applications. Current mitigation activities, resources, programs, and potential action items from research materials and stakeholder interviews were also identified.

The information is based on surveys and interviews with local officials and the best available data sources found from federal, state, regional, and local agencies and departments. The risk and/or impact of several hazards were negligible and the state examination was considered sufficient in justifying the time spent on the analysis.

Hazard identification and risk estimation can be a highly complex, time consuming and very costly effort if sophisticated technical and engineering studies are undertaken. The Town of Fairfax does not have the resources to undertake hazard identification and risk assessment studies to this level of detail. The Town of Fairfax and the Northwest Regional Planning Commission used a hazard profile matrix (Attachment A) that was used to develop a risk rating for each identified hazard. The matrix was completed by relying on available hazard identification and risk evaluation information as well as the knowledge and judgment of the planning participants. Health and safety consequences, property damage, environmental damage and economic disruption are classified as the consequences of occurrence of each hazard. The following is a description of the risk characteristics used to classify each hazard:

**Frequency of Occurrence:**

1. Rare: Unknown but rare occurrence
2. Unlikely: Unknown but anticipate an occurrence
3. Possible: 1% to 10% probability in the next year, or at least one chance in the next 100 years.
4. Likely: 10% to 100% probability in the next year, or at least one chance in the next 10 years.
5. Highly Likely: Near 100 % chance in the next year.

**Magnitude or % Community Affected:**

0. Negligible: < 10% of properties damaged.
1. Limited: 10% to < 25% of properties damages/Loss of essential facilities/services for up to 7 days/few (<1% of population) injuries possible.
2. Critical: 25% to 50% of properties damaged/Loss of essential facilities/services for > 7 days < 14 days/Major (< 10% of population) injuries/few deaths possible.
3. Catastrophic: > 50% of properties damaged/ loss of essential facilities/services for > 14 days/Severe (> 10% of population) injuries/multiple deaths possible.

**Health & Safety Impacts:**

0. No health and safety impact
1. Few injuries or illnesses
2. Few fatalities but many injuries or illnesses
3. Numerous fatalities

**Property Damage:**

0. No property damage
1. Few properties destroyed or damaged
2. Few destroyed but many damaged
3. Few damaged but many destroyed

4. Many properties destroyed and damaged

**Environmental Damage:**

0. Little or no environmental damage
1. Resources damaged with short term recovery practical
2. Resources damaged with long term recovery feasible
3. Resourced destroyed beyond recovery

**Economic:**

0. No economic disruption
1. Low direct and/or indirect costs
2. High direct and low indirect costs
3. Low direct and high indirect costs
4. High direct and high indirect costs

The risk estimation matrix (See Attachment A) for the Town derives a "relative risk score" using a qualitative process. The total is considered in this plan to constitute the relative risk score. The hazards with the highest risk scores are flooding (fluvial erosion), severe winter storm (ice storm) followed by severe thunderstorms (high winds, lightning, hail). The community's overall risk rating is low (390 out of a possible high of 1,200).

Vulnerability assessments build on the identification of hazards in the community and the risk that the hazards pose to the community. The vulnerability assessment process examines more specifically how the facilities and systems of the Town would be damaged or disrupted by the identified hazard. Vulnerability assessments are included in each hazard profile and in Table 5.2.

Vulnerability Scores

The combination of the impact of the hazard and the frequency was used to determine the community vulnerability (risk score) as HIGH, MODERATE or LOW. The vulnerability classifications based on risk scores are as follows:

- 0-24 LOW
- 25-49 MODERATE
- 50-75 HIGH

For example, a Flood event is *highly likely* (nearly 100% probability in the next year) in many communities within Franklin County but the degree of impact varies, so a *highly likely* flood with *critical* or *catastrophic* impact rates the community vulnerability as HIGH. A community with a *highly likely* or *likely* (at least one chance in the next 10 years) flood with a *limited* impact would receive a vulnerability rating of MODERATE. The vulnerability of a community having the occurrence of an event as *possible* or *unlikely* with *limited* or *negligible* impact would be LOW.

A full summary of hazards and impacts is provided in Table 5.1.

**Table 5.1 SUMMARY OF HAZARDS AND IMPACTS FOR THE TOWN OF FAIRFAX**

| Hazard Type | Frequency of Occurrence | Impact/ Magnitude | Risk | Estimated Dollar Losses | Vulnerability |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Flooding / Fluvial Erosion | Frequent | Limited to Catastrophic | Moderate | $1,741,314 | Loss of road access, power loss, telecommunications loss. Roads, bridges, commercial and residential structures, seasonal homes and utilities. |
| Severe Winter Storm / Ice Storm | Frequent | Limited to Catastrophic | Moderate | n/a | Roads, bridges, commercial and residential structures, seasonal homes, Town Office, Public Safety Building, Post Office and utilities. |
| Severe Thunderstorms (High Winds, Lightning, Hail) | Frequent | Limited | Moderate | $8,706,570 | Falling limbs and/or trees, power loss, telecommunications loss, church, structural damage, crop damage. Commercial structures, residential and seasonal homes, public buildings, utilities. |
| Structure Fire | Highly Likely | Limited | Moderate | $2,336,470 | All structure types, especially those lacking early detection systems. |
| Loss of Electrical Service | Likely | Limited to Catastrophic | Moderate | n/a | Town Office, Town Garage, Public Safety Building, Post Office, schools, church, utilities, residential and seasonal homes, commercial structures, including commercial farms. |
| Hazardous Materials | Likely | Limited | Low | n/a | Residential and seasonal homes, commercial structures, Town Office, Town Garage, State Garage, Public Safety Building, Post Office, church, schools, utilities, and the environment. |
| Hail | Highly Likely | Limited | Low | n/a | Residential and seasonal homes, commercial buildings Town Office, Town Garage, State Garage, Public Safety Building, school, church and utilities. |
| Drought | Rare | Limited to Catastrophic | Low | n/a | Commercial structures (Morse Mill), farms, livestock, private wells, public structures (water reservoir, water pumping station and wastewater treatment plant), residential and seasonal homes and vulnerable populations. |
| Dam Failure | Rare | Limited | Low | $4,073,900 | VT104, TH10 (Nichols Road), TH3 (Conger Road), commercial structures, livestock, utility(water pumping station and power lines residential homes. |
| Loss of Water and Sewer Service | Rare | Limited | Low | n/a | Public health, residential and seasonal homes, elderly housing units, commercial structures, church, public structures (water reservoir and wastewater treatment plant, Town Office, Post Office Public Safety Building). |
| Telecommunication Systems Failure | Rare | Limited | Low | n/a | Residential structures, seasonal homes, commercial, industrial public building , Town Office, Highway Dept., Public Safety Building, Post Office schools, utilities. Special needs populations. |
| Tornado | Rare | Limited | Low | $8,706,570 | Falling limbs and/or trees, power loss, telecommunications loss. Structural damage to residential and seasonal homes, public buildings Town Office, Town Garage, Public Safety Building, Water and Sewer dept. commercial structures, Post Office and utilities. |
| Earthquake | Rare | Limited to Catastrophic | Low | $87,065,700 | Infrastructure (roads, bridges), structural damage to residences, seasonal homes, commercial building, Town Office, Town Garage, Water and Sewer Dept., Post Office, utilities. |
| Major Fire - Wildland | Rare | Limited | Low | n/a | Residential and seasonal homes, commercial structures, utility poles and lines, road closures, fires in rural areas lacking fire breaks. |
| Civil Disturbance | Rare | Limited | Low | n/a | School, Town Office, Town Garage, Post Office. |
| Terrorism/WMD | Rare | Limited | Low | n/a | School, Town Office, Town Garage, Post Office, Water and Sewer Dept. |

Each hazard was analyzed to estimate losses within the Town of Fairfax. The results are included in each hazard profile and in Table 5.1. Human losses were not calculated during this exercise, but could be

expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The data was calculated using *FEMA's Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001).

While all the hazards listed in the State Mitigation Plan were considered, only the hazards identified in this plan are the ones most probable to put the Town of Fairfax at risk. The hazards not addressed in this plan update along with the justification for not including them are outlined in the following table.

| **Hazard Not Profiled** | **Justification** |
|---|---|
| Extreme Temperatures | The Committee agreed that extreme temperatures a non-issue because they are brief in duration if they occur at all. Hot spells in summer and cold snaps in winter are just part of life in Montgomery and not a concern. |
| Hurricane | The Town is too far north from the Atlantic coast. Vermont does not have any coastline. Tropical storms are profiled under High Winds section. |
| Infectious Disease Outbreak | Has not occurred in Town. Considered rare. |
| Invasive Species | Considered rare. Town would rely on state to assist individuals and commercial ag producers in mitigation and response to invasive outbreak. |
| Rock Cuts | None in town. |
| Nuclear Power Plant Failure | Montgomery is approximately 180 miles northwest from the nearest nuclear power plant which is the recently decommissioned VT Yankee Nuclear Power Plant owned by Entergy Nuclear Vermont Yankee, LLC. |
| Rockslide/Landslide | Do not occur in Town. No areas where rockslides are an issue. Mentioned in landslide (fluvial erosion). |

The community has identified and chosen to focus mitigation action items on the following hazards: Flooding / Fluvial Erosion, Severe Winter Storm / Ice Storm, and Severe Thunderstorms (High Wind, Lightning, and Hail). These are the hazards that are most likely to occur in Fairfax and are the hazards the town has developed mitigation actions around.

## Hazard Profiles

The following hazards include a narrative explaining Location/Geographic Area and Extent (magnitude or severity), Probability, Impact and discussion of Past Occurrences of natural hazards that affect the Town.

### Flooding

Description:

Flooding is the most widespread and destructive hazard in the United States. Flooding has also been the most common and costly hazard to affect Fairfax. Flooding can occur anytime of the year as a result of heavy rains, thunderstorms, tropical storms, hurricanes or Nor'easters. It can result from the overflow of major rivers and their smaller tributaries or inadequate local drainage. Historically, floods have been a factor in over 80% of all federally declared disasters. People living in close proximity to bodies of water such as rivers, lakes, and streams are at greater risk from flooding than those not living in the floodplain.

Impact and Geographic Area of the Hazard

Most of the destruction from flooding in Fairfax is due to fluvial erosion rather than inundation flooding, which is the type of flooding

**Lamoille River at East Georgia**

**Flood Categories (in feet)**
Action Stage: 10

**Historic Crests**
(1) 21.64 ft on 03/06/1979
(2) 20.00 ft on 11/04/1927
(3) 19.40 ft on 02/21/1981
(4) 18.81 ft on 04/03/1959
(5) 18.14 ft on 02/28/2000

Recent Crests
(1) 12.28 ft on 04/16/2014
(2) 13.10 ft on 04/27/2011
(3) 11.58 ft on 04/12/2011
(4) 14.40 ft on 04/01/2005
(5) 10.25 ft on 08/31/2004

targeted through the NFIP. Fluvial erosion is the destruction of river banks caused by the movement of rivers and streams. This occurs when the stream is unstable and has more energy than is needed to transport its sediment load, due to channel alterations or runoff events that increase water speed in the channel. Fluvial erosion and river corridor mapping was released by the VT Agency of Natural Resources (ANR) in early December 2014. This mapping will assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones. Fairfax is considering developing a fluvial erosion bylaw, which would be included with their floodplain regulations. This bylaw is considered interim for the river corridor criteria set by Vermont Division of Emergency Management and Homeland Security (DEMHS). Fairfax should work with the Northwest Regional Planning Commission and ANR to ensure that their floodplain bylaw remains inclusive of river corridors. There is 50' stream corridor buffer requirement written in the regulations for any development near a stream.

**Flood Stage Impacts:**

11.5' - Flooding possible along Hunt Street in Fairfax Village, Goose Pond Road and River Road in the South East of Town. A few residences may have flooding along lawns and driveways. Route 104A along the Lamoille River between Fairfax and East Georgia may become inundated by water. There will be widespread field and lowland flooding from Fairfax downstream through Georgia.

Historic land uses in Fairfax resulted in flood plain encroachments and removal of vegetation along river and stream banks. Such land use practices increased the risk of erosion and landslides. USGS and FEMA maps indicate that Fairfax has low incidence of reported landslides along the Lamoille and associated tributaries. Phase I Geomorphic Assessments were conducted by the Vermont Agency of Natural Resources along Mill Brook, Tracy Brook and Stone Brook in 2004. There are no recorded massive landslide events in Town. However, large landslides are becoming more common within the region outside of Fairfax.

*Photo is courtesy of Mike Cain*

*August 29, 2004 ~ Stones Brook flooding on Chaffee Road.*

Flood inundation is an annual threat to the residents of Fairfax and is the most probable cause of emergencies or disasters. Spring thaws and ice breakups may cause lowland flooding. Summer or fall storms are more likely to be responsible for major flooding. Localized semi-annual flooding may cause roads to close, and limits access to certain areas of Town. In the south-east area of Fairfax, the Lamoille River flows from east to west along low lying Goose Pond Road and River Road to the village. These low-lying roads are primarily made up of single family residences and are subject to some flooding from river inundation. The Town has upgraded several culverts and upgraded ditching to address flooding issues in these areas.

Flash floods typically occur in high elevation drainage areas as a result of summer thunderstorm activity. Flash flooding can also result from ice dams, though Fairfax has no mapped ice jams and ice jams are not considered a risk to the community. Infrastructure and structures along higher elevation streams and drainage areas are most susceptible to damage from flash flooding. Drainage ditches and culverts are the

biggest concern for local flash flooding events. Areas in Fairfax that are particularly susceptible include Stones Brook in the southeastern part of Town along Chaffee Road and nearby Shepherdson Hollow Road. In the East Central part of Town, Beaver Meadow Brook floods during severe thunderstorms but this is primarily field flooding and not a threat to public safety.

Several homeowners along the Lamoille River in the village area are concerned about riverbank erosion along their property. The Town Highway system has experienced many erosion events along the road shoulder or near culvert inlets during periods of high precipitation and rapid run-off within proximity of the Lamoille River and its tributaries including: TH39 (Goose Pond Road) and TH51 (River Road); TH37 (Shepardson Hollow Road) along Stones Brook; TH29 (Wilkins Road) along Wilkins Brook; and TH13 (Berthiaume Road), TH17 (Woodward Road), and TH31 (Comette Road) along the tributaries of Mill Brook. The Town noted one area of hillside erosion (44°39'48" N, 72°59'39" W) that has been developing over the past two years along privately-owned property north of TH51 (River Road) which parallels the Lamoille River. Also, the Town Highway Department is concerned about riverbank erosion (44°39'35" N, 72°59'32"W) along the Lamoille River that is threatening a road shoulder segment of TH51 (River Road).

There is a very limited history or information on ice jams within the Town. However, ice jams do occur along the Lamoille River as it drains west into the town of Georgia. VT Route 104A parallels the River west of Town and is a major transportation route for commuters heading to I89 south towards Chittenden County or north to the greater Saint Albans area. Ice jams occur along this stretch each spring within the town of Georgia. The Vermont Agency of Transportation has jurisdiction over VT104A and crews monitor any flood risks in the area mentioned. Impacts are limited as traffic is simply rerouted briefly either north onto Route 104 or south onto Route 128. Ice Jams are not considered a risk to the Town.

A GIS based overlay analysis was conducted using FIRM data with the Vermont E-911 site data of structure locations. The results found that there are twenty –nine (29) sites within the 100 or 500 year flood plain in Fairfax. Twenty-two (22) are single family dwellings, one (1) is a multi-family dwelling, three (3) are mobile homes, one (1) is a commercial unit, one (1) is classified as industrial and one (1) is a substation operated by Green Mountain Power. This represents less than 2% of structures within the community. The commercial site is Steeple Market which is a small grocery, deli and gas station located within the village. The industrial site is the Green Mountain Power hydroelectric plant located at Fairfax Falls on the Lamoille River in East Fairfax.

Estimating flood damage of the 2% of structures with 20% damage is $1,741,314. Cost of repairing or replacing the utilities, roads, bridges, culverts, and contents of structures is not included. Damages from past flooding events are included in the flood history section below.

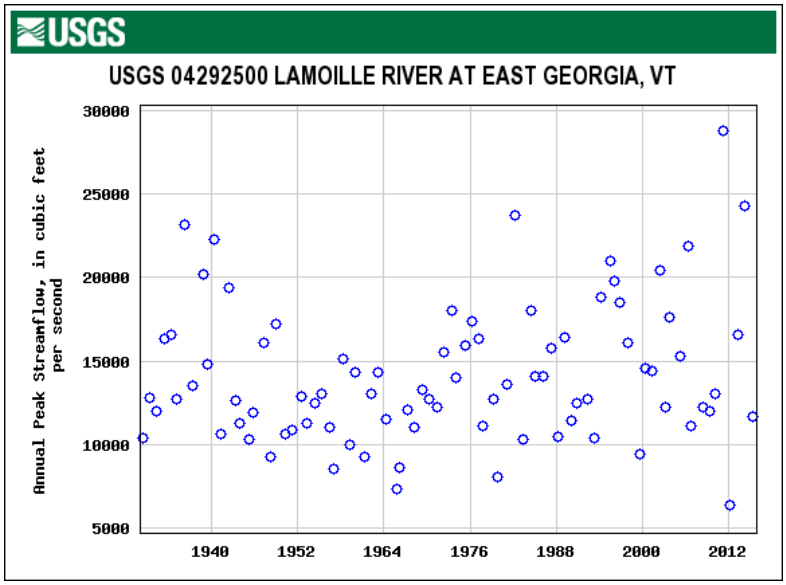
Spring flooding in routine but not always documented. There have been several Presidentially Declared Disasters in recent years for Franklin County which have included severe thunderstorms and associated flooding. Franklin County, including the Town of Fairfax, experienced flooding from a winter storm on January 1996. The storm affected Fairfax from the period of January 14 through January 16th FEMA Declaration 1101-DR was associated with this event. Many roads were washed out and culverts needed replacing throughout town and trees and branches cut power to town. On July 14–16, 1997, flooding in northern Vermont caused severe local damage and resulted in a Presidential disaster declaration (FEMA-1184-DR-VT). The erosion and deposition were significant at numerous locations. On January 6, 1998 a storm produced flooding along streams as snow turned to freezing rain. This storm is referred to as the Ice Storm of 1998 (FEMA-1201-DR-VT), but the weather was more akin to a traditional winter storm than an ice storm for the Town of Fairfax. TH51 (River Road) in Fairfax was impassable for 14 days due to flooding. On June 4, 2007 (FEMA-1698-DR), and August 24, 2007 (FEMA-1715-DR), Franklin County was on the edge of a strong frontal system that brought heavy rain and flash flooding which damaged

road infrastructure. A series of storms affected the entire state from June 14-17, 2008, (DR 1778) producing heavy rainfall. . The year 2011 was a record year for flooding in the state of Vermont. The worst flooding in Franklin County occurred over a two-week period in April and May of 2011 (DR 1995, 4043). A federal declaration was made (DR 4178) which Franklin County was part of. In Fairfax, some flooding occurred along local roads with an estimated $10,000 in damages. Additionally, in August 2011, flooding caused by Tropical Storm Irene in Southern and Central Vermont was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR-4022). Although, Franklin County was included in the declaration Fairfax was spared from the devastating flooding that occurred elsewhere in state.

Extent / Probability

Flash floods/fluvial erosion, severe rain storms are all are probable local hazard events according to plan participants. There have been 12 flood events in Fairfax in between 1996 and 2017. Flash floods typically occur during summer when a large thunderstorm or a series of rain storms result in high volumes of rain over a short period of time. Higher-elevation drainage areas and streams are particularly susceptible to flash floods. Flash floods are likely in Fairfax, and potential damage to Route 104A could limit access to town, as it is the major transportation corridor to the community from the east. Flooding and fluvial erosion are considered highly likely by the town.

There are two stream gauges on the Lamoille River which runs from east to west through southern Fairfax. The closest gauge is upstream in Jeffersonville which is a relatively new gauge with limited historical data. Another gauge is located downriver west of town in East Georgia, Vermont. The highest recorded measurement was 21.64 feet, which was measured on March 6, 1979. The average height for the river in this reach is approximately 6.51 feet.



Lamoille River at East Georgia Stream Gauge
*Source: USGS*

Extent for fluvial erosion: Goose Pond and River Roads are the worst areas There are embankments between the road and river to the east that are susceptible to erosion when the river rises No structures would be damaged but the road would be shut off, which would cut off access to at least twenty homes. This is the worst area of fluvial erosion in Fairfax.

Floodplain/River Corridor Mapping

The following maps were created using the Vermont Agency of Natural Resources (ANR) 'Natural Resources Atlas' which is an online mapping tool. The maps depict the River Corridors that VT ANR has designated. Special flood hazard areas (SFHAs) that FEMA has mapped were digitized by the Northwest Regional Planning Commission from the original Flood Insurance Rate Maps (FIRMS) and are not official D-FIRMs It should be noted that the current map effective date (as of this plan writing) for the Flood Insurance Rate Maps (FIRMS) for Fairfax is 1/20/1982.

The below maps depict the southern half of Fairfax. The Lamoille River flows from east to west. Mill Brook and Stones Brook are two tributaries feeding into the Lamoille from the north east. The green shaded areas are the ANR River Corridors. FEMA floodways and SFHAs have not been digitally mapped by FEMA for the Town of Fairfax.

The river corridors (shaded) span more stream length than the SFHAs. River corridors are only mapped for streams with watershed of two or more square miles, but they do also apply to the area within fifty feet of top of bank for all mapped streams in the Vermont Hydrography Dataset. Areas within mapped river corridors are being considered for incorporation into the Fairfax floodplain bylaw.


The map below depicts flood zones based on FEMA FIRMs. D-FIRMS are not yet available for the southern half of Fairfax. The SFHAs are depicted in orange (100 year flood) and brown (500 year flood).

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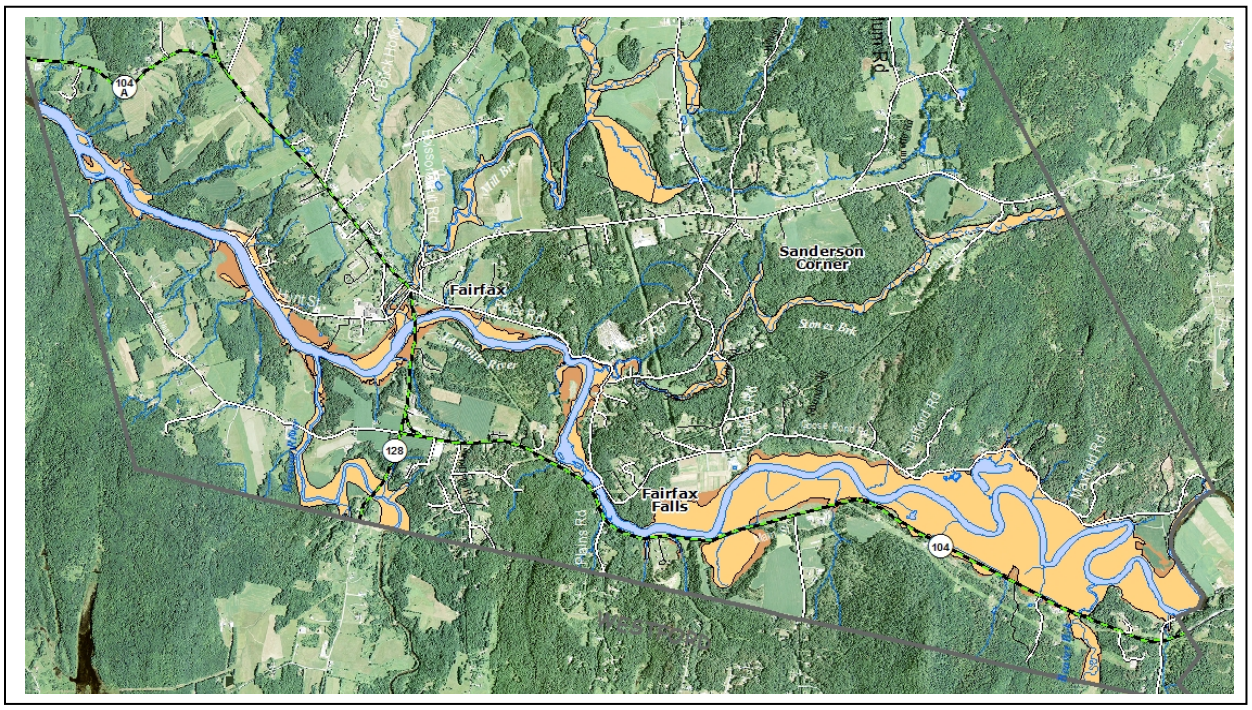
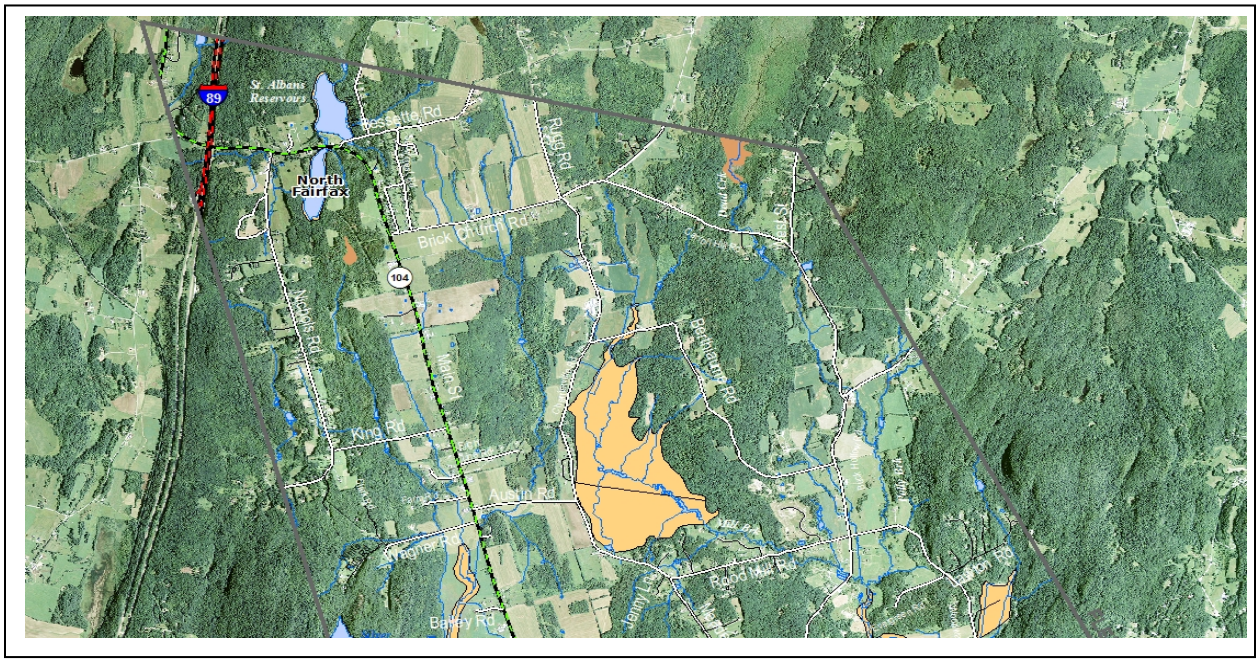



The below maps depict the northern half of Fairfax. The green shaded areas are the ANR River Corridors. FEMA floodways and SFHAs have not been digitally mapped by FEMA for the Town of Fairfax.




The map below depicts flood zones in northern Fairfax based on FEMA FIRMs. D-FIRMS are not yet available for the southern half of Fairfax. The SFHAs are depicted in orange (A zone) and brown (B zone). In the central part of the map, the SFHA of Mill Brook extends over a wide forested area bordered by Rood Mill Road, Cherriereville Road and Berthieume Road. SFHAs accommodate standing floodwaters.

According to FEMA's National Flood Insurance Program, as of September 30, 2016, the Town of Fairfax has nine policies in force with $2,323,200 in insurance in-force and $4,892 written premium in force. These residential structures, built prior to the Town enacting flood hazard ordinances, are located in low density residential areas.

Past Occurrences

The last serious flood occurred in November 1927 when dangerous flash flooding was recorded. There is no official record of loss of life. Four covered bridges were destroyed. Numerous homes were inundated with rising waters, and many roads were damaged. Small buildings were observed being swept down the Lamoille River over Fairfax Falls. The electric plant at the Falls was flooded but remained structurally sound.

Floods on the Lamoille River occurred in 1936, 1938, 1942, 1973, 1976, 1977 and 1984.

A flood event on July 9, 1994 caused approximately $5,000 in property damages in Fairfax.

The January 15, 1996 winter storm (FEMA 1101-DR) triggered flooding throughout the Town and County. The flooding damaged many roads in Town.

On August 31, 1997, heavy rain caused flooding throughout the southern portion of Franklin County causing roads to flood as many culverts were overwhelmed. There were significant damages to TH51 (River Road) and TH 39 (Goose Pond Road) resulting in $5,224 in damages.

On January 6, 1998, a storm produced flooding along streams as snow turned to freezing rain. This storm is referred to as the Ice Storm of 1998 (FEMA-1201-DR-VT), but the weather was more akin to a traditional winter storm than an ice storm for the Town of Fairfax. TH51 (River Road) in Fairfax was impassable for 14 days due to flooding.

A strong storm system settled over the area on June 30, 1998. Torrential rain fell across Town and most of the County. Road were flooded and undermined in Fairfax causing approximately $10,000 in damages.

Flooding occurred during a September 11, 1998 storm that resulted in $5,492 in damages.

On February 28, 2000, mild winter weather combined with a cold front creating flood conditions throughout Fairfax and neighboring communities. Steady rain added to the snowmelt runoff. Several roads in Fairfax were flooded.

August 29 - 30, 2004, heavy rain fell across the region as a cold front moved through the area. Several roads were closed due to wash outs and bridges were damaged throughout Town. Stones Brook overtopped its banks and caused extensive damages to Chaffee Road and private property. There was approximately $40,000 in damages.

A strong storm system produced heavy rain on October 25, 2004. Many roads were flooded resulting in approximately $9,350 in damages.

On June 4, 2007 (FEMA-1698-DR), and August 24, 2007 (FEMA-1715-DR), Franklin County was on the edge of a strong frontal system that brought heavy rain which damaged road infrastructure.

A series of storms affected the entire state from June 14-17, 2008, (DR 1778). Stronger storms on Monday June 16 produced up to 1-inch hail. These storms also produced heavy rainfall, but were moving more quickly. No flooding resulted. On Tuesday June 17th strong thunderstorms produced pea sized hail

and heavy rain in the Lamoille River basin in northwest Vermont. Flash flooding occurred in the eastern parts of Franklin County.

The year 2011 was a record year for flooding in the state of Vermont. The first floods occurred over a two-week period in April and May of 2011 (DR 1995, 4043). These floods impacted the northern half of the state, including the counties of Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orleans, Washington, and Windham. The damage totaled over $1.8 million in FEMA assistance. In the spring, heavy rains in late March/early April on top of a deep late season snowpack resulted in riverine flooding and sent Lake Champlain well over the 500-year flood elevation breaking the 140-year-old peak stage elevation.

During the period of April 15-18, 2014 severe storms and flooding affected n Caledonia, Essex, Franklin, Lamoille, Orange, Orleans, and Washington Counties in Vermont. A federal declaration was made (DR 4178). In Fairfax, some flooding occurred along local roads with an estimated $10,000 in damages.

Additionally, flooding caused by Tropical Storm Irene in Southern and Central Vermont was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR-4022). The details and impacts of Tropical Storm Irene are provided in the Hurricanes/Tropical Storms section of this risk assessment. However, it is important to underscore that the majority of damages in the state resulting from Tropical Storm Irene were due to flooding and fluvial erosion.

## Severe Winter Storms (Ice Storm)

Description

Severe winter storms with snow, ice and freezing temperatures in various combinations are fairly commonplace in Fairfax. Such storms are accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines. Winter storms can cause roofs to collapse and limit access to areas and buildings around Town. Extreme cold often accompanies a severe winter storm or is left in its' wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening.

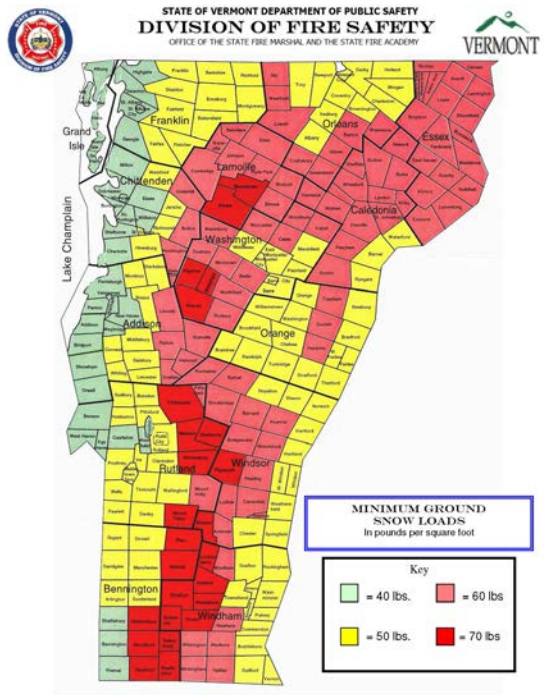
Impact and Geographic Area of the Hazard

The National Weather service defines a blizzard as "a storm which contains large amounts of snow or blowing snow, with winds in excess of 35 mph and visibilities of less than 1/4 mile for an extended period of time (at least 3 hours). Some of the worst historical storms in Fairfax have left snow depths of 14" (March 2001), wind speeds up to 40 mph (January 1998), and ice accumulations of 2-4" (January 1998 and December 2013).

Construction standards for snow load (see map below) indicate that structures in Fairfax should be built to withstand loads of 50 pounds per square foot. This would indicate an average depth of snow of 40 inches or 10 inches of ice on a square foot of roof surface. At that point, design standards would be exceeded and the structure runs the risk of collapse. Given this standard, a snowstorm which dumped 40 inches of snow or 10 inches of ice would likely result in a few collapsed roofs, especially on structures which are not built to these standards.

Winter storms affect the entire Town and generally cause disruptions to public and private services. The primary impacts of a storm typically include the disruption to transportation networks, school closings and occasionally telecommunications and power outages. Vulnerable populations such as the elderly, those dependent on medical equipment and specialized health or physical care are at risk to winter storms. Also at risk are farms and associated structures and livestock. Barns can collapse due to heavy snow loads. Dairy cattle are susceptible to mastitis if they are unable to be milked. With the almost annual occurrence of a significant snow or ice storm, the town feels an impact most on the infrastructure and agricultural segment of the community. The town is able to keep the roads open and treated for most storms and any loss of power is usually limited to hours, except during the Ice Storm of 1998 when most of the town was without power for three to four days.

**Minimum Snow Loads for Estimating Construction: Fairfax (50 lbs/sq ft.)**




Extent and Probability:

Winter Storms occur annually in Fairfax, typically in the form of a Nor'easter. Nor'easters occur most often in the winter and early spring, but also sometimes during the fall. These storms can leave inches of rain or several feet of snow on the region, and sometimes last for several days.

Ice storms occur less frequently than winter storms. According to the Town's Emergency Management Coordinator, the ice storms of 1998, 2010 and 2013 deposited 1-2" of ice throughout the entire town and accumulated ice lingered from 2 days up to a week until temperatures increased. Ice storms can affect the entire Town and generally cause disruptions to public and private services. The primary impacts of an ice storm typically include disruption to transportation networks due to fallen limbs and trees, school closings and occasionally telecommunications and power outages. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards along roadways.

Fairfax' recent history has not recorded any loss of life due to the extreme winter weather. These random events are difficult to set a cost to repair or replace any of the structures or utilities affected. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

The Town is equipped to handle most winter emergencies, including maintaining road accessibility through various snow and vegetative debris removal equipment. The Town has access to private machinery, including bulldozers, plows, ATVs and snowmobiles, should they be needed in the event of an emergency. Heavy wet snows occurring during early fall and late spring and ice storms in the winter months are the cause of most power failures.

**Burlington, Vermont**
**Top 10 Fall Snowfall Totals**
Sep-Nov

| Highest | | | Lowest | | |
|---|---|---|---|---|---|
| Rank | Snowfall | Year(s) | Rank | Snowfall | Year(s) |
| 1 | 24.0" | 1900 | 1 | 0 | 2009/1948/1937/1915 |
| 2 | 23.0" | 1921 | 2 | 0.1" | 2004 |
| 3 | 21.9" | 1906 | 3 | 0.4" | 2010/1953/1930 |
| 4 | 20.4" | 2002 | 4 | 0.5" | 2003/1946/1941/1934/1918 |
| 5 | 19.4" | 1910 | 5 | 0.7" | 1999/1960/1894 |
| 6 | 19.2" | 1971 | 6 | 0.8" | 1982 |
| 7 | 18.8" | 1968 | 7 | 0.9" | 1988/1929 |
| 8 | 16.1" | 1997 | 8 | 1.0" | 1931 |
| 9 | 16.0" | 1977 | 9 | 1.3" | 1964 |
| 10 | 15.6" | 1969 | 10 | 1.4" | 1939 |

*Source: National Oceanic and Atmospheric Administration*

Past Occurrences: A FEMA declared disaster (FEMA 1101-DR-VT) for the County was made following a January 19th, 1996 winter storm. A warming trend produced heavy rains causing rapid snow melt that led to flooding.

On January 6th 1998, a winter storm affected the Town and produced some flooding along streams. Snow turned to freezing rain and produced power outages into the area. This storm is referred to as the Ice Strom of 1998 (FEMA-1201-DR-VT), but the weather in Fairfax was more akin to a traditional winter storm than an ice storm.

A fall snow event occurred on October 20, 2006 when a low-pressure system brought cold air to the northern portion of the state. Heavy, wet snow accumulation of 3-6 inches occurred in Fairfax damaging many trees and causing power disruptions.

On February 14, 2007, a winter storm blanketed most of New England. In Vermont, snow fell heavy at times from late morning through early evening before dissipating during the night. Snowfall rates of 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused near whiteout conditions at times, along with considerable blowing and drifting snow, making roads nearly impassable. Temperatures in the single numbers combined with brisk winds created wind chill values of 10 degrees below zero or colder. In Fairfax, there was 26" of snowfall from the event.

**Burlington, Vermont**
**Top 10 Spring Snowfall Totals**
Mar-May

| Highest | | | Lowest | | |
|---|---|---|---|---|---|
| Rank | Snowfall | Year(s) | Rank | Snowfall | Year(s) |
| 1 | 52.7" | 1933 | 1 | 0.1" | 1945 |
| 2 | 47.8" | 2001 | 2 | 1.0" | 1903 |
| 3 | 45.7" | 1971 | 3 | 2.0" | 1910 |
| 4 | 37.7" | 1974 | 4 | 2.7" | 1927 |
| 5 | 36.4" | 1916 | 5 | 3.1" | 1934 |
| 6 | 36.1" | 1997 | 6 | 3.2" | 1991 |
| 7 | 34.4" | 1994 | 7 | 3.9" | 1946 |
| 8 | 33.9" | 1983 | 8 | 4.0" | 1905 |
| 9 | 31.0" | 2007/1972 | 9 | 4.1" | 1915 |
| 10 | 30.1" | 2011 | 10 | 4.2" | 1921 |

*Source: National Oceanic and Atmospheric Administration*

On December 22, 2010, Vermont received a Presidential disaster declaration (DR 1951) to supplement state and local recovery efforts in the areas struck by severe storms during the period of December 1-5, 2010. FEMA's public assistance funds were made available to affected counties including Franklin County.

During December 20-26, 2013 (DR-4163) a wide-spread low pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm that brought wide-spread power outages. Many Towns throughout Franklin County, Vermont were affected by the ice storm. Vermont Electric Cooperative responded to over 60,000 customer outages throughout the state during the week and estimated costs of restoring power at $7,400,000. In Fairfax, the highway department was active keeping roads open and removing ice damaged trees and limbs from local roads. The Green Mountain Power service area was greatly impacted by the ice storm and approximately 500 people were without power during the outage. Mutual Aid resources were assisting public utility companies for two weeks. The Fairfax High School gymnasium was opened as a community shelter. Hundreds of residents were without power for several days.

## Structure Fire

Description

The Fairfax Fire and Rescue Departments received 164 calls in 2016 of which 19 were for structure fires. The fire department actively upgrades equipment through federal grant programs. Fire personnel are

trained in NIMS/ICS. The Fairfax Fire Department has entered into the Franklin County International Fire Fighters Association's Mutual Aid Agreement. The City has adopted building and safety codes.

Impact and Geographic Area of the Hazard

Structure fires can occur anywhere. There are wood frame buildings susceptible to structure fire scattered throughout the Town of Fairfax. The highest concentration of public buildings is in the traditional village center. This area contains single family residential, multifamily residential and commercial and would pose the highest risk of damage to the public and private sector. Most of these buildings were built before modern fire-resistant construction materials and methods were developed. Many new multifamily units (Old Academy Road, School Street and Hunt Street) have been built to state fire code standards. The risk of general property damage due to structure fire is highest at agricultural businesses with farm buildings often built close by each other and susceptible to fire passing from one structure to another.

Extent/Probability

The Fairfax Fire Department responds to approximately150 calls per year, ranging from auto crashes, carbon monoxide alarms, hazardous materials, hazardous conditions, automatic fire alarms, public event standbys, and fires of all types. Approximately 20 calls per year are specifically structure fires. The Fire Department also provided assistance to other Towns through Franklin County Mutual Aid.

Fairfax village structures that are relatively close thus raising the risk for a multiple structure fire. The impact of this type of incident would primarily be on the residential sector. Older historic buildings that lack fire alarms and sprinkler systems are greater at risk for damages.

**Fairfax Fire Department Annual Responses**

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| # of Fire/EMS Responses | 138 | 127 | 111 | 130 | 194 | 281 | 194 | 162 |
| # Structure Fires | 16 | 29 | 14 | 17 | 21 | 24 | 10 | 31 |

The Town of Fairfax has an ISO rating of 6 within 1000 feet of a municipal fire hydrant, and a rating of 9 for all other areas outside the municipal system. The Town has adopted building and safety codes. Water supply for fire protection is provided by hydrants within the municipal water system and a combination of dry hydrants, ponds, and rivers throughout the rest of Town. There are 30 fire hydrants in Fairfax, which are for immediate response to fires and not for extended use due to capacity limitations. The Fire Department has a map of other water sources available in the case of a fire, including two fire ponds.

Many of the structure fire calls are typically for chimney fires for residences who use woodstoves as primary heat source during the heating season (late fall through early spring). Most chimney fires are extinguished before significant damages occur. Also, fires from kitchen stoves and ovens, portable electric heating sources and electrical fires are the more common sources of structure fires. The Fire Department actively upgrades its equipment through federal grant programs.

Estimated loss due to fire damage on 20 structures annually using median home values is $4,672,940. This loss estimate does not include building contents and assumes total structure loss.

Past Occurrences

On April 11, 2014, a fire originating in a wood stove completely destroyed a single family residential structure.

On December 24, 2008, a fire destroyed Steeple Market in the village. The building dated from the 19th century and for all but the last 28 years had been a Catholic Church. The steeple for which the market was

named collapsed as the rest of the building became an inferno, driven by a stiff wind. Fortunately, no one was injured. Fairfax firefighters, with help at the scene from the neighboring communities of Saint Albans town and city, Georgia, Milton and Cambridge, prevented the fire from spreading to nearby residential structures.

On January 17, 1941, Bellows Free Academy of Fairfax was destroyed by an evening fire. There were no reports of injuries or deaths. The cause of the fire may have been a concentration of coal gas in the ventilating system. The building was originally built in 1902 at a cost of $50,000.

On August 26, 1898, a fire in the village area destroyed two stores and three houses. It was estimated that the loss was $15,000. There were no reports of injuries or deaths.

## Thunderstorms (High Winds, Lightning)

Description

Thunderstorms are caused by an updraft, which occurs when warm, moist air rises vertically into the atmosphere. The updraft creates a cumulus cloud, which will eventually be the thunderstorm cloud.. Severe thunderstorm winds are brief in duration and bring gust in excess of 50 mph. Severe thunderstorms are capable of producing high winds, large hail, lightning, flooding, rains, and tornadoes. Microbursts are downdrafts from thunderstorm that may reach speeds in excess of 80 mph. (State of Vermont Hazard Mitigation Plan 2013).

The National Weather Service (NWS) issues a wind advisory when winds are sustained at 31 to 39 mph for at least one hour or any gusts 46 to 57 mph. Winds of 58 mph or higher cause the NWS to issue a High Wind Warning. In Vermont, high winds are most often seen accompanying severe thunderstorms. In fact, straight-line winds are often responsible for most of the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds.

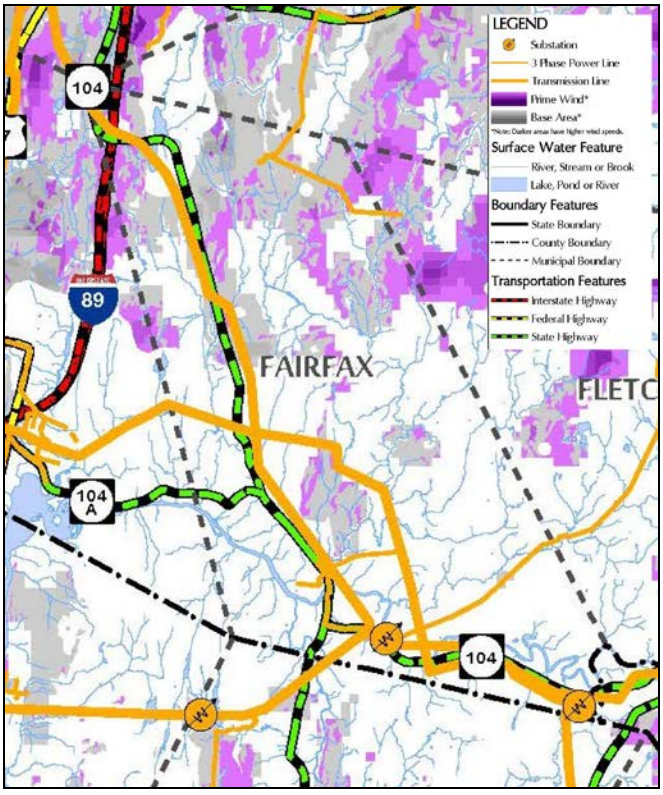
Impact and Geographic Area of the Hazard

The Town has experienced a variety of strong thunderstorm systems that develop that track from the West and from the Green Mountains to the east.. Ridgelines along western and eastern borders of town are more susceptible to lightning strikes than others. Severe thunderstorms can affect all areas of Town but areas of higher elevation are more susceptible to lightning strikes. Hail is a typical accompanying hazard.

| Beaufort Number | Wind Speed Range (mph) | NOAA Terminology | Description |
|---|---|---|---|
| 0 | 0 | Calm | Smoke rises vertically. |
| 1 | 1-3 | Light air | Direction shown by smoke but not by wind vanes |
| 2 | 4-7 | Light breeze | Wind felt on exposed skin; leaves rustle. |
| 3 | 8-12 | Gentle breeze | Leaves and small twigs in constant motion; wind extends light flag. |
| 4 | 13-18 | Moderate breeze | Raises dust and loose paper; small branches are moved. |
| 5 | 19-24 | Fresh breeze | Small trees sway. |
| 6 | 25-31 | Strong breeze | Large branches in motion; umbrellas used with difficulty |
| 7 | 32-38 | Near gale | Whole trees in motion, inconvenience felt when walking against the wind. |
| 8 | 39-46 | Gale | Breaks twigs off trees. Cars veer on road. Generally impedes progress |
| 9 | 47-54 | Severe Gale | Light structural damage. |
| 10 | 55-63 | Storm | Trees uprooted. Considerable structural damage |
| 11 | 64-73 | Violent Storm | Widespread structural damage. |
| 12 | 74-95 | Hurricane | Considerable and widespread damage to structure |

High winds track generally occur from weather systems that track west to east over the Champlain Valley. High winds are common along the Lamoille River corridor in the southern part of Town, as well as the hilltops that run north-south along the eastern and western borders of Town. Often strong winds occur at the base of neighboring Georgia Mountain along the Lamoille River and VT104A according to plan participants. Additionally, strong winds occur in in the hills of north eastern and north western and south central areas of Fairfax.

**Wind**




Potential wind energy areas in Fairfax. Prime refers to areas where no conservation limits exist for wind energy. Base refers to areas where conservation resources limit wind energy development. *Source: Regional Wind Energy Initiative.*

High winds are a hazardous threat to the Town and most commonly accompany other storm events. Violent windstorms are possible in Fairfax. The Town is far inland and is unlikely to receive a direct hit from a hurricane, however high winds and hail storms have occurred in Town as weakened tropical storms track near the region. High winds associated with severe thunderstorms affect forested areas, utility lines and exposed property.

Extent/Probability

There have been 141 thunderstorm events in the region in the past 58 years according to the National Climatic Data Center. Of those, 77 are classified as severe thunderstorms with wind speeds of 50 kts or greater. Participants estimate that thunderstorms with accompanying high winds occur at least once per year typically between June and August.

Severe thunderstorms can cause power outages, property damage, transportation interruptions, affect businesses and can cause loss of life. Micro bursts with high wind speeds and high precipitation accumulations over brief periods often down trees and branches and power lines and can overwhelm local drainage networks for brief periods. Micro bursts have occurred almost annually in the past 10 years according to project participants.

Lightning strikes in western Franklin County average between 4-6 strikes per square mile each year based on data collected by NASA satellites between 1995 and 2002. Within the Town of Fairfax, these numbers would average between 160 -240 lightning strikes per year. There is very little data on lightning strikes in Town. There are rare instances where lightning has caused barn fires and grass fires during dry periods. Damages from lightning could come in the form of destroyed electrical appliances, structure fires, or wildland fires. Private properties in Fairfax have experienced lightning strikes. High elevations and areas around bodies of water such as lakes and ponds are more susceptible. The Town's Highway Department has appropriate debris removal equipment.

**Severe Thunderstorms in Fairfax: *Source NCDC***

| Dates | Type | Description | Area | Magnitude | Property Damages |
|---|---|---|---|---|---|
| 2/10/2001 | High Wind | Strong Cold front from Canada was accompanied with very high winds. | Western Franklin Category | 64 kts. | $1,000 |
| 3/10/2002 | High Wind | A cold front moved across the area from Canada and brought strong winds. Trees were blown down around Town. | Franklin County | 54 kts. | $5,000 |
| 6/9/2004 | Thunderstorms High Wind | A cold front tracked slowly across northern New York and Vermont. this front was preceded and accompanied by thunderstorms with damaging winds. In Fairfax trees and power lines were blown down. | Franklin County | 50 kts. | $5,000 |
| 7/5/2005 | Thunderstorms | Thunderstorms preceded a cold front that moved into Vermont from Canada. Thunderstorms were severe in Franklin County with dozens of trees blown down damaging cars. Winds were estimated between 58 and 72 mph (between 50 and 63 knots). Power outages were reported in the county. | Franklin County | 55 kts. | $100,000 |
| 6/19/2006 | Thunderstorms High Winds | Thunderstorms intensified during the day as they moved into the Champlain Valley from Canada. These thunderstorms produced severe weather including downed trees. | County Wide | 50 kts. | $10,000 |
| 8/16/2007 | Thunderstorms High Wind | A cold front moved across the region from Canada and was accompanied by high winds. Several trees in Fairfax were uprooted. | State-wide | 60 kts. | $50,000 |
| 5/26/2011 | Thunderstorms High Wind | Unstable air mass travelled across northern Vermont from the west during the late afternoon producing widespread thunderstorms and damaging winds. Many customers were without power due to downed trees on utility lines. | Fairfax | 50 kts. | $20,000 |
| 7/6/2011 | Thunderstorms | A well-established squall line moved across the state during the afternoon with numerous reports of wind damage as well as lightning strikes. As a result of these storms, more than 15,000 customers in Vermont lost power. | State-wide | 50 kts. | $5,000 |
| 9/8/2012 | Thunderstorms High Wind | A squall line of severe thunderstorms developed and pushed east into Vermont. There was isolated minor wind damage in the form of large tree branches knocking out powerlines across town. | County wide | 50 kts. | $25,000 |

| | | | | | |
|---|---|---|---|---|---|
| 10/29/2012 | High Wind | Superstorm Sandy brought high winds along the western slopes of the Green Mountain. Much of the state experience 50 knot wind speeds. There was light damage in the community of Fairfax. | State-wide | 50 kts. | $10,000 |
| 6/1/2013 | Thunderstorms High Wind | A weak disturbance, well ahead of a cold front forecast triggered a few scattered thunderstorms as it entered Vermont. Damaging winds occurred in Fairfax toppling trees along Buck Hollow Road. | Fairfax | 50 kts. | $2,000 |
| 7/7/2016 | Thunderstorms High Wind | An unstable air mass passed over the area in the afternoon. Scattered thunderstorms developed ahead and along this font producing isolated severe wind damage including fallen trees and downed power lines in Huntville. | Fairfax | 50 kts. | $5,000 |

It is extremely difficult to predict where the event will occur and the type of associated structural damage. The estimated damage from a severe thunderstorm event occurring to 10% of all structures in Town with 20% damage is $8,706,570. The estimated cost does not include building contents, land values or damages to utilities. There are no known deaths that have occurred in Town due to severe thunderstorms.

Past Occurrences

6/23/2002: A cold front moved into northern Vermont from Canada and triggered thunderstorms in the region during the evening hours. Thunderstorms with accompanying winds blew down trees in Fairfax.

9/19/2003: The remnants of Hurricane Isabelle brought strong winds. Trees and power lines were blown down across the area with most reports from Enosburg, Fairfield and Fairfax. Damage estimates between the 3 municipalities was approximately $10,000.

11/13/2003: A strong low-pressure system moved through the eastern Great Lakes and into southern Canada. Early morning winds uprooted a few trees in town. Damages estimates were less than $5,000.

9/29/2005: A strong cold front moved across western Vermont during the morning of September 29th. Large scale damaging winds preceded and followed the front. Trees and power lines were blown down across both Franklin and Addison counties, with numerous power outages. There were damages estimates of $35,000 between both counties.

*Photo courtesy Henry Raymond*
*August 16, 2007~ Wind Storm damage on Main Street, Fairfax Village.*

10/16/2005: An ocean storm system moved north to the east of New England and resulted in strong winds across the region. There were downed trees and power outages in the county and across the State. Damage estimates in the county were approximately $10,000.

2/17/2006: An arctic front barreled across the Champlain Valley with sustained winds of 30 to 40 mph. There were widespread reports of downed trees and powerlines. There were an estimated 50,000 customers without power across the state. Damages in the County were estimated at $75,000.

In September 2002, Tropical Storms Hannah and Isidore produced winds and heavy rain in Fairfax on September 14-15 and September 27 respectively. No damages or flooding were reported.

On July 8, 2005, Tropical Storm Cindy produced heavy rain across much of the state including Fairfax. Rain amounts were estimated between 1 and 3 inches with no reported damages.

Tropical moisture from Katrina reached Fairfax on August 30, 2005. The rain was initially steady then became heavy on the following day. Rainfall totals across Franklin County were generally between 2.5 and 4 inches. No damages were reported.
A powerful front brought damaging high winds during the afternoon of August 16, 2007. There were brief power disruptions, downed trees and associated damages to residential property throughout Town.

On June 2, 2008, the National Weather Service issued a Tornado Watch for Franklin County. A powerful cold front with strong winds tracked across Lake Champlain and into Vermont during the afternoon and early evening. Power outages were scattered throughout Town as many trees and branches toppled power lines. Power was restored within 12 hours. On August 28, 2011, Tropical Storm Irene (DR-4022) devastated parts of Southern and Central Vermont, however the northern part of the state was largely spared. Heavy rain fell throughout Enosburgh throughout the day and evening. Some local roads experienced flooding from culverts being overtopped but damages were minor compared to other areas of the state.

On October 29, 2012 Hurricane Sandy made landfall near Ocean City, New Jersey. In Vermont, a predominant east-northeast wind blew across the region with the strongest winds in northeast Vermont and along some Green Mountain western slope communities including Fairfax. Much of the state witnessed wind gusts of 35 to 45 mph with those western slope communities in the 50-60 mph range. Tree and power line damage was scattered but still left a total of 35,000 residents throughout the state without power at some point during the storm.

## Loss of Electrical Service

Description
Power loss typically accompanies other hazards such as severe winter storms/ice storms and severe thunderstorms. Power loss occurs when transmission lines are compromised by weather events or human caused events such as a car crashing into a power pole.

Impact and Geographic Area of the Hazard
In winter, branches and trees laden with snow and ice often fall on transmission lines causing limited service disruptions.

Extent and Probability
The community does not lose power for sustained periods often. Brief interruptions of power, lasting from a few minutes to a few hours occur annually. Historically, utility service disruptions in Fairfax have been minor affecting small areas for a limited time.

It is difficult to estimate losses due to loss of electrical service both in the public and private sectors. Damages vary dependent on the season. Power loss in the winter can cause water pipes to freeze damaging private and public structures. Power loss can also lead to loss of business transactions. No loss estimates were derived for this hazard due to lack of data and resources. Any structure dependent on electrical utility is susceptible.

Past Occurrences
On March 8, 2008, at the time of this writing, ice and snow fell over much of the region downing trees, limbs and causing power outages. Reports on the extent of power outages ranged from one hour to

seventy-two hours. Town Highway crews were busy clearing debris. There were no estimates on losses due to the event.

On June 3, 2008, a strong cold front tracked through Fairfax producing violent thunderstorm activity. Numerous lightning strikes occurred throughout town. One strike hit the Fairfax Falls substation causing a power outage in the village. Utility workers restored power within a few hours.

During December 20-26, 2013 (DR-4163) a wide-spread low pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm that brought wide-spread power outages. Many Towns throughout Franklin County, Vermont were affected by the ice storm. Vermont Electric Cooperative responded to over 60,000 customer outages throughout the state during the week and estimated costs of restoring power at $7,400,000. The Green Mountain Power service area was greatly impacted by the ice storm and approximately 500 people were without power during the outage. Mutual Aid resources were assisting public utility companies for two weeks. The Fairfax High School gymnasium was opened as a community shelter. Hundreds of residents were without power for several days.

The Town's primary emergency shelter (BFA Fairfax High School) has a stationary generator. The Public Safety Building and Water and Sewer Department are equipped with switches for portable generators which are readily available. There are vulnerable populations in the Town that would need special attention during a power failure, notably the elderly with respiratory needs. There is no backup power available to the residents of Fairfax Green Adult Living complex which is privately owned.

The Public Safety Building has a hook-up for a PTO driven generator. The Town owns a PTO driven generator that could also be used by the sewer plant. There is the likelihood that locally owned PTO driven generators would be available during power outages. The preference would be to install a permanent stationary generator with an automatic transfer switch.

The Town has identified the following actions to mitigate the impacts on the community due to power interruptions:

## Hazardous Materials (Fixed Site and Transport)

Description

There are 9 sites in Town that have sufficient types and/or quantities of hazardous materials that require reporting through 20 VSA, Chapter 1, and Public Law 99-499, 42 USC 9601 "Superfund Amendments and Reauthorization Act of 1986, Title III Emergency Planning and Community Right to Know" (see Attachment B).

Impact and Geographic Area of the Hazard

The largest quantities of hazardous materials used in Fairfax are flammable or combustible liquids: heating fuels and automotive fuels. Other types of HazMat incidents that should be anticipated at vehicle and heating fuel dispensing depots include spills, leaks, fires and explosions. Propane, in high volumes, is stored and moved frequently along VT104, VT104A and VT128 and can be expected to be involved in a high percentage of hazardous materials incidents. The Fairfax Emergency Operation Plan contains a full hazards analysis for hazardous materials.

The following table lists permitted underground storage tanks as reported to the Vermont Agency of Natural Resources[2]. These tanks have not been taken out of service.

**UNDERGROUND STORAGE TANKS IN FAIRFAX**

| Facility Name | Address | Permit Holder | Gallons | Contents |
|---|---|---|---|---|
| BFA Fairfax | 75 Hunt St | Town of Fairfax School District | 3,000 | Diesel |
| Fairfax Steeple Market | 1098 Main St. | Sandalwood Development, Inc. | 8,000<br>8,000 | Gasoline<br>Gasoline |
| Minor's Country Store | 874 Main St | Minor's Country Store, Inc. | 4,000<br>8,000<br>8,000<br>2,000 | Diesel<br>Gasoline<br>Gasoline<br>Kerosene |
| Nan's Mobil | 1301 Main St | R L Vallee, Inc. | 10,000<br>8,000<br>3,000 | Gasoline<br>Gasoline<br>Diesel / Kerosene |
| Ross' Auto Repair | 1184 Main St | S B Collins, Inc. | 4,000<br>4,000 | Gasoline<br>Gasoline |

Extent/Probability

With ever-increasing numbers of trucks on Vermont's highways a large hazardous material spill seems inevitable. Both the Fairfax highway crew and the Vermont Agency of Transportation are committed to improving highway safety but the task continues to be overwhelming.

A large fixed site hazardous materials storage location is unlikely to be established in Fairfax in the near future. With adequate industrial space available in nearby Georgia and Saint Albans, it is likely that any future needs for such a facility will be accommodated there.

Based on the recommended Public Safety evacuation distance from the 2014 Emergency Response Guidebook, a 1,000-foot circle has been drawn around Tier II sites. Structures inside the circle are at-risk from a fixed-site HazMat incident and may need to be evacuated or shelter-in-place if an incident occurred. Of the 1,652 structures (E911 locations) in Fairfax, there are 204 (residences, public facilities, commercial or industrial facilities) or 11% that may be impacted by a fixed-site incident.

Major incidents occurring on Vermont 128, 104 or 104A could disrupt traffic and essential services until corrective action has been completed. These corridors are identified as the most probable location of a major incident. Using the same method for a HazMat fixed-site incident (q.v.), 424 residences, commercial, religious and public facilities along VT104, 17 residences on VT104A, and 37 residences and commercial facilities along VT128 are potentially at-risk for a HazMat transport incident. At-risk sites include the Fairfax Public Safety Building (Fire and Rescue Departments), Town Office, Green Mountain Power substation, the Catholic Church, the Baptist Church, the Methodist Church and the Historical Society. There are two Tier II Sites within the 100 or 500 year flood plain in Fairfax: Steeple Market and VELCO substation in East Fairfax. Steeple Market contains an above ground fuel storage tank that may be at risk during a 100 or 500 year flood event.

[2] Tanks containing heating oil used exclusively for the purpose of heating an on-premises building are exempted from these requirements, as are tanks smaller than 1100 gallons containing motor fuels at farms or private residences.

In case of HazMat incident at any of the intersections along Route 104 in the village area, the Town has identified a village bypass along TH2 (Fletcher Road), TH24 (Boissoneault Road), and TH25 (Huntville Road). However, Bridge 23 over Mill Brook on TH24 (Boissoneault Road) would need to be redesigned to safely accommodate tractor trailers. The Town has a strong desire to upgrade Bridge 23 to secure a village bypass.

The Town is concerned about the vulnerability of the intersection of VT 104 and TH2 (Fletcher Road) within the village area. Tractor trailers have a difficult time negotiating the intersection. A worst-case spill (1,000 feet) at the intersection would affect all of TH 49 (School Street), TH35 (Maple Street) and parts of TH36 (Hunt Street) as well as access to the village from TH2 (Fletcher Road), TH51 (River Road) and VT 104. Access along TH36 (Hunt Street) to and from BFA Fairfax Elementary, Middle and High Schools, the Town Hall, Mountain View Elderly Housing and the Sewer Plant would lead through the worst-case spill zone. Disruptions to commerce and public safety in the village area would also occur. The Town has a limited ability to deal with incidents involving hazardous materials.

Past Occurrences

There have been two significant HazMat incidents in recent memory. On June 7, 2007, a 2,000-gallon diesel fuel spill occurred on TH25 (Huntville Road). The spill was caused by a faulty tank dispenser at Hillcrest Foods. The Vermont Department of Environmental Conservation monitored cleanup efforts and tested neighboring wells.

In September 1995, approximately 4,600 gallons of gas was spilled when a tanker truck overturned on VT104A. A remedial system was subsequently installed and was shut down in March 1999 due to a logging truck accident. Remediation using phytoremediation is currently ongoing. Consultant reports indicate that remediation is working.

Fairfax Volunteer Fire Department members have received some HazMat awareness and technical training. It is expected that the Vermont HazMat response team would assist in responding to a HazMat incident. The nearest HazMat response vehicle is located 16 miles away from the village at the IBM facility in Essex, Vermont. HazMat decontamination trailers are stationed 24 miles away in Swanton Village, Vermont and 24 miles away in South Hero, Vermont.

State highways in Fairfax are used by many trucks headed south from Saint Albans, East from Georgia and west from Cambridge carrying hazardous materials as their payload. While the Fairfax Volunteer Fire Department has training in hazardous materials, the entire State of Vermont is highly dependent on the limited resources of the State's HazMat team. Fortunately, highway safety is improving both in alignments of the highways themselves and in safer vehicle designs.

**Hail**

Description

Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the thunderstorm that produces it.

Impact and Geographic Area of the Hazard

A damaging phenomenon from thunderstorms is hail. Hail is typically a localized event and can cause a large amount of damage over a short period. There is no area in Town more susceptible to hail damage than other areas. Power outages may occur resulting in significant loss of business as well as threatening public safety. Cleaning up debris following high wind events can be costly depending on the severity of

the event. Farmers have sometimes called hail the "white plague," because entire fields of crops can be destroyed in minutes.

Extent/Probability

Hailstorms usually occur in Vermont during the summer months and generally accompany passing thunderstorms. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. There have been 64 recorded hail events in Franklin County between 1958 and 2015. During that time period, 5 events were reported in Fairfax.

**Tornado and Storm Research Organization (TORRO) Hailstorm Intensity Scale**

| TORRO Scale | Intensity Category | Typical Hail Diameter (mm)* | Probable Kinectic Energy, J-m^2 | Typical Damage Impacts |
|---|---|---|---|---|
| H0 | Hard Hail | 5 | 0-20 | No damage |
| H1 | Potentially Damaging | 5-15 | >20 | Slight general damage to plants, crops |
| H2 | Significant | 10-20 | >100 | Significant damage to fruit and crops, damage to glass and plastic structures, pain and wood scored |
| H3 | Severe | 20-30 | >300 | Widespread glass damage, vehicle bodywork damage |
| H4 | Severe | 25-40 | >500 | Widespread glass damage, vehicle bodywork damage |
| H5 | Destructive | 30-50 | >800 | Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries |
| H6 | Destructive | 40-60 | - | Bodywork of grounded aircraft dented, brick walls pitted |
| H7 | Destructive | 50-75 | - | Severe roof damage, risk of serious injuries |
| H8 | Destructive | 60-90 | - | Severe damage to aircraft bodywork |
| H9 | Super Hailstorms | 75-100 | - | Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open |
| H10 | Super Hailstorms | >100 | - | Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open |

Most of hail events measured 1 inch in diameter, but in Fairfax hail size was mainly less than 1 inch. The largest hail during the period was 2-inch diameter hail that fell in Fairfax on July 16, 2009 (National Center for Climate Data).

Hail is considered a relatively infrequent occurrence. Those hail events that do occur tend to be highly localized and limited to a relatively small area.

**Hail Events in Fairfax and Franklin County Since 1988**

*(Source: National Climatic Data Center)*

| Property Damage (Adjusted for inflation) | Crop Damage (Adjusted for Inflation) | Date | Hail Size | Area | Injuries | Fatalities |
|---|---|---|---|---|---|---|
| $0.00k | $0.00K | 8/4/1988 | 0.75 in. | Franklin County | 0 | 0 |
| $0.00k | $0.00K | 6/29/1998 | 0.75 in | Fairfax | 0 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| $0.00k | $0.00K | 6/29/2006 | 0.75 | Franklin County | 0 | 0 |
| $0.00k | $21,224.49 | 7/16/2009 | 2.00 in | Fairfax | 0 | 0 |
| $0.00k | $0 | 7/16/2009 | 1.00 in | Fairfax Falls | 0 | 0 |
| $0.00k | $0.00K | 6/26/2009 | 1.00 in. | Western Franklin County | 0 | 0 |
| $0.00k | $0.00k | 5/26/2011 | 0.88 in | Fairfax | 0 | 0 |
| $0.00k | $0.00K | 6/18/2011 | 0.75 in. | Fairfax | 0 | 0 |

The impact of hail storm is difficult to predict due to the randomness of the event. It is difficult to set a cost to repair or replace any of the structures or utilities affected. Every structure is susceptible to damage. There are no defined areas where this event will occur.

Past Occurrences

One citizen noted that on June 29, 1998, an estimated ¾ inch sized hail fell in Fairfax as a cold front moved through the area during the afternoon and early evening.

On July 10, 2001, a strong thunderstorm with gusty winds produced large hail that fell throughout North Fairfax during the afternoon and early evening.

On July 16, 2009, numerous thunderstorms developed and moved across Vermont during the afternoon and evening. In addition, there were a few super-cell thunderstorms that produced very large hail, up to 3.3 inches in diameter in nearby Westford (Chittenden County) with numerous reports of damage to vehicles, homes, crop and livestock. Golf ball to ping-pong size hail reported at Riverberry Farm on River Road in Fairfax. Hail caused significant damage to berry and other crops. There was an estimated $20,000 in crop damages related to the storm.

A large mass of unstable air travelled through the area on the evening of May 26, 2011. There were numerous reports of damaging winds and very large hail (up to 2.5 inches in diameter). Some 25,000+ customers in the state lost power during these storms. No damage estimates were reported.

A cold front moved across northern Vermont on June 18, 2011 producing strong thunderstorms. Dime sized hail was reported by some residents in Fairfax. No damage estimates were reported.

## Drought

Description

Drought is defined as a water shortage with reference to a specified need for water in a conceptual supply and demand relationship.

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

Impact and Geographic Area

Drought is difficult to monitor and assess because it develops slowly and covers extensive areas, as opposed to other disasters that have rapid onsets and obvious destruction. Drought due to lack of rain is generally a regional issue due to its widespread nature. Any location within the town could experience drought and/or lowered water table. Residents and businesses located along the Lamoille River could use the river as a non-potable water source. Droughts can pose a serious threat to the Town, especially to agricultural based businesses, such as commercial farms and horse boarding stables that are more directly affected by droughts. There are water reservoirs available to serve as backup as needed to the village and Town residents.

Extent/Probability

Four types of drought are identified in the State's Hazard Mitigation Plan: meteorological, agricultural, hydrological and socioeconomic. Local knowledge indicates dry spells are rare in occurrence and brief in duration. Within the Town of Fairfax, the risks include shallow wells drying up, Droughts have impacted residential and commercial water supplies, particularly to dairy farms and horse ranches. Drought can be a problem in late summer with local springs and wells reduced to minimal flows.

Local interviews noted that the Town has faced economic losses because of drought, however no specific amounts were determined. Loss estimates are difficult to ascertain due to lack of data.

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

Past Occurrences:

According to State Climatologist, an extended drought period in the region occurred during the 1960s when much of Vermont experienced severe drought in 1964 and extreme drought in 1965 and 1966. The years following this drought period saw the development of several community-owned water systems including Fairfax.

Water tables reached an all-time low during the drought of 1988, however recovery was rapid.

## Dam Failure

Description

Dams are water storage, control or diversion structures that impound water upstream in reservoirs. Dam failure can take several forms, including a collapse of, or breach in, the structure. While most dams have storage volumes small enough that failures have few or no repercussions, dams storing large amounts can cause significant flooding downstream.

Impact/Geographic Area

There are three dams and two dikes located in Fairfax that are registered with the Agency of Natural Resources. In North Fairfax, St. Albans North and South Reservoirs are earth fill dams located on Mill River. The reservoirs contain the water supply for City of St. Albans located approximately 3.5 miles away. They are owned by the City of St. Albans. VT104 runs between the reservoirs. A treatment plant constructed in 1970 is located north of VT104. The treatment plant has been renovated several times since. There is a gatehouse located at each reservoir that all raw water to be transmitted to the plant. The North Reservoir was constructed in 1895 and reconditioned in 1995 to meet state and federal dam safety standards. The dam is 1200 feet in length and 30 feet in height. The lake area is 35 acres with a mean depth of 13 feet and volume of 448-acre feet. The South Reservoir was constructed in 1873 with an embankment of approximately 26 feet in height. The South Reservoir has a lake area of 1,346 acres with a mean depth of 13 feet and volume of 346-acre feet. The South Reservoir is not used during normal operation. Access to the north reservoir is limited to water department personnel.

Silver Lake is located on Beaver Meadow Brook approximately 3 miles to the southeast of the St. Albans Reservoirs on the border of the Towns of Fairfax and Georgia. There is one earthen dam and two dikes that were constructed by the City of St. Albans in 1912. The lake area is 27 acres with a volume approximately of 390-acre feet. Silver Lake is used as a supplemental water source for the City of St. Albans. A 16-inch clay pipe connects Silver Lake to the South Reservoir.

The Fairfax Falls Dam in the southern part of town on the Lamoille River is owned by Green Mountain Power (GMP). It is a gravity concrete structure with a concrete spillway consisting of two sections of irregular height, built on a rock outcropping on the Lamoille River. The dam generates hydroelectricity. It was constructed in 1919. The original concrete dam (ca. 1870) is inundated upstream of the existing dam. It is the upstream dam of the four dams that comprise the Lamoille River Project, licensed by the Federal Energy Regulatory Commission.

Extent/Probability

The project participants felt that there is a little chance of a dam failure in the town of Fairfax due to the regular maintenance and recent upgrades conducted at each of the sites.

A risk assessment of the reservoirs was conducted by the City of St. Albans in 2014 and is the best available data. The assessment includes summaries of the consequences to both road infrastructure and residential structures during a “sunny day” failure and “overtopping” conditions for each reservoir. Discharge would occur in a westerly direction along VT104. The most reasonable flood conditions that can be expected for a dam failure for each reservoir would include culvert and road washout, railbed and embankment erosion, and damages to structures downslope of the reservoirs. A GIS analysis of the area within Fairfax found 26 sites at-risk of being damaged. The sites include 17 residential homes, 2 mobile homes, 1 commercial site, 6 accessory buildings and 1 cemetery. This represents 1% of structures within the Town of Fairfax. Roads that would be damaged include VT104 and the intersections of TH10 (Nichols Road) and TH3 (Conger Road).

Using the median home values (US Census 2009-2013) estimated losses for 17 single family homes due to dam failure of the St. Albans Reservoirs are $3,824,000 and $249,900 for 2 mobile homes. This estimate does not include damages to highway infrastructure, railbed, culvert, utility or building contents.

The Town has recently conducted some improvements to the impoundment at Silver Lake. There are no residences within the discharge area of Silver Lake and none are planned as the area is primarily used for logging and recreational purposes. Expected damage estimates are minimal. The project participants do not think Silver Lake poses a risk for dam failure based on recent upgrades and inspections.

For Fairfax Falls, a breach analysis was completed in 1986 to determine the downstream impact of a dam failure under various flow conditions. It is the best available data for this site. GM is currently updating the Dam Breach Analysis for the Fairfax Falls Dam. The breach analysis concludes that there is no significant hazard to life or property from a potential failure of the Fairfax Falls Dam at the 100-year flood. Both the 500-year and 10-year floods were demonstrated to have little or no incremental impact on structures in Town. Additionally, the Army Corps of Engineers' Inventory of Dams in the United States lists the Dam's downstream hazard classification as "3", which is a low hazard classification.

Past Occurrences:
There is no record of dam failure occurring within the Town. The Fairfax Falls dam survived record flows during the Great Flood of 1927.

## Water and Sewer Service Loss

Description
Many of the Town's residents have private wells and septic systems. The village area has a municipal water system that is chlorinated. Water service disruptions in the village area have been rare.

Impact and Geographic Area
Malfunctions to the wastewater treatment facility are addressed in the Water and Sewer Department's Electrical Power Outage Plan and Spill Prevention Plan, as well as the Town of Fairfax' Emergency Operations Plan. The Town has water supplies available for residents with contaminated private wells if needed. The Town has established a health officer to address public health issues related to a failed septic.

Water and sewer service loss would impact residents and businesses in the village area including BFA Fairfax Elementary, Middle and High Schools, Fairfax Municipal Offices including the Water and Sewer Department, Fairfax Public Safety Building (Fire and Rescue Departments) and the Fairfax Green Adult Living complex.

Extent/Probability
Disruptions to water and wastewater services are considered rare. The Town has agreements with a privately owned septic service company to help transport wastewater during system disruptions. The village water system is gravity fed further reducing the likelihood of a water service loss.

In 2002, the Town hired Green Mountain Engineering to explore locations for additional water supply wells. Green Mountain Engineering completed a hydrology study that located four potential sites, none of which were located on Town owned land, including a 56-acre parcel by the water control building. Before looking into Green Mountain Engineering's recommended sites, the Selectboard pursued other options for determining water source potential on the Town owned 56 acres to eliminate that site, which were unsuccessful. The Selectboard also pursued one of Green Mountain Engineering's recommended sites, which abuts the Town's existing supply well and is in the same aquifer. The Town met with the property owner and began negotiations on price and seller rights for use of the property. The Selectboard has delayed with pursuing this well site due to its proximity to the existing well. It is in the same aquifer and therefore would not serve well as a backup in the case of contamination; however, the State allows backup wells to be located in the same aquifer. It is possible that the well could serve as additional capacity, but the well needs to be drilled and a pump test completed to determine if it would affect the current well's existing capacity.

It is difficult to estimate losses due to loss of water and sewer service both in the public and private sectors within the village area and Town. No loss estimates were derived for this hazard due to lack of

data and resources. Structures dependent on the water and wastewater system are more susceptible to loss of service.

Significant improvements have been made to the wastewater system since August 1996. A new system was installed to deliver oxygen to the three sewage treatment lagoons. Previously, bacteria in the treatment lagoon were dying as a result of a lack of oxygen. This resulted in decreased efficiency in waste treatment, as well as an increase in odors from the plant. The new oxygen delivery system has improved the treatment efficiency (and therefore capacity) of the facility, and has alleviated the previous problem of excessive odor. In addition, two main pumps have been replaced since the system was built. The system is entirely paid for and the fees being charged are currently covering the yearly maintenance costs.

As noted previously, the current wastewater system is not adequate to meet the needs of the future population of the village area and is at capacity. Without improvements to the current system, the Town will not achieve the desired density or experience new economic development in the Village. The Selectboard recently commissioned a Wastewater Feasibility Study to look at doubling the discharge capacity and completing required upgrades to the existing Wastewater Treatment Plant. The final results of the Feasibility Study were presented in June of 2007, which reported a total estimated cost of $2.5 billion. The Selectboard held a public meeting in December of 2007 to present the results of the Feasibility Study and to discuss potential financing and action plans for securing additional sewer treatment capacity and additional drinking water supply; however, no decisions have been made as a result of the meeting.

Past Occurrences
None.

## Telecommunication Systems Failure

Description:
Telecommunication System Failure occurs when any one or combination of cell service, internet, radio communications, fiber optic, cable or satellite signals are disrupted.

Impact and Geographic Area
Many areas in Town have cell phone coverage. Loss of cell service is more common in south eastern areas of Fairfax. FairPoint Communications offers high-speed internet service to the village area and northern Fairfax and telephone service throughout the entire Town. GlobalNet Internet Services provides limited microwave high speed internet for the northern part of Town and Comcast Cable offers high speed internet service, voice and cable television in the greater village area. There are two public Wi-Fi sites in Town at the Library and at the Town Office. Many residents utilize satellite television and satellite based internet services. Cell service companies that are available include AT&T, Verizon and Sprint. Coverage throughout town varies. One noted dead spot is on VT104 along a mile stretch in the North of Town in the area around the interstate overpass. There are two Public Telephones in the village.

Extent/Probability
Telecommunications system failures occur periodically and typically are brief in duration lasting from a few minutes to several hours. They occur at frequency similar to power losses. Loss of service is typically related to weather events. Heavy snow, either directly or indirectly, can cause service lines to be disrupted. Interruptions are relatively brief lasting from a few seconds to several hours. Project participants deemed the telecommunication system failures have occurred a lot less frequently in recent years due to increased efforts by companies to add redundancy and upgrades in their existing infrastructure.

It is difficult to estimate losses due to telecommunications systems failure both in the public and private sectors. Telecommunications loss can also lead to loss of business transactions. No loss estimates were derived for this hazard due to lack of data and resources. Private and public structures within the village area have access to broadband internet and would be susceptible to loss of DSL service. Individuals with cell phones would be affected by loss of cell coverage. Land line phone customers lose service when phone lines are disrupted from the effects of ice, falling limbs, high winds, etc.

Past Occurrences

On August 31, 2002, a Verizon Trunk Line that serviced northwestern Vermont was severed due to a tree-falling accident in the Town of Georgia. All telecommunications services that utilized the fiber optic network were lost for 8 hours. The state 911, cell phone and Lifeline systems were disrupted. Residents were unable to place a phone call out the local exchange. Businesses were unable to make e-credit transactions. Businesses and homeowners lost their security systems. The St. Albans Amateur Radio Club established emergency lines of communications for public safety officials. Verizon added redundancy to their network to mitigate future disruptions of a trunk line failure. Since then, Verizon has sold off their landline infrastructure and operations to FairPoint Communications.

In early August 2014, the statewide 911 system failed for 40 minutes. Vermont's 911 system is run by Intrado, a company based out of Longmont, Colorado. Intrado reported that the failure was caused by a "double equipment failure" followed by another error that left the system unavailable.

On November 28, 2014, a disruption in FairPoint service lasted nearly 6 hours. Dispatchers were not able to take emergency calls over that period because the E-911 system was affected by the outage.

A winter storm on December 10, 2014 caused a statewide disruption in FairPoint Communication internet services. The company claimed the issues stem from winter storm damage in New Hampshire that affected the fiber optic network serving Vermont. Fairpoint was in the third month of a labor strike during this time as well.

## Tornado

Description

A tornado is violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often visible as a funnel cloud.

Impact/Geographic Area

Tornados may form when strong thunderstorms track through the area. These phenomena are rare in Fairfax. There is no defined area to predict where this event will happen. Environmental impacts would include felled trees, while business impacts would be in the form of destroyed crops. Building damages may include destroyed windows, torn roofs, and destroyed barns.

Extent/Probability

According to the National Climate Data Center, there have been 8 reported F2 tornado events of in Franklin County since 1957. There is no record of a tornado event in Fairfax however an "unofficial tornado event occurred on June 11, 1973 that toppled a barn. Tornado events occurred in Franklin County on June 18, 1957, June 13, 1961, August 3, 1970, and July 19, 1972.

**Fujita Tornado Damage Scale** (*Source: NOAA)*

| Scale | Wind Speed Estimate (MPH) | Typical Damage |
|---|---|---|
| F0 | <73 | Light damage. Some damage to chimneys; branches |

| | | |
|---|---|---|
| | | broken off trees; shallow-rooted trees pushed over; sign boards damaged. |
| F1 | 73-112 | Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads. |
| F2 | 113-157 | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground. |
| F3 | 158-206 | Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown. |
| F4 | 207-260 | Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated. |
| F5 | 261-318 | Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur. |

For a tornado event, the estimated potential loss to 10% of structures with 20% damage is $8,706,570. The estimate does not include building contents, land values or damages to utilities. The estimate does not include building contents, land values or damages to utilities. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Past Occurrences

Tornado events occurred in Franklin County on June 18, 1957, June 13, 1961, August 3, 1970, and July 19, 1972.

A "cyclone" touched down in Fairfax on August 7, 1907 damaging several barns and destroying cattle.

On June 11, 1973, the locally known *Fairfax Tornado* event occurred. High winds caused widespread damage throughout the Town. Barns were swept away or damaged beyond repair including a 353-foot poultry farm. Roofs were torn off homes and downed trees littered the roadside.

*Cyclones are not frequent in Vermont, but they occasionally strike as they did in Fairfax on August 7, 1907. This pile of rubble was all that was left of the Ryan's large barn after the cyclone departed. Forty-five cattle died when the barn collapsed.*

*Courtesy of Mike & Margie Cain*

A Tornado Watch for Franklin County was issued by the National Weather Service on June 3, 2008. There were no observed tornados but high winds toppled trees, knocking out power during the late afternoon and early evening.

## Major Fire – Wildland

Description

A wildfire is the uncontrolled burning of woodlands, brush, or grasslands. Wildfire typically comes in the form of grass fires.

Impact/Geographic Area
Forest fires are rare however the fuel potential for large fires exist. Much of Fairfax's landscape is heavily wooded with a mixture of hardwood and softwood types. In general, wildfire risk is considered town wide excluding the village area. Structures in forested areas without adequate fire breaks or are difficult to access due to their remote nature, are more susceptible than others.

Extent/Probability
Wildfires are uncommon in Fairfax. Wildfire conditions in Fairfax are at their worst in spring (mid-April) when dead vegetation dries out fields are cleared of fall and winter debris and new vegetation has yet to grow. Late summer and early fall sometimes bring conditions when vegetation becomes dry from prolonged dry periods. The state has issued burning bans in April 2000, October 2005 and March 2012.

By State law, an open burning permit is required from the Town Forest Fire Warden before any outdoor vegetation burning can occur. The fire warden will issue a permit if the weather and fuel conditions are favorable for a controlled burn. The Town Fire wardens is also responsible for wildland fire suppression enforcing forest fire laws by issuing open burning permits and inspecting burn sites, and educating the public on proper burning practices.

Throughout Fairfax, there are large tracks of forested land could be at risk during sustained dry periods. The entire Town has minimal wildfire protection due to the on-call basis of the Fire Department. The potential for wildfire increases with the increase of fuel loads. A wild fire complex similar to what occurs in Florida, Texas, and western states during dry periods, has not occurred in the Town. Potential loss estimates are difficult to ascertain due to a lack of data on losses.

Past Occurrences
The fire department does not keep detailed records for wildfires so no details of past wildfires are available other than what was recorded in the Report to State Fire Marshall outlined in the table above.

## Earthquake

Description
According to the USGS, an earthquake occurs when two blocks of the Earth suddenly slip past one another. The surface where they slip is called the fault or fault plane. The location below the Earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the Earth is called the epicenter.

Impact/Geographic Area
Earthquakes have been felt in Fairfax and remain a geologic possibility. The Town is situated in a moderate earthquake zone. Although earthquakes are not a frequent event, they have the potential to cause extensive damage to masonry (brick) buildings that are not reinforced and older bridges. The village area contains several older brick buildings that are likely to be damaged.

Extent/Probability
A HAZUS earthquake risk analysis and loss estimate was conducted at the regional level in 2002. There is moderate potential for serious damage to buildings and infrastructure in older portions of Town. Structures are mostly of wood frame construction. The estimated loss of 20% of Town structures

$87,065,700. Costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures are not included due to lack of resources to dedicate to a comprehensive loss analysis.

Past Occurrences
According to the USGS, three earthquakes have occurred in the state of Vermont.
July 6, 1943: A magnitude 4.1 earthquake occurred near Swanton, Vermont. This earthquake was felt by many. Windows were broken in some areas of the state.
March 31, 1953: A magnitude 4.0 earthquake occurred near Brandon, Vermont. No injuries or damage reported.
April 10, 1962: A magnitude 4.1 earthquake occurred near Middlebury, Vermont. This earthquake was felt by many state-wide. Some dishes and windows were broken in areas on the state.

### Terrorism / WMD and Civil Disturbance

Description
Terrorism is the unlawful use or threat of violence especially against the state or the public as a politically motivated means of attack or coercion.

Impact/Geographic Area
Such events would likely occur in one of the public facilities located in the village areas such as the school or town office. Local government and school facilities conduct drills and exercises to prepare themselves to respond to such incidents. The Vermont State Police in coordination with the Sheriff's Department would provide law enforcement for either a Terrorism/WMD or civil disturbance incident.

Extent/Probability
Such events are possible in Fairfax but are considered rare. Active shooter incidents are, unfortunately, becoming more frequent across the United States in facilities such as schools, government offices and along the roadways (road rage incidents).

The loss estimate due to this event is impossible to predict. A terrorist event would likely occur at the Schools or Town Offices within the village. The schools have an emergency planning committee and school crisis guides which address a variety of responses to a terrorist type event such as a school shooting. The schools utilize an automated parental / guardian notification system in the event of a school closing.

Past Occurrences
None.

## 6. CRITICAL FACILITIES

A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the appropriate jurisdictions, or fulfills important public safety, emergency response, and/or disaster recovery functions. The current scope of this plan is to address these facilities and associated infrastructure. Once this plan is accepted, there is the possibility to expand the plan to cover other

*Photo courtesy Henry Raymond*
*Fall 2006 ~ River Road Mitigation Project.*

facilities and structures within the community.

The critical facilities identified in the Town of Fairfax Hazard Mitigation Plan include shelters, electric and communication utilities, public safety facilities, government offices, public works, dams, impoundments, hazardous materials storage sites, schools, senior housing units and churches. Data from the Fairfax Planning Commission, Northwest Regional Planning Commission, Local Emergency Planning Committee #4, Fairfax Fire Department and Fairfax Rescue Service were used to assist in the analysis of areas affected by various hazards. Limited data sets from GIS were available for this analysis; however, the Northwest Regional Planning Commission is committed to providing this in the future as data, time and funding permit. A history of hazard events was also used for the analysis. The results of the analysis are listed in Attachment B.

The community hazard mitigation map is included in Attachment E. The community map depicts hazard areas, critical facilities, and vulnerable sites based on the best available data derived from local, regional, state and federal sources.

## 7. MITIGATION STRATEGY

### Local Hazard Mitigation Goals

The Hazard Mitigation Goals were developed by the Committee for the Fairfax Local Hazard Mitigation Plan.

**General Goals**

- Reduce the loss of life and injury resulting from all-hazards events.
- Reduce the financial losses and infrastructure damage incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.
- Include hazard mitigation planning in the municipal planning process including the Town Plan, Capital Improvement Plan and Local Emergency Operations Plan.
- Ensure the general public is part of the hazard mitigation planning process.

**Town Plan (Adopted September 2013) Goals and Policies that support Hazard Mitigation**

- Discourage development in areas which are hazardous to human health and safety, or which are otherwise unsuited for this purpose.
- Protect fragile and sensitive resources, endangered species, and archeological sites, including but not limited to critical habitat, wetlands, steep slopes, prime agricultural soils, and floodplains.
- Promote land settlement and economic development patterns that minimize energy use.
- Provide and plan for efficient and adequate municipal facilities and services, including a community library, recreation opportunities, sewer and water infrastructure, solid waste management, and public safety and emergency response.
- Support access to a variety of community services, including communications, health, and human services.
- Consider community health when making decisions and setting policy.
- Balance growth with the Town’s ability to provide expanded services and facilities.
- Promote orderly future development with strict regard for the capability of the land to support it.
- Provide a safe, reliable source of municipal drinking water within the Water District.
- Provide for the efficient and reliable delivery of sufficient water supplies for fire protection in Fairfax Village.
- Assess when improvements or expansions to the municipal water supply and wastewater treatment plant will be needed and how to finance them.

- Provide a range of housing types and affordable housing units that are within walking distance to schools, safe areas for physical activity, and local businesses via safe walking and biking routes and public transportation.
- Provide for safe, convenient, economic, and energy efficient transportation systems that respect the natural environment and utilize a variety of transit modes.
- Create a balanced transportation system that includes provisions for safety and mobility of pedestrians, bicyclists, and those with strollers and in wheelchairs.
- To limit development on lands unsuited for that purpose, including fragile and sensitive resources, such as critical habitat, wetlands, steep slopes, prime agricultural soils, and floodplains
- Create an attractive, safe and friendly village environment that invites and supports safe pedestrian use, community events and an active lifestyle.

**Existing Hazard Mitigation Programs, Projects and Activities**
The mandatory provisions of State and Federal law for continued Town eligibility in the National Flood Insurance Program are included in the Town's land use regulations and are applied in the review of any land alterations or construction within the Flood Hazard Overlay District. The mandatory provisions are contained in Section 4424 of Title 24, Chapter 117, V.S.A. and 44 CFR 60.3 and 60.6 as amended. Copies of these provisions are available at the Office of the Town Clerk.

<u>Flooding/Fluvial Erosion</u>

- The Town has Zoning Bylaws which designate a Flood Hazard District with the objective of minimizing future public and private losses caused by development in flood hazard areas. The Town participates in the National Flood Insurance Program (NFIP).
- Flood Hazard Areas in Fairfax are identified on Flood Hazard Boundary Maps (FHBMs) and Flood Insurance Rate Maps (FIRMs) produced by FEMA. The purpose of these districts, which are located along the flood plains of rivers and streams throughout the Town, is to prevent increases in flooding caused by excessive development of lands within flood hazard areas.
- Flood Hazard Area Ordinance adopted in 2006.
- Continued participation in the NFIP.
- TH41 (Chaffee Road) Culvert Replacement Replaced culvert to road bridge and culvert standards to mitigate flood damages around this site. 2014.
- Repairs to Bridge 5 on TH29 (Wilkins Road).
- Replace and upgrade Bridge 18 on TH51 (River Road) with funding through HMPG program. 2006.
- Road shoulder stabilization along TH39 (Goose Pond Road).
- Ditch and culvert maintenance (debris removal, upgrades, etc.).
- Phase I Geomorphic Assessments were conducted for Mill Brook, Tracy Brook, and Stone Brook in 2005 following Vermont Agency of Natural Resources standards.
- Identify projects that may be eligible for funding under Vermont's Ecosystem Restoration Grant program.
- Adopted Road Codes and Standard that follow Vermont Agency of Transportation protocols.
- Advising the public about the local flood hazard, flood insurance, and flood protection measures.
- Performing regular drainage system maintenance, such as sediment and debris clearance.
- Inspecting bridges and identifying if any repairs or retrofits are needed to prevent scour.
- On-going annual culvert inspections.

<u>Severe Winter Storms (Ice Storm)</u>

- Shelter agreement between BFA Fairfax School and American Red Cross is renewed on a semi-annual basis.

- Monthly tests are conducted of the BFA Fairfax School's generator to ensure it is functioning properly.
- Ensure municipal highway crew has equipment to safely and appropriately address snow accumulations along roadways (winter tires, chains, chain saws, plows, etc.).
- Educate the public though mailings, front porch forum and public service announcements on safe winter driving techniques and storing emergency kits, sleeping bags, blankets, emergency food and water in vehicles.
- Inspecting bridges and identifying if any repairs or retrofits are needed to prevent scour.
- On-going annual culvert inspections.
- Road crews have response equipment to deal with downed trees and branches.

Structure Fire

- Continue to identify dry hydrant locations near vulnerable sites where reliable water source is missing.
- Encourage new development to allow for the safe access of firefighter apparatus.
- Educate public on the need to clean and maintain wood stoves on an annual basis.
- Continue to recruit and train volunteer fire fighters.
- Annual ISO inspection.
- Fire fighter personal protection equipment upgrades through Federal grant programs.
- Upgrades to firefighting offensive and defensive equipment through Federal grant programs.
- Fire fighter training through Vermont Fire Academy and Emergency Management Institute
- Member of Franklin County Mutual Aid.
- Installed dry hydrants along Fletcher Road by Meadow Brook Farm, Hunt Street, Goose Pond Road, and on VT104 in Fairfax Falls by dam.
- Members attend NIMS/ICS Training meet state NIMS strategy as appropriate.
- Department communications equipment programmed for interoperability following Vermont's Communication Plan (VCOMM) strategy.

High Wind

- Install emergency generator for town hall to limit day-to-day business disruptions during power outages.
- Encourage utilities to remove vegetation along power line corridors and to regularly maintain corridors.
- Test emergency generator at Fairfax High School gymnasium on a monthly basis.

Loss of Electrical Service

- Stationary emergency backup generator exists for BFA Fairfax High School (designated Red Cross shelter)
  Town Garage has 300kw portable generator Department ensures highway department generators are tested monthly and functioning properly.
- Install electrical surge protection devices to protect municipal office equipment.
- Install emergency generator for town office.
- Water and Sewer Department has transfer switch for portable generator
- Fire department has a 20 kW PTO driven generator
- On-going regularly scheduled road maintenance programs (cutting vegetation)

Hazardous Materials (Fixed Site and Transport)

- Fire department members trained in responding to HazMat incidents including HazMat awareness level training.

- Fire department upgrades fire fighter personal protection equipment as necessary
- Town proactive in reducing traffic conflicts in village area. A formal request was made to the State Agency of Transportation to reduce VT104 speed limit within the village area to 25 mph to reduce the risk of accidents
- Public Safety Official participated in Local Emergency Planning Committee sponsored HazMat tabletop exercise for Town of Fairfax in 2005 and 2007
- Town maintains active membership in Local Emergency Planning Committee District 4
- Continue to seek improvements to Route 104/Fletcher Road intersection.

Water and Sewer Service Loss

- Sewage treatment plant expansion feasibility study completed in 2007
- Final feasibility study for backup water source adopted by the Selectboard in 2007

Terrorism/Civil Disturbance

- School has updated State School Response Guide to handle variety of emergency situations
- School Board proactive in addressing school safety issues

Other Community Preparedness Activities

- Installed warning signs near problematic intersections at TH31 (Comette Road) and TH2 (Fletcher Road), TH28 (Swamp Road) and TH2 (Fletcher Road), TH1 (Buck Hollow Road) and TH11 (Carroll Hill Road)
- Conducted VT Agency of Transportation Road Safety Audit along TH39 (River Road) and implemented recommendations to reduce conflicts in 2007
- Safe Routes to School Task Force cross walk recommendations at VT104 intersections with Buck Hollow Road, Huntville Road, Hunt Street, and Lamoille River Bridge as well as locations along Buck Hollow Road, Huntville Road, and Hunt Street
- Safe Routes to School Task Force Feasibility Study recommendations to Vermont Agency of Transportation to place in-street pedestrian crossing signs at any cross walk added to VT104
- Fairfax Emergency Operations Plan, adopted 2016
- Emergency Responders attend professional training sessions as appropriate including ICS training
- Town continually works towards achieving compliance with State NIMS strategy including having municipal staff and elected officials, as appropriate, attend ICS training
- Town of Fairfax and associated departments members of Franklin County Mutual Aid Agreement
- Regular maintenance of Town fleet and emergency equipment
- Community participates in the Vermont Enhanced 911 System Program

**Participation and Compliance with the National Flood Insurance Program (NFIP)**

The National Flood Insurance Program (NFIP) is a voluntary program organized by the Federal Emergency Management Agency (FEMA) that includes participation from 20,000 communities nationwide and 247 Vermont towns and cities. Combined with floodplain mapping and floodplain management at the municipal level, the NFIP participation makes affordable flood insurance available to all homeowners, renters, and businesses, regardless of whether they are located in a floodplain.

The federal government makes flood insurance available to the citizens of the community because the town has adopted flood plain regulations. In 1973, the NFIP was amended to mandate the purchase of flood insurance as a condition of any federally regulated, supervised or insured loan on any construction or building within the 100-year floodplain. In 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act to reduce subsidies for structures built before the NFIP was instituted (called pre-FIRM structures). Over 50 percent of Vermont's NFIP policies are pre-FIRM, which means that flood insurance premiums for many will increase over the ensuing years.

While the NFIP floodplain management criteria are administered by States and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Fairfax is a member in good standing with the NFIP (CID 500052). The latest floodplain ordinance was adopted February 14, 2011.

**Repetitive Loss Properties**

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:
(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

According to the State Hazard Mitigation Officer, Fairfax has no repetitive loss properties. There have been zero claims since 1978.

**Incorporation of Mitigation into Other Municipal Planning Mechanisms**

There have been and will continue to be many efforts to improve the resiliency of the Town of Fairfax since the Town formalized hazard mitigation planning efforts. The flood identification and risk section of this plan will be used in the development of the 2018 Comprehensive Municipal Plan update to address the flood hazard resiliency requirement of Municipal Plan as required under statute. The entire hazard mitigation plan will be used in Economic Development activities to improve community wide disaster resilience with an emphasis on reducing flood risk to municipal, state and private infrastructure. The Plan's hazard identification and risk assessment section will also be referenced each year during the update to the Town's Local Emergency Operations Plan for identifying critical infrastructure, risk areas and vulnerable sites.

**Development Trends**

Fairfax's population has risen to historically high levels; due in large part to a period of sustained, accelerated growth that began in the 1970's and has continued to the present decade. As shown in the table below, Fairfax has more than tripled its population between 1960 and 2010 and has a significantly higher growth rate than that of the County as a whole. Forecasts for future growth show Fairfax's population continuing to grow at a fast rate. Between 1970 and 2000, increasing numbers of people moving into Fairfax were contributing to population growth, with natural increase (births minus deaths) making up a much smaller percentage of population growth. After 2000 however, natural increase contributed to 60 percent of the overall population growth in Fairfax; with the birth/death rate rapidly rising and net migration substantially slowing.

**Population Trends and Projections, 1950 - 2015**

| | ***Population*** | | | | | | ***Estimates*** | ***Projections*** |
|---|---|---|---|---|---|---|---|---|
| | **1950** | **1960** | **1970** | **1980** | **1990** | **2000** | **2010** | **2015** |
| ***Fairfax*** | 1,129 | 1,244 | 1,366 | 1,805 | 2,486 | 3,527 | 4,285 | 5,049 |
| **% Change** | n/a | 10.20% | 9.80% | 32.10% | 37.70% | 41.90% | 21.50% | 17.83% |
| **% of County Total** | 3.80% | 4.20% | 4.40% | 5.20% | 6.20% | 7.80% | 8.97% | 9.77% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Franklin County** | 29,894 | 29,473 | 31,281 | 34,788 | 39,980 | 45,417 | 47,746 | 51,701 |
| **% Change** | n/a | -1.40% | 6.10% | 11.20% | 14.90% | 13.60% | 5.13% | 8.28% |
| Source: U.S. Census Data, 1950-2010, MISER Population Projections 2015. | | | | | | | | |

The population of Fairfax as a percentage of the County population has continued to increase, from 3.8% in 1950 to 8.97% sixty years later. Without a change in the predominant growth trends of the past, Fairfax will continue to grow at a faster rate than the County. The Town's accessibility to Interstate 89 and to Chittenden County employment centers has significantly contributed to the accelerated growth that Fairfax has experienced. The clear majority of daily commuter trips leave Fairfax for Chittenden County destinations. Further, Fairfax offers the rare combination of country charm, accessibility, and quality services such as excellent schools – all of which are powerful attractions for potential homebuyers.

Since the last mitigation plan, impacts from development on the Town's vulnerability have decreased. There have been no new or proposed developments in the flood plain or in hazardous areas. One building in the village area was removed near a dangerous intersection where concern for a hazardous materials vehicle accident was high. The building interfered with line of site for vehicles approaching the intersection. There have been no large commercial or industrial developments. Residential development has typically been single family homes or condominium development in the village area. The Town has worked with the power company to ensure that trees and branches are removed along utility lines. However, continued growth at projected rates will likely challenge the ability of the town to provide adequate services needed to accommodate it. Policies and programs are needed which manage growth rates to lessen land impacts, and to ensure that municipal infrastructure can accommodate growth.

**Risk Reduction Goals**

Through current plans, policies and mitigation actions, Fairfax is working to decrease damages from severe winter storms (ice storms), flooding/fluvial erosion, severe thunderstorms/high winds. Other less hazardous risks are also being addressed.

**Identified Hazard Mitigation Programs, Projects and Activities**

Table 7.2 outlines mitigation programs, projects, activities and describes the overall direction the Town is taking to work toward mitigating risks from natural and man-made hazards. These mitigation strategies have been chosen by the Town, through surveys and interviews with community officials, as the most appropriate policies and programs to lessen the impacts of potential hazards.

The following list documents the questions (criteria) considered in establishing an order of priority. Each of the following criteria was rated according to a numeric score of "1" (indicating Poor), "2" (indicating Average) and "3" (indicating Good). The highest possible score is 36. The full scoring matrix used is located at the end of this annex.

1) Does the action reduce damage?
2) Does the action contribute to community objectives?
3) Does the action meet existing regulations?
4) Does the action protect historic structures or structures critical to Town operations?
5) Can the action be implemented quickly?
6) Is the action socially acceptable?
7) Is the action technically feasible?
8) Is the action administratively possible?
9) Is the action politically acceptable?
10) Is the action legal?

11) Does the action offer reasonable benefits compared to its cost of implementation?
12) Is the action environmentally sound?

The Table of Actions (Costs/Benefits) addresses the priorities for the mitigation strategies in the Matrix below. Priorities for the strategies did not changer, however progress has been made and completed priorities are indicated. There was a rough cost/benefit analysis done for each action listed in the table. The below cost and benefits table addresses the priorities for the mitigation strategies that are stated in the Mitigation Actions Table.

Table of Actions – Costs

| | |
|---|---|
| High | =>$100,000 |
| Medium | = $25,000 – 100,000 |
| Low | =<$25,000 |

Table of Actions – Benefits

| | |
|---|---|
| High | Public Safety |
| Medium | Infrastructure/Functionality |
| Low | Aesthetics/General Maintenance |

Mitigation projects are listed in terms of mitigating threat or risk to public health and safety, reduction of hazard to community assets, adherence to Town plan and local ordinances, cost, and feasibility. Projects are classified as either short - term or long - term activities. Short –term action items are activities which the municipality may be capable of implementing within one to two years. Long-term action items may require new or additional resources, funding or authorities. Ongoing action items occur at least once per year. Projects being considered will undergo a Benefit-Cost Analysis for feasibility utilizing FEMA's BCA model for federal and state funded projects.

**Table 7.2. IMPLEMENTATION SCHEDULE FOR PRIORTIZED MITIGATION PROJECTS**

*Note: In the table below, time frames are defined from the date of this plan (2016) as follows: Short term equals 6 months to one year. Medium term equals 1-3 years. Long term equals 4+ years.*

| Priority Score | Hazard Mitigated | Mitigation Action | Responsibility/ Oversight | Funding/Support | Cost / Benefit | Time – Frame | Initial Implementation Steps |
|---|---|---|---|---|---|---|---|
| 36 | Flooding / Fluvial Erosion | Conduct Inventory of Stormwater Erosion for Town Roads | Town Highway Department / Road Foreman | State grants and local funding | Low – High | Short – Term (2017) | Secured funding from VTrans. Work to begin spring / summer 2017. |
| 36 | Flooding / fluvial erosion, Hazmat. | Upgrade Bridge 23 – TH24 (Boissoneault Road) | Road Foreman/Selectboard | State grants and local funding | Medium / High | Medium-term 2017 - 2019 | Hydraulic Study (2017). Engineering (2017 – 2018) Apply for grant Funding (2017-2019) |
| 36 | Severe Winter Storm (Ice Storm) | Community Education about how to prepare for winter conditions | Emergency Management Director and Coordinator | Town Budget. | Low/High | Annually | September (Emergency Preparedness Month) |
| 34 | Flood, Fluvial Erosion, Severe Winter Storm, Power Loss | Clear vegetation from power line corridors. | Green Mountain Power | Utilities, Hazard Mitigation Grant Program | High/ High | Medium-Term (Summer 2017. Dependent on outside agency schedules | Not started. Work with utilities to identify problem poles. Seek funding. |
| 33 | Flooding / fluvial erosion, Hazmat | TH 22 (Rocky Ridge Road) and VT104 Intersection | Road Foreman/Selectboard | State grants and local funding | Medium / High | Long-term 2017 - 2020 | Hydraulic Study (2017). Engineering (2017-2018).. Apply for funding (2017-.2020) |
| 33 | Flooding / fluvial erosion, Hazmat | Intersection improvement at TH28 (Swamp Road) and TH2 (Fletcher Road) | Road Foreman / Selectboard | Local funding | Medium - High | Short (2017) | Engineering completed. Local funding secured. Permitting spring 2017. Construction expected to be completed by fall 2017. |

| Priority Score | Hazard Mitigated | Mitigation Action | Responsibility/ Oversight | Funding/Support | Cost / Benefit | Time – Frame | Initial Implementation Steps |
|---|---|---|---|---|---|---|---|
| 33 | Flooding / fluvial erosion, Hazmat | Intersection improvement at TH29 (Wilkins Road) and TH 2 (Fletcher Road) | Road Foreman / Selectboard | Local funding | Medium - High | Long – term (2017 – 2020) | Hydraulic Study (2017). Engineering (2017-2018). Apply for funding (2017-2020) |

At the time of applying for FEMA's PDM-C, FMA or HMGP grant programs, each project listed above will undergo the full benefit-cost analysis methodology (BCA version 4.8 and higher) to maximize savings.

Conduct Inventory of Stormwater Erosion for Town Roads – The Town will be conducting and inventory of roads that are within 100 feet of streams. The goal is to identify problem areas where road erosion from flooding is occurring and to improve water quality in drainage areas. The Town will then target problem erosion areas and seek funding through VAOT and/or budget locally.

Upgrade Bridge 23 – TH24 (Boissoneault Road) – Bridge 23 serves as the village bypass when Main Street (VT State Route 104) is closed. Currently the bridge is too narrow for trucks and restricts the stream flow. Erosion on the banks around the bridge is evident. The bridge needs to be upgraded to accommodate stream channel dynamics and truck traffic.

Community Education on How to Prepare for Winter Conditions – The EMC will prepare public education materials regarding winter conditions and post them on the Town's website and other types of social media such as Front Porch Forum and Facebook. The information will include family emergency home and vehicle kits and communication plans, carbon monoxide risks, welfare visits for elderly and other vulnerable populations, information on preparing for extreme cold temperatures and other severe winter weather measures. The EMC will work with the Selectboard to ensure Town Highway Department has sufficient road salt and sand to maintain roads during winter weather and that the town facilities have emergency generators that are tested and functioning.

Clear vegetation from power line corridors – The Town EMD and EMC will work with utility company to ensure power line corridors within the Town and State right-of-way are free of obstruction from trees, branches and other vegetation that could disrupt services during severe weather events. Green Mountain Power is ultimately responsible for maintenance of their infrastructure. The Town supports their effort.

TH 22 (Rocky Ridge Road) and VT104 Intersection – This intersection is a dangerous intersection due to line of site issues. Rocky Ridge Road contains several residents who rely on fuel delivery. Propane trucks have difficulty accessing the area. The intersection is also a bus stop for the school. The Town continues to work with State officials in trying to design safety improvements to the intersection. The road shoulders have evidence of erosion following rain events.

Intersection improvement at TH28 (Swamp Road) and TH2 (Fletcher Road) - This intersection is a dangerous intersection due to line of site issues. Swamp Road contains many residential homes and a farm that rely on fuel delivery. A small creek drains near the intersection as well and there is evidence of erosion along the road shoulder following rain events. The town has worked with VAOT officials in designing elevation changes along the intersection to address line of site issues. The project will be completed in 2017.

Intersection improvement at TH29 (Wilkins Road) and TH 2 (Fletcher Road) - This intersection is a dangerous intersection due to line of site issues. Wilkins Road follows a brook along a steep drainage. There are many residential homes and farms that rely on fuel delivery along this road. During high rain events, there is evidence or erosion along the road shoulder in the intersection. The town has worked with VAOT officials in designing elevation changes along the intersection to address line of site issues

**Existing Planning and Regulatory Capabilities**
The Town has a limited staff that is comparable in size to other neighboring towns of similar population. The Town has a Planning Committee and Development Review Committee comprised of volunteers and supported by one full time Zoning Administrator. They have a three-person highway crew who are responsible for maintaining 66.54 miles of highway. The highway crew is constantly maintaining roads during the winter months limiting their availability for other projects. The town employs a 3-person water and sewer department. The Fire Department has a combination career/paid-per-call department consisting of one full-time Lieutenant and an average of 30 volunteers. The department is able to meet the needs of the communities and can activate mutual aid with neighboring departments if circumstances warrant.

The Zoning Administrator is responsible for the floodplain management program and continued compliance. The Zoning Administrator could use more training in floodplain management given that the Lamoille River flows east to west through town. Land use development projects that require permits are reviewed for compliance with Town's Land Use Regulations which include Flood Hazard District with support from the State Agency of Natural Resources and include site visits and permitting as applicable. Any permits for conditional uses within the District such as substantial improvements to existing structures, new construction, recreation or open-air markets, etc. are allowed only by approval of the Town's Development Review Board.

The Town offers a lower tax rate more affordable homes than communities in the more populated Chittenden County which it borders. This coupled with its easy access to Interstate 89 makes it attractive to new residents who work in Chittenden County but choose to live in more affordable communities such as Fairfax. This will help build the tax base.

**How this Plan Will Improve Existing Capabilities**
The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the Town of Fairfax. The Town's Emergency Management Director will analyze these programs for their effectiveness and noted improvements needed. Fairfax uses all of the plans listed below to help plan for current and future activities. For example: The Local Emergency Operations Plan has a contact list that is used for response purposes in the case of a hazard event, and is updated every year after Town Meeting Day. The Town's Municipal Plan directs visions and goals that include Natural Resources and Land-Use decisions. In the development of this plan, the latest 2013 Town Plan was used. Municipal Road and Bridge Standards are followed by the town and they do an annual culvert and bridge inventory that is mapped by the NRPC. The Town is compliant with the NFIP.

The Town is committed to use the Hazard Mitigation Plan when it plans for and regulates land use development. The Hazard Mitigation Plan's Table of Actions and Risk and Vulnerability Assessments will help guide land use district decisions, including goals and policies. During Town Meeting Day held every March, policies and action items in the City Plan are reviewed and integrated into hazard mitigation as needed. The Local Emergency Operations Plan contact list is updated after Town Meeting each year, including updates to vulnerable geographic locations, as well as locations of vulnerable populations. Updates to each of the planning mechanisms outlined in the table below are typically addressed by the Emergency Management Director.

There is no timeframe for updating the below referenced plans and regulations to better incorporate hazard mitigation, however, as each document is updated the hazard mitigation plan will be reviewed for incorporation. The goals of this hazard mitigation plan will be incorporated in the upcoming Town Plan update to ensure that emergency preparedness and mitigation planning efforts are included in the Town Plan, with particular attention to projects in the Mitigation Actions Table. This will help ensure that this plan is utilized and project follow-through occurs.

**Table 7.1. TOWN OF FAIRFAX POLICIES AND PLANS**

| Existing Policies and Plans | Description | Effectiveness/Enforcement/Hazard that is Addressed | Gaps in Existing Policies |
|---|---|---|---|
| Town Plan | Policies and vision for future land use. | Adopted September 5th, 2013. Overall objectives are to foster economic prosperity and to maintain the quality of life in the Town of Fairfax as well as ensuring the health, safety and welfare of its' citizens. Addresses: All-hazards. | Does not address new flood resiliency requirement. |
| Zoning Bylaws Subdivision Regulations | Land use regulations and local provisions related to the division of a lot, tract or parcel of land. | Last amended and adopted September 29, 2014. Restrictions on development in potential hazardous areas such as steep slopes, floodplains, and waters source areas. Addresses: Flooding/fluvial erosion, structure fire, HazMat, water/wastewater loss, telecommunications, utility related. | Uses 50-foot-wide riparian buffer for stream corridors rather than state river corridor protection measures. River corridor protection will be considered during next update. |
| Emergency Operations Plan | Operations and procedures for community based emergency. | Adopted April 2016. Addresses all hazards. | Plan lacks a debris management plan annex which was recently released by state. |
| Municipal Road and Bridge Standards | Town Road and Bridge Standards regarding all future road and bridge construction within the Town. | Adopted December 12, 2014. Improve safety; reduce lifecycle costs, addresses environmental concerns for transportation networks. Address flooding and fluvial erosion hazards, HazMat and public safety. | Annual review of standards. |
| Franklin County Mutual Aid Agreement | Agreement between municipalities and first response agencies for coordinated emergency assistance, | Franklin County Mutual Aid Agreement. 2007/2015. Addresses: All Hazards. | None identified. |
| School Crisis Guide 2016. | Response guide for school officials, staff and public safety officials for various types of emergency incidents involving the school. | In place and reviewed annually. Addresses: Terrorism, structure fire, HazMat. | Guide is updated annually. |
| Water and Sewer Department Spill Response Plan | Mitigation and response measures to address accidental release of sewage into the environment. | In place and updated annually. Addresses: HazMat & Waster Sewer Service Loss | None identified. Federal and state mandated plan is updated annually. |

| | | | |
|---|---|---|---|
| Water and Sewer Department Electrical Power Overflow Plan | Standard operating procedures and list of resources to mitigate damages due to loss of electrical service for short or long-term periods. | Department has this in place as of 2007 and has been updated annually. Addresses: Loss of Electrical Service. | None identified. Federal and State mandated plan updated annually. |
| Bridge and Culvert inventory | Bridge and culvert database on municipal road system that is updated annually. | In place since 2000. Updated annually. Addresses: Flood/fluvial erosion hazard. | None identified. Annually updated. |

There are currently no large or small-scale developments planned in Fairfax that would be considered in the floodplain or flood prone areas.

Through current plans, policies and mitigation actions, Fairfax is working to decrease damages from winter storms, floods and structure fires. Other less hazardous risks are also being addressed.

**Flooding and Development Regulations**

Fairfax participates in the National Flood Insurance Program. FEMA conducted a flood hazard study for the Town of Fairfax in 1980 and flood hazard areas were identified along the Lamoille River, Beaver Meadow Brook, Mill Brook, Wilkins Brook, Stones Brook, Browns River, Dead Creek, Silver Lake, St. Albans Reservoirs and two unnamed streams. Flood Insurance Rate Maps (FIRMs) were prepared by FEMA in January 1980. They are available for review at the Fairfax Town Office. The Town of Fairfax has adopted floodplain regulations to protect the health, safety, and welfare of its residents and to allow the community to participate in the National Flood Hazard Insurance Program. In 2006, the Town established an ordinance for special flood hazard areas. The purpose of the ordinance is to:

- Minimize and prevent the loss of life and property, the disruption of commerce, the impairment of the tax base, and the extraordinary public expenditures and demands on public services that result from flooding and other flood related hazards; and
- Ensure that the design and construction of development in flood and other hazard areas are accomplished in a manner that minimizes or eliminates the potential for flood and loss or damage to life and property; and
- Manage all flood hazard areas designated pursuant to 10 V.S.A. § 753; and
- Make the state, municipalities, and individuals eligible for federal flood insurance and other federal disaster recovery and hazard mitigation funds as may be available.

There is stream corridor protection regulations included in the Town's land use regulations. A 50-foot riparian buffer on each side of stream is required for any proposed development. The goal is to help control soil erosion and protect water quality

The Town Zoning Administrator is responsible for monitoring compliance with the NFIP. The Town works with the elected officials, Northwest Regional Planning Commission, the State and FEMA to correct existing compliance issues and prevent any further NFIP compliance issues through continuous communications, training and education.

## 8. PLAN IMPLEMENTATION, MONITORING & EVALUATION

Monitoring and Updating the Plan – Yearly Review

Once the plan is approved and adopted, the Emergency Management Director in Fairfax, along with interested and appointed volunteers and stakeholders, will continue to work with the Emergency Planner at the Northwest Regional Commission to monitor, evaluate, and update the plan throughout the next 5-

year cycle. The plan will be reviewed annually at the May Selectboard meeting along with the review of the town's Local Emergency Operations Plan (LEOP). During the annual review, the Selectboard will evaluate the plan effectiveness at achieving its stated purpose and goals This meeting will allow town officials and the public to discuss the town's progress in implementing mitigation actions and determine if the town is interested in applying for grant funding for projects that can help mitigate future hazardous events; e.g., bridge and culvert replacements, road replacements and grading, as well as buying out any repetitive loss structures that may be in the Special Flood Hazard Area, and revise the plan as needed. Northwest Regional Commission's Emergency Planner will assist the Fairfax Emergency Management Director with this review, as requested by the Town. Progress on actions will be kept track using a table the NRPC will provide to the Town EMD to update. There will be no changes to the plan, unless deemed necessary by the Town. If so, the post disaster review procedure will be followed.

Routine Plan Maintenance (5 Year Update and Evaluation Process)

The Hazard Mitigation Plan is dynamic and can be updated to reflect the needs of the community. It is recommended the Town reviews and incorporates elements of the Local Hazard Mitigation Plan into their land use and development plan, future zoning regulations and additional flood hazard bylaws. The incorporation of the Local Hazard Mitigation Plan into the aforementioned documents will also be considered after federal, state and local declared disasters.

To ensure that the plan remains current and relevant, it is important that it be updated periodically as required under 44 CFR § 201.6(c)(4)(i). This update process will be thorough and occur every five years. Participants outlined below will work with the Emergency Planner at the Northwest Regional Commission (NRPC) in accordance with the following procedure:

1. The Fairfax Selectboard will appoint a team to convene a meeting of the hazard mitigation planning committee. The Town's Emergency Management Director will chair the committee, and other members should include local officials such as Selectboard representatives, Town Emergency Management Coordinator, Road Foreman, Fire Chief and Water/Waste Water Supervisor, health officer, interested stakeholders, etc. The Emergency Management Director will work with the Northwest Regional Planning Commission Emergency Planner and be the point person for the Town.
2. The NRPC Emergency Planner will guide the committee through the update process and will discuss the process to determine if the evaluation criteria is still appropriate or modifications or additions are needed due to changing conditions since the last update occurred. Data needs will be reviewed, data sources identified and responsibility for collecting information will be assigned to members.
3. A draft report will be prepared based on these evaluation criteria and in conformance with the FEMA *Local Hazard Mitigation Plan Review Crosswalk* document.
    - Changes in community and government processes, which are hazard-related and have occurred since the last review.
    - Changes in community growth and development and their effect on vulnerability.
    - Progress in implementation of plan initiatives and projects.
    - Effectiveness of previously implemented initiatives and projects.
    - Incorporation of new mitigation initiatives and projects.
    - Cost-benefit review of new mitigation projects.
    - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report.
    - Evaluation of hazard-related public policies, initiatives and projects.

- Verification of and commitment to compliance with NFIP program requirements including review and update as necessary of local flood damage reduction regulations.
- How mitigation strategies have been incorporated into other planning mechanisms.
- Review and discussion of the effectiveness of public and private sector coordination and cooperation.

4. The NRPC Emergency Planner will update the draft from the information gathered at the meetings, research and data collected independently during research for the update. The draft will be prepared in conformance with the latest FEMA Region 1 *Local Hazard Mitigation Plan Review Crosswalk* document.

5. The Selectboard will review the draft report. Consensus will be reached on changes to the draft. Emphasis in plan updates will be on how the plan can become more effective at achieving its stated goals and strategies.

6. The changes will be incorporated into the Plan by the NRPC Emergency Planner.

7. The Selectboard will notify the public that the draft is available for public comment and review. The Town will advertise and make available the draft plan both electronically and in hard copy. The draft plan will simultaneously be distributed electronically to adjacent towns for review and comment.

8. Public and adjacent town comments will be incorporated by the NRPC Emergency Planner. The final draft will be provided to the committee and town staff for final review and comment.

9. The NRPC Emergency Planner will finalize the plan with any remaining comments from the plan committee and town staff. The NRPC Emergency Planner will submit plan electronically to DEMHS State Hazard Mitigation Officer (SHMO) for review.

10. The Plan will be reviewed by DEMHS SHMO and FEMA Region 1.

11. SHMO and FEMA comments will be addressed in the Plan by NRPC Emergency Planner.

12. The plan will be resubmitted as needed until the plan is approved pending adoption. Once the plan receives APA by FEMA, the Selectboard will notify and schedule a public meeting for adoption.

13. The Selectboard will adopt the plan and distribute to interested parties.

14. The final adopted plan will be submitted by the NRPC Emergency Planner to DEMHS and FEMA. All “draft” watermarks and references to “draft” will be removed.

15. FEMA will perform one final review to ascertain that no changes were made to Plan (other than removing watermarks and inserting dates) following the APA and then the Plan is deemed “FINAL”. FEMA will issue final approval of the adopted plan and the five-year period shall begin again.

16. The Selectboard will distribute final Plan to interested parties and make available to public.

Continued Public Involvement

Maintenance and implementation of this plan will require the continued participation of local citizens, agencies and other organizations. To keep the public aware and involved in local hazard mitigation efforts, the town will take the following measures:

- Provide hazard mitigation information at Town Meeting
- Schedule and advertise a planning meeting each year, soon after Town Meeting
- Seeking participation from key players in addition to general public interest:
    - Select Board
    - Planning Commission
    - School
    - Fire & Rescue
    - Emergency Management/911 Coordinator
- Post the hazard mitigation plan on the town website
- Selectboard will review past hazard mitigation committee members and consider whether new members should be added. Representatives of local businesses, nonprofits, academia, etc. should especially be considered.
- Notify the public of committee meetings through town website, newsletter, newspaper and social media (Facebook, Front Porch Forum, etc.)

Programs, Initiatives and Projects Review

Although the plan should be reviewed in its entirety every five years as described above, the Town may review and update its programs, initiatives and projects more often directly with the State Hazard Mitigation Officer (SHMO) based on changing local needs and priorities.

The Town of Fairfax will incorporate elements of this plan, such as identified projects, into capital planning initiatives, and annual budget reviews during Town Meeting. The plan will be available for distribution during public meetings particularly Town Meeting in order to educate the public on mitigation programs and receive public input regarding the process. Additionally, the Town of Fairfax Planning Commission, Zoning Board and Select Board will consider incorporating the requirements of the Hazard Mitigation Plan into the Town Plan, Zoning Bylaws, Local Emergency Operations Plan and any related public safety ordinances during their respective updates.

Post-Disaster Review/Update Procedure

Should a declared disaster occur, a special review will occur among the Selectboard Chair, the Emergency Management Coordinator, the NRPC Emergency Planner, and those involved in the five-year update process as described above. This review will occur in accordance with the following procedures:

1. Within six months of a declared emergency event, the town will initiate a post disaster review and assessment. Members of the State Hazard Mitigation Committee will be notified that the assessment process has commenced.
2. This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation projects effectively lowered community vulnerability/damages. New mitigation projects will be discussed, as needed.
3. A draft After Action Report of the review and assessment will be distributed to the hazard mitigation committee.
4. A meeting of the committee will be convened by the Selectboard to make a determination of whether the plan needs to be amended. If the committee determines that no modification of the plan is needed, then the report is distributed to local communities.

5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on the recommendations and forwards to the Selectboard for public input.
6. The Selectboard adopts the amended plan after receiving Approval-Pending-Adoption notification from FEMA.

**Attachment A**

**Hazard Identification and Risk Assessment**

**Town of Fairfax**

| Hazard | Impacted Area | Probability Of Occurrence | *Consequence of Occurrence* | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | *Health & Safety* | *Property* | *Environment* | *Economic* | |
| Flooding / Fluvial Erosion | 2 | 5 | 1 | 2 | 2 | 2 | 45 |
| Severe Winter Storm (Ice Storm) | 3 | 5 | 1 | 1 | 1 | 3 | 45 |
| Thunderstorms (High Winds, Lightning) | 3 | 5 | 1 | 2 | 1 | 1 | 40 |
| Structure Fire | 1 | 5 | 1 | 1 | 1 | 2 | 30 |
| Loss of Electrical Service | 3 | 4 | 1 | 1 | 0 | 2 | 28 |
| Hazardous Materials | 1 | 4 | 1 | 1 | 2 | 1 | 24 |
| Hail | 1 | 5 | 0 | 1 | 1 | 1 | 20 |
| Drought | 3 | 1 | 1 | 1 | 2 | 2 | 9 |
| Dam Failure | 1 | 1 | 1 | 1 | 2 | 3 | 8 |
| Water Service Loss | 2 | 1 | 0 | 1 | 2 | 2 | 7 |
| Sewer Service Loss | 2 | 1 | 0 | 1 | 2 | 2 | 7 |
| Telecommunication Systems Failure | 3 | 1 | 0 | 0 | 0 | 3 | 6 |
| Tornado | 1 | 1 | 1 | 1 | 1 | 2 | 6 |
| Earthquake | 1 | 1 | 1 | 1 | 1 | 2 | 6 |
| Major Fire – Wildland | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| Civil Disturbance | 1 | 1 | 1 | 0 | 0 | 2 | 4 |
| Terrorism / WMD | 1 | 1 | 1 | 0 | 0 | 2 | 4 |
| | | | | | | **Total Risk Rating** | **359** |

**Attachment B**

**Critical Facilities, HazMat Storage Facilities, and Vulnerable Sites**
**Town of Fairfax**

| Facility Name or Facility Designation | Facility Owner | Function | Street or Location |
|---|---|---|---|
| BFA - Fairfax | Principal: D. Scott Lang | School/Library | 75 Hunt St |
| Fairfax Baptist Church | Wayne Sweet | Place of Worship | Main St |
| Fairfax Falls Dam | Central Vermont Public Service | Energy Facility or System | Lamoille River |
| Fairfax Fire Station | Town of Fairfax | Fire Station | Goodall St |
| Fairfax Post Office | United States Postal Service | Government | VT Route 104 |
| Fairfax Public Safety Building | Town of Fairfax | Emergency Operations Center | Goodall St |
| Fairfax Rescue Station | Town of Fairfax | EMT Station | Goodall St |
| Fairfax Town Garage | Town of Fairfax | Highway Department | Fletcher Rd |
| Fairfax Town Offices | Town of Fairfax | Government Facility | 67 – 101 Hunt St |
| Fairfax Water and Sewer Department | Town of Fairfax | Water Supply and Wastewater Treatment Facility | 67 – 101 Hunt St |
| Fairfax Water Tank | Town of Fairfax | Public Water Supply | Fletcher Rd |
| Fairfax Municipal Well | Town of Fairfax | Public Water Supply | Fletcher Rd |
| Joyal Fuels, Inc. | Frank Joyal | Hazardous Materials Storage Facility | Goodall St |
| Minor's Country Store | Jeff Minor | Hazardous Materials Storage Facility | VT Route 104 |
| Mountain View Housing | RH Carr Associates | Elderly Housing | Mountain View St |
| Nan’s Mobil | Tim Vallee | Hazardous Materials Storage Facility | 1301 Main St |
| Ross' Auto Repair | S.B. Collins, Inc./Clifford Ross | Hazardous Materials Storage Facility | 1184 Main St, Route 104 |
| St. Albans City Fairfax Water Plant | City of St. Albans | Hazardous Materials Storage Facility | VT104 in North Fairfax |
| St. Albans City North and South Reservoirs | City of St. Albans | Dam<br>Public Water Supply | VT104 in North Fairfax |
| St. Lukes' Parish | Rev. Francis E. Connors | Place of Worship | 17 Huntville Rd |
| Steeple Market | Bernie Pierre | Hazardous Materials Storage Facility | 1098 Main St |
| Substation ( East Fairfax ) | VELCO, Inc. | Energy facility or System<br>Hazardous Materials Storage Facility | 25 Fisher Rd |
| Substation (Fairfax Falls) | VELCO, Inc. | Energy facility or System<br>Hazardous Materials Storage Facility | 781 Main St |
| United Church of Fairfax | Rev. Elizabeth Griffin | Place of Worship | Fletcher Rd |
| Fairpoint Communications Central Office | Fairpoint Communications LLC | Hazardous Materials Storage Facility<br>Utility | Main St |
| Fairfax Green | Fairfax Investments, LTD | Adult Living Housing Complex | Old Academy Rd |

**Attachment C**
**Town of Fairfax Mitigation Projects Priority Matrix**

1 = Poor, 2 = Average, 3 = Good

Each of the following criteria was rated according to a numeric score of "1" (indicating Poor), "2" (indicating Average) and "3" (indicating Good).

1. Does the action reduce damage?
2. Does the action contribute to community objectives?
3. Does the action meet existing regulations?
4. Does the action protect historic structures or structures critical to Town operations?
5. Can the action be implemented quickly?
6. Is the action socially acceptable?
7. Is the action administratively possible?
8. Is it technically feasible?
9. Is the action politically acceptable?
10. Is the action legal?
11. Does the action offer reasonable benefits compared to its cost of implementation?
12. Is the action environmentally sound?

| Mitigation Action | | Criteria | | | | | | | | | | | | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | |
| | Conduct Inventory of Stormwater Erosion for Town Roads | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **36** |
| | Upgrade Bridge 23 – TH24 (Boissoneault Road) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **36** |
| | Community Education about how to prepare for winter conditions | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **36** |
| | Clear Vegetation from Power Line Corridors | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **34** |
| | TH 22 (Rocky Ridge Road) and VT104 Intersection | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | **33** |
| | Intersection improvement at TH28 (Swamp Road) and TH2 (Fletcher | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | **33** |
| | Intersection improvement at TH29 (Wilkins Road) and TH 2 (Fletcher Road) | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | **33** |

**Attachment D**
**Public Government Participation**

Information in the Hazard Mitigation Plan is based on research from a variety of sources listed in Appendix G. It encompassed research using a historical perspective and future projections for the vulnerability assessment. The research methods and various contributions to the plan included but were not limited to:

• Town of Fairfax Select Board

• Town of Fairfax Emergency Management

• Town of Fairfax Highway Department

• Northwest Regional Planning Commission GIS

• Local Emergency Planning Committee #4 (Franklin County)

• Fairfax Volunteer Fire Department

• Fairfax Rescue

• Northwest Regional Planning Commission

• Franklin County Sheriff's Office

• Vermont Department of Transportation District 8

• Vermont Division of Emergency Management and Homeland Security

• Vermont Agency of Natural Resources

• • Vermont Fire Academy

• Northeast States Emergency Consortium

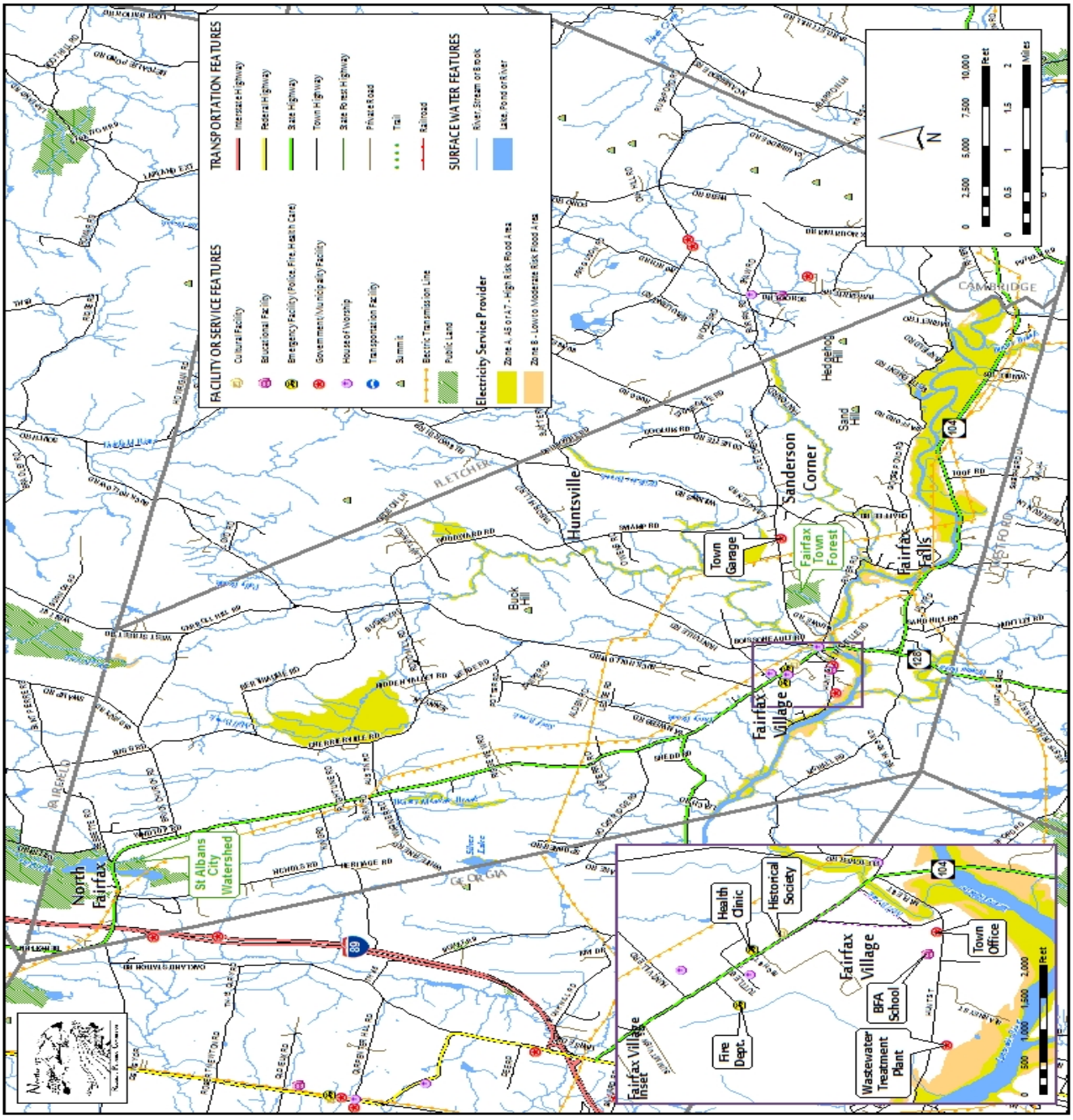
• Federal Emergency Management Agency

• National Weather Service

• National Oceanic Atmospheric Administration

• Vermont Geological Survey

**Attachment E**
**Town of Fairfax Flood Vulnerability Map**



**Attachment F**
**Public Notice Flyer Posted from April 1 to April 30th, 2015**

## Fairfax Hazard Mitigation Plan 2015

The draft Fairfax Hazard Mitigation Plan update is now available for public review and comment at the Fairfax Town Office, 12 Buck Hollow Road, Fairfax, VT and on the town website: www.fairfax-vt.gov and at the Northwest Regional Planning Commission, 75 Fairfield Street, St. Albans and NRPC website: www.nrpcvt.com.

The Plan will be available for comment until the end of the public comment period on **May 1, 2015.**

Anyone who would like to comment on the plan should contact Shaun Coleman, Senior Planner at the Northwest Regional Planning Commission: phone: 802.524. 5958 X13 or email at scoleman@nrpcvt.com. We encourage your review and participation!

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- Lister's Office
- Recreation & Parks Department
- Town Clerk's Office
- Utility Department
- Zoning/Planning/ DRB
- Fairfax School District
- Garbage and Recycling

## TOWN OF FAIRFAX

Hazard Mitigation Plan Update Meeting

February 16, 2015

7:00 pm

The Meeting will be held at Fairfax Fire Station

Goodall Road, Fairfax, VT 05454

Agenda

Public Comment

Modifications to Agenda

Background/Purpose/Process

ERAF Overview

Priorities

Adjourn

*The purpose of this plan is to assist the Town of Fairfax in becoming more resilient to natural and man-made hazard events by identifying actions and strategies to reduce losses associated with hazardous events.*

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- Garbage and Recycling

## TOWN OF FAIRFAX

Hazard Mitigation Plan Update Meeting

March 21, 2015

9:00 am to 12:00 pm

The Meeting will be held at Fairfax Fire Station

Goodall Road, Fairfax, VT 05454

Agenda

Public Comment

Modifications to Agenda

Review of Existing Plan

Update and Prioritize Mitigation Actions

Other Business

Adjourn

*The purpose of this plan is to assist the Town of Fairfax in becoming more resilient to natural and man-made hazard events by identifying actions and strategies to reduce losses associated with hazardous events.*

**Attachment G**
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