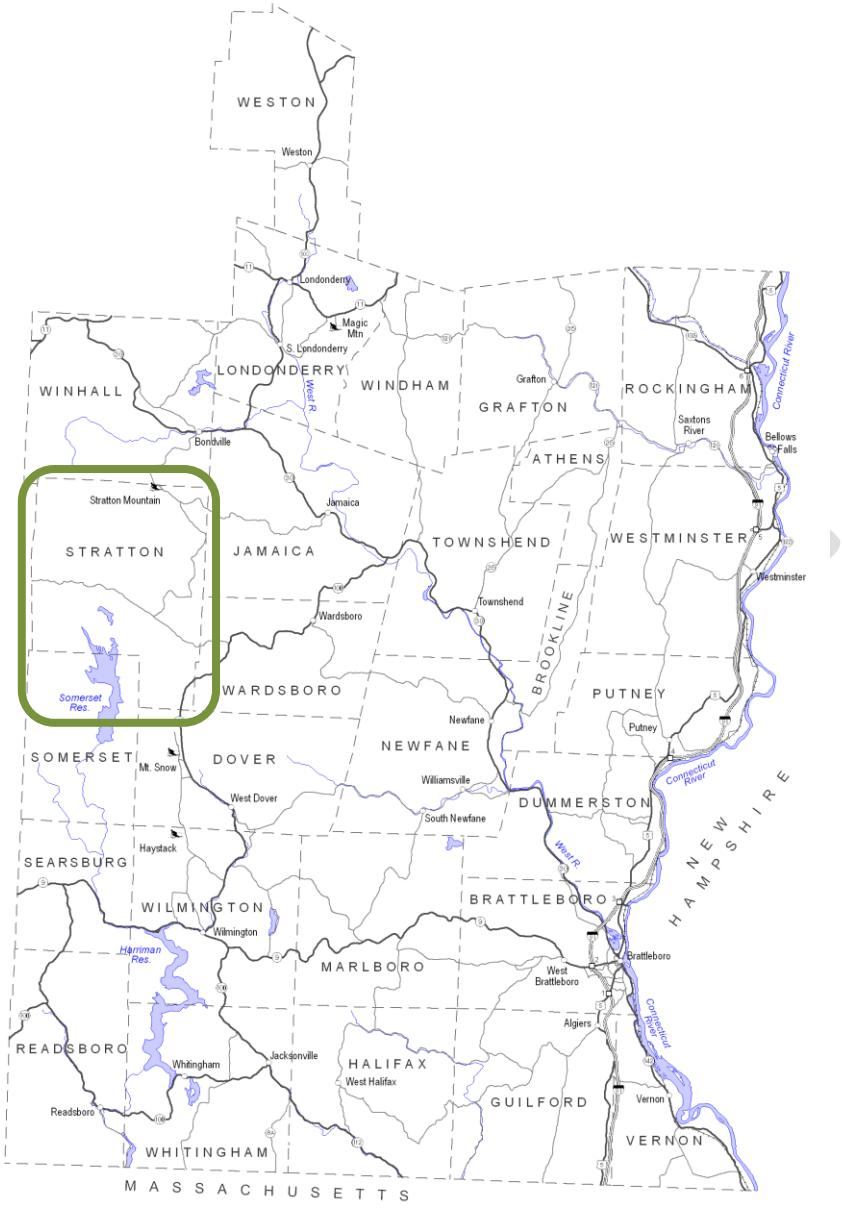
Town of Stratton
Local Hazard Mitigation Plan



Draft January 23, 2019

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PLEASE SEND ANY COMMENTS TO ASABETTO@WINDHAMREGIONAL.ORG
OR CALL 802-257-4547 X 113

WINDHAM REGIONAL COMMISSION

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INTRODUCTION AND PURPOSE

This Single Jurisdiction Hazard Mitigation Plan is NEW, and has never been approved by FEMA or adopted by the Town of Stratton.

The purpose of this plan is to assist the Town of Stratton in identifying all of the hazards facing the town and to identify new and continuing strategies to reduce long term risks from identified hazards.

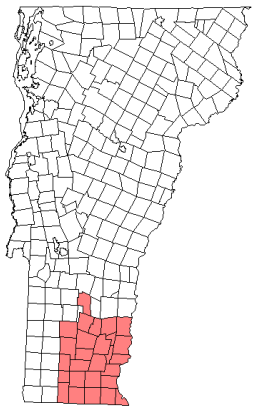
Hazard mitigation is any sustained action that reduces or eliminates risk to people and property from natural and human-caused hazards and their effects. Based on the results of previous Project Impact efforts, FEMA and state agencies have come to recognize that it is less expensive to prevent damage from disasters than to repeatedly repair damage after a disaster has struck. This plan recognizes that communities also 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 what local actions can be taken to reduce the severity of hazard-related damage.

Hazard mitigation strategies and measures alter the hazard by: eliminating or reducing the frequency of occurrence; averting the hazard by redirecting the impact by means of a structure or land treatment; adapting to the hazard by modifying structures or standards; or avoiding the hazard by stopping or limiting development. Mitigation could include projects such as:

- Flood-proofing structures
- Tying down propane/fuel tanks in flood-prone areas
- Elevating furnaces and water heaters
- Identifying and modifying high traffic incident locations and routes
- Ensuring adequate water supply
- Elevating structures or utilities above flood levels
- Identifying and upgrading undersized culverts
- Planning for land use for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Establishing and enforcing appropriate building codes
- Public information

WINDHAM REGION GEOGRAPHY

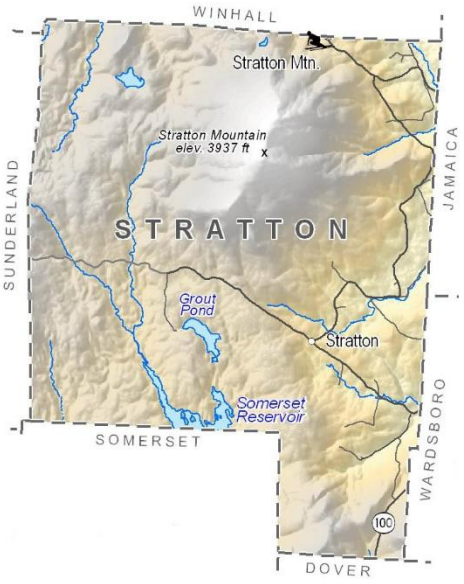
Situated in Vermont's southeastern corner, the Windham Region consists of 23 towns in Windham County, the neighboring towns of Readsboro, Searsburg, and Winhall in Bennington County, and Weston in Windsor County. The region is bordered by Massachusetts to the south and New Hampshire to the east. At over 920 square miles (590,000 acres), the region accounts for roughly 9.6% of the State's total land area. The Windham Region has several distinctive identities, largely defined by the diverse natural environment.



The Region's topography is relatively flat or gently rolling land in the Connecticut River valley in the east, while the western part of the region is characterized by the Green Mountain ridges and peaks with narrow stream valleys. Stratton Mountain is the highest point in the region at 3,936 feet. The lowest point is along the Connecticut River in Vernon, at 200 feet.

In addition to the Connecticut, other major rivers of the region are the Deerfield, Green, North, Saxtons, West, and Williams, all tributaries of the Connecticut. There are two major flood control reservoirs on the West River, Ball Mountain and Townshend, and two major storage reservoirs for hydropower generation on the Deerfield River, Somerset and Harriman.

STRATTON GEOGRAPHY & TOWN PROFILE



The Town of Stratton is a rural Southern Vermont hill town in the midst of the Green Mountains. Stratton is the 10th smallest incorporated town by population in the state. Stratton is known for the Stratton Mountain Ski Resort. The Town is composed of 46.9 square miles (30,016 acres) on the north-western edge of Windham County. Stratton is bordered to the north by Winhall, to the west by Sunderland, Somerset and Dover to the south, and Jamaica and Wardsboro to the east. Route 100 runs through the southeast portion of Stratton and serves as the largest connector road to the Town. Stratton Arlington Road runs east-west through Stratton; West Jamaica Road is a major north-south connector; both of these roads are dirt in portions, which gives a scale to the rural and remote nature of Stratton.

The mixed softwood and hardwood forest-covered terrain is mountainous with much of the northern part of the Town at an elevation of 2500 feet or more. Developable land in Stratton is limited. Approximately 79% of the land is in public or semi-public ownership including the lands of the Green Mountain National Forest, TransCanada Flow Easement area, the Lye Brook Wilderness Area, and the Stratton Town Forest. Stratton Resort's privately held land holding occupies approximately 2,881 acres in the northeastern portion of the Town, none of which is the in the National Forest. The only land not in forest cover is at the Stratton Resort and around the scattered homes in the Town. Together the public or semi-public lands combined with the privately held Stratton Resort lands take up 88.6% of the Town. Only 3,422 acres, or 11.4% of the town, are not in public or resort land and would be available for town mitigation efforts. The Town only has about 1 mile of state roadway (Route 100) and about 30 miles or town roadway. The Town does not have a commercial center, with the exception of the commercial area at the resort complex. There is a substation of the Londonderry Post Office in the resort area. Industry, other than recreation and limited logging, is not present. Stratton is a residential town.

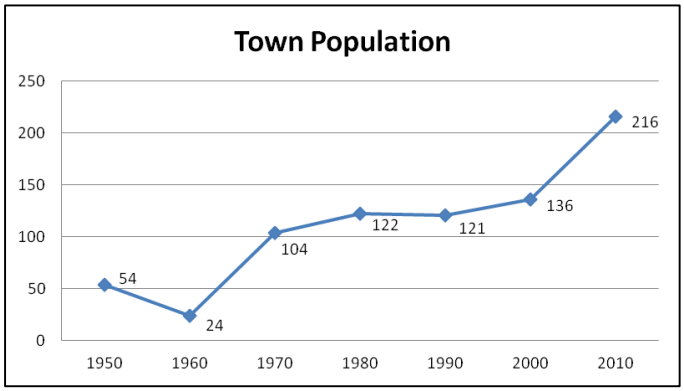
The Appalachian and Long Trails cross the Town in a north-south direction. Within the Town are several ponds, many wetlands and the northern part of Somerset Reservoir.

Fun Fact: Stratton Mountain is the highest point in the Windham Region at an elevation of 3,937 feet. Its historic fire tower is on the National Register.

The climate is generally temperate with moderately cool summers and cold winters, as in the rest of Vermont. The weather is unpredictable, and large variations in temperature, precipitation, and other conditions may occur both within and between seasons.

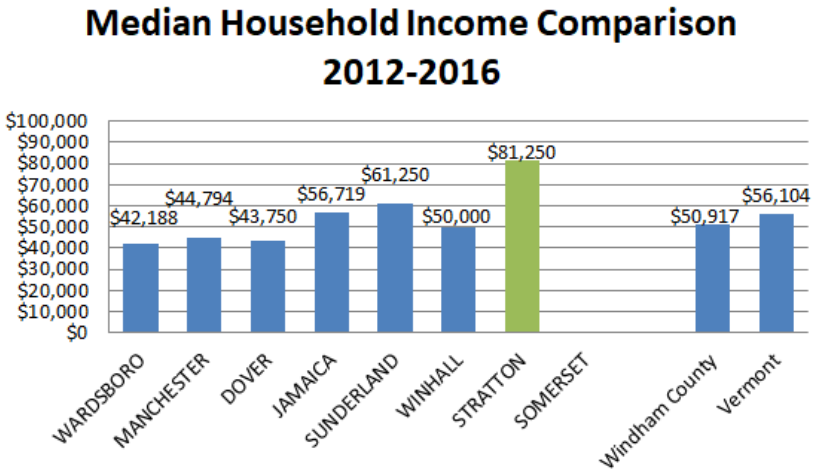
Development Trends

The population of Stratton rose between 2000 and 2010 from 138 to 216 people, an increase of 59%. Percentage wise this is much higher than surrounding towns, but population overall remains less than all surrounding towns with the exception of Somerset.



Town	1990	2000	2010	% Change 1990-2000	% Change 2000-2010
Stratton	121	136	216	12%	59%
Winhall	482	702	769	46%	10%
Jamaica	754	946	1,035	26%	9%
Wardsboro	654	854	900	31%	5%
Dover	994	1,410	1,124	42%	-20%
Somerset	2	5	3	150%	-40%
Sunderland	872	850	956	-3%	13%
Manchester	3,622	4,180	4,391	15%	5%

Seasonal housing has long been the majority of the total housing in Stratton. In 2010, seasonal housing accounted for 92.6% of all housing, 94.0% in 2000 and 92.1% in 1990. From 2000 to 2010, the number of housing units in Stratton rose from 1,091 to 1,441, a 32% increase, while total households rose from 60 to 98, a 63% increase. This increase had a lot to do with Stratton Resort expanding between 1997 and now. The median estimated household income for the period 2012-2016 increased from 2012 to $81,250. Note in the table below that Stratton's median household income is higher than that of all surrounding towns, and the County and the State.



In 2010, the median age of the town was 40, down three years from 2000. Windham County's median age was older at 44.9 years. Part of this difference can be accounted because of the

presence of the Stratton Mountain School. Stratton Mountain School is an independent boarding and day school that focuses on college preparatory academics and competitive winter sports. On the whole, Stratton is a very small town with a relatively younger and more affluent population than in the region generally. These are important factors to consider when thinking about the vulnerability of a community.

During the period 2012-2016, 43.0% of Stratton residents worked in Stratton, including the 29.0% of residents that worked at home. Outside of working at Stratton Mountain Resort, there are very few jobs located within Stratton.

Emergency Services

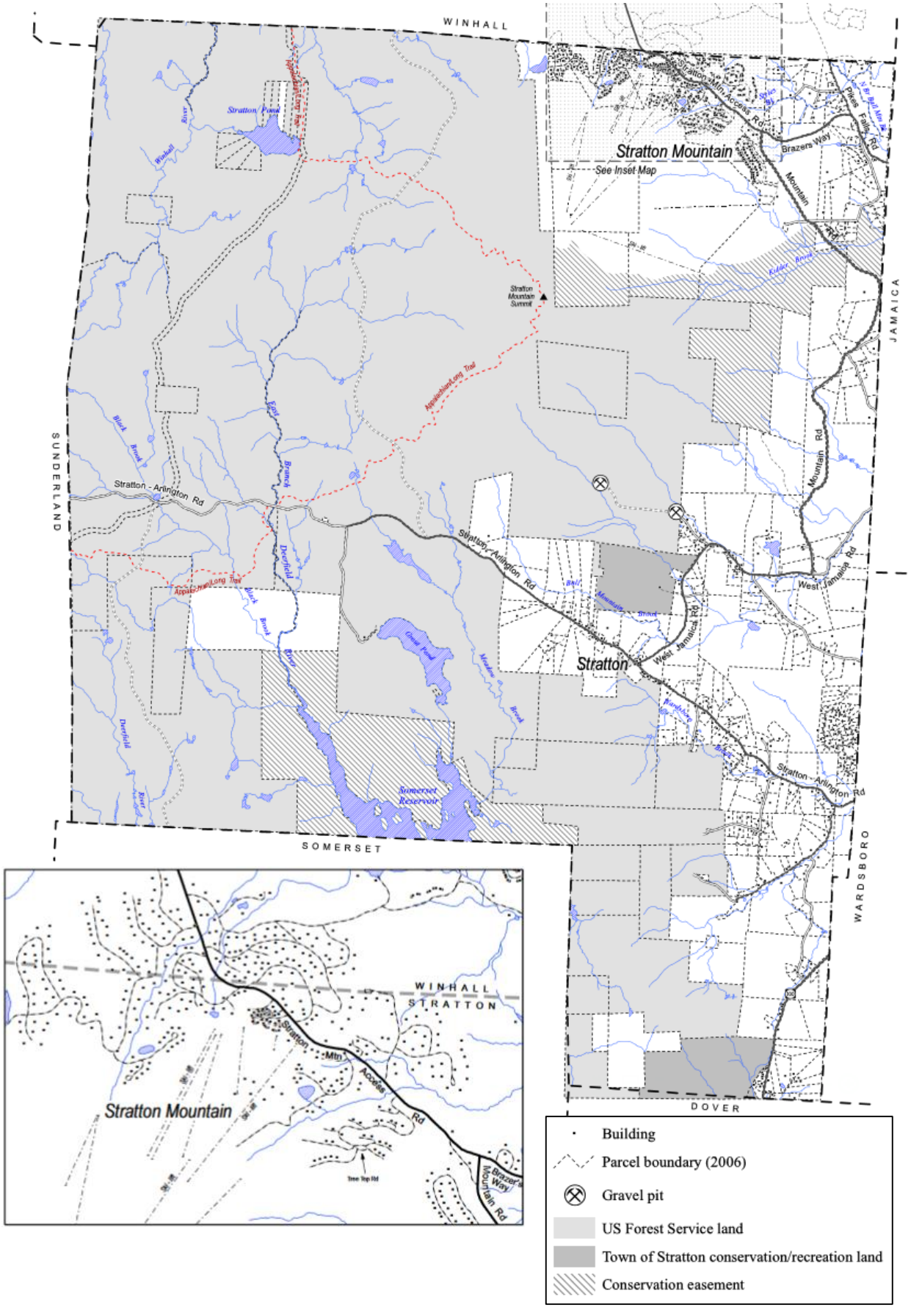
The Emergency Management Director, who is appointed by the Selectboard, coordinates emergency preparedness and response for the Town. Stratton is served by the Stratton Fire Department. The Department is composed of approximately 16 volunteer crew members and the Chief. The Department serves the entire town and has mutual aid agreements with surrounding towns. Keene Mutual Aid serves as dispatch for the Department. As with many small town fire departments in Vermont, getting volunteer firefighters is difficult. The Stratton Fire Department makes all efforts to recruit volunteer fire-fighting personnel to protect Stratton residents and visitors. Members attend training courses sponsored by Vermont Fire Academy and the various mutual aid associations. There is a firehouse on Stratton Mountain Access Road. The Resort has contributed to the equipment costs and the funding of the construction of the fire house. There is no contract between the Resort and the Town Fire Department but the Department services the Resort. There are some resort employees that volunteer with the Department.

Emergency medical services are provided primarily by Rescue Inc. operating out of their West Townshend facility. Stratton Mountain Rescue serves the mountain area. Rescue Inc. is a non-profit organization funded through subscriptions and donations. Rescue Inc. provides numerous towns in the region with ambulance service, medical care, transport to and from area hospitals and large regional hospitals. Grace Cottage is the closest hospital. It is primarily staffed by trained volunteers; however, two full-time personnel are employed. The statewide 911 locatable address system provides dispatch service for fire, emergency and ambulance calls. Stratton has a contract with the Windham County Sheriff's Department for police services for the majority of the town. Stratton Mountain Resort has an independent contract with the Winhall Police Department for the Resort lands.

Stratton Town Hall is the designated emergency shelter in Stratton. The shelter is not a Red Cross designated shelter. It can act as an overnight shelter and does have a backup generator. The Town Office is the Local Emergency Operations Center and also has a backup generator.

Keene Mutual Aid is dispatch
Fire Department, Town Garage, Town Office and the Road Crew all have interoperable radios. They are interoperable throughout the state with other fire departments and police.
Cell phone

Existing Land Use Map from the 2014 Stratton Town Plan



PLANNING PROCESS

Town residents who took part in the planning process for developing the Local Hazard Mitigation Plan for Stratton tend to be affiliated with more than one association for the town. In rural areas of Vermont, it is typical that people who are most interested in the safety, health and welfare of their community will preside on more than one board and may for example, hold the role of Fire Chief, or school teacher, or be a small business owner, in addition to owning personal property in the town. Therefore, although the meeting may not have as many people in attendance as a more populated community would, those present at the meeting are representing not only a variety of roles, but many roles that would be held by numerous individuals in a more populated area.

Documentation of the Planning Process

This Single Jurisdiction Hazard Mitigation Plan is NEW, and has never been approved by FEMA or adopted by the Town of Stratton.

The Town began the planning process in August 2018. Alyssa Sabetto, Emergency Planner for the Windham Regional Commission, worked with Town Clerk, Kent Young, to set up a public meeting. The Hazard Mitigation Planning participants convened on August 28, 2018 at the Stratton Town Office and met with Alyssa. Kent directly invited town officials and the general public was informed through the normal means the town uses to advertise all public meetings. The meeting was advertised and open to the public.[1] It lasted for several hours and involved:

- a review of the draft document with discussion of more recent hazard events,
- completion of hazard analysis and discussion of what hazards the town wants the plan to focus on
- progress made in mitigation efforts that were noted several years ago,
- development of new hazard mitigation projects, and
- review of mapping of the town to note where hazard events are causing repeated or large scale damage.

Alyssa drafted the plan to meet the current standards and guidelines of FEMA for hazard mitigation plans. She took the information from the August 28, 2018 meeting, along with follow-up information gathered in conversations with the Road Foreman and the Town Clerk. Alyssa also reviewed and utilized the data sources noted and cited throughout this plan to gather further information. The draft was presented for internal town review by the Committee, town personnel, Planning Commission and Selectboard on January 9, 2019. This internal town review period was from January 9-23. Comments and corrections, were received back from Town Clerk Kent Young. Alyssa made the revisions and corrections to finalize the draft for public comment.

The revised draft plan was put out for public comment on January 28, 2019. This was done by posting an electronic copy on the town website and having a hard copy of the plan advertised

[1] See appendices 8 and 9 for sign in sheet and meeting agenda.

and made available at the town office for public review and comment. Flyers were posted around town advertising its availability for review and comment. Numerous comments were received from the public during the over two weeks plus comment period, and they were incorporated into the draft. It was simultaneously distributed to the adjacent towns of: Readsboro, Wilmington, Halifax, and Heath and Rowe, MA for comment via email.[2] There were comments received from Brattleboro and they were incorporated. The plan was finalized by Alyssa Sabetto for submittal to VT Division of Emergency Management and Homeland Security (DEMHS). This submittal allows DEMHS to make suggested revisions on the draft, and allows for any revisions to be made before the final draft is submitted to the Federal Emergency Management Agency Region 1 (FEMA) for review.

The following people were involved in the hazard mitigation planning process:

Contributors (2018)	Affiliations	Home
Chris Liller	Stratton Highway Department (incoming Road Foreman)	Stratton
Kent Young	Town Clerk, Planning Commission Chair	Stratton
Kevin Robinson	Stratton Selectboard member	Stratton
Alyssa Sabetto	Windham Regional Commission	Brattleboro

Public Involvement and Input from Neighboring Communities

Making the Stratton Hazard Mitigation Plan available for public comment included the following efforts:

- All of the meetings discussed in the above sections were advertised and open to the public.[3]
- The hazard mitigation planning meeting took place on August 28, 2018 and was open to the public.
- The Stratton Road Foreman met with Alyssa on December 19, 2018 to go over remaining questions and mitigation action ideas in preparation for the final draft plan.
- The draft plan was made available in hard copy for public review and comment at the town office from January 28-February 11, 2019.
- A draft of the plan was posted from January 28-February 11, 2019 on the town website for public comment.[4]
- Flyers were put up around town for public comment on the draft.[5]
- On January 28, 2019, an invitation was extended via email to neighboring towns to provide a means and opportunity to review and comment on the draft Stratton Hazard Mitigation Plan.[6] One response was received back from the Zoning Administrator in Brattleboro.[7] Inter-town communication will repeat for future revisions of this Plan.

[2] See appendix 3 for reach-out and response.
[3] See appendix 7 for town website advertisement of November 19, 2015 meeting.
[4] See appendix 2.
[5] See appendix 4.
[6] See appendix 3.
[7] See appendix 3 for response from the Town of Brattleboro.

RISK ASSESSMENT

The risk assessment portion of a Hazard Mitigation Plan contributes to the decision-making process for allocating available resources to mitigation projects. 44 CFR Part 201.6(c)(2) of FEMA's mitigation planning regulations requires local municipalities to provide sufficient hazard and risk information from which to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Methodology

A **vulnerability analysis** for each community begins with an inventory of possible hazards and an assessment of the risk that they pose. These are the questions to be answered. What hazards can affect your community? How bad can it get? What is the likelihood of future events occurring? What areas of your town are most vulnerable to these hazards? How does climate change impact your town currently and what are you worried about for future impacts? Information collected from the core planning team went into this vulnerability assessment to identify the hazards the town feels most vulnerable to.

The following table is the scale used to rank each hazard that is analyzed:

Hazard Assessment Ranking Criteria		
	Frequency of Occurrence: Probability of a plausibly significant event	**Potential Impact:** Severity and extent of damage and disruption to population, property, environment and the economy
1	Unlikely : <1% probability of occurrence in the next 100 years	Negligible: Isolated occurrences of minor property damage and environmental damage, potential for minor injuries, no to minimal economic impact
2	Occasionally: 1–10% probability of occurrence per year, or at least 1 chance in next 100 years	Minor: Isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption
3	Likely: >10% but <75% probability per year, or at least 1 chance in next 10 years	Moderate: Severe property damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: 100% probability in a year	Major: Severe property damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Potential impact is considered and scored separately for impacts to infrastructure, life, economy and the environment. Additionally, seasonal patterns that may exist are considered, what areas are likely to be affected most, the probable duration of the hazard, the speed of onset (amount of warning time, considered with existing warning systems).

The combination of the impact scores for infrastructure, life, economy and environment, along with the probability (frequency of occurrence) score are used determine the hazard ranking score for each hazard. This score was used to determine which hazards the plan would address.

While all hazards were considered by the Hazard Mitigation Planning participants for inclusion in this plan, it is not feasible to study each in depth. For hazards that are not profiled in this plan, the reader is directed to the Vermont State Hazard Mitigation Plan. The rationale for not

addressing all of the hazards is that Stratton has a low level of risk associated with them and/or the town does not choose to mitigate for them at this time. This plan will only focus on the hazards that Stratton has decided are pertinent to their community and they have chosen to mitigate for at this time which are Fluvial Erosion and Wind. The below table shows the hazards in terms of their hazard ranking score as determined by the Hazard Mitigation Planning participants.

HAZARD ASSESSMENT								
		Potential Impact						
Possible Hazard	**Probability**	Infrastructure	Life	Economy	Environment	**Average:**	**Score:**	**Most vulnerable facilities and populations**
Fluvial Erosion	3	3	3	3	3	3	9	There are a number of culvert upgrades needed.
Ice	4	2	2	2	2	2	8	
Snow	4	1	2	2	1	1.5	6	
Wind	4	1	2	2	1	1.5	6	
Wildfire	2	3	3	3	3	3	6	No history
Cold	4	1	1	1	1	1	4	
Hail	2	2	2	2	2	2	4	
Heat	3	1	1	1	1	1	3	
Earthquake	1	3	3	3	3	3	3	No history
Drought	2	1	2	1	1	1.25	2.5	
Invasive Species	2	1	1	1	2	1.25	2.5	ANR has put up detector traps for EAB; HWA has not been seen to be an issue; Not a big syrup producing town; Impact could increase with climate change
Infectious Disease Outbreak	2	1	2	1	1	1.25	2.5	There are not too many ticks in town; No public schools in town
Inundation Flooding	2	1	1	1	1	1	2	Hardly any SFHA in town
Landslides	1	1	1	1	1	1	1	This is not an issue; no slides in town

The above table shows vulnerability to some natural hazards that Stratton—due to their extremely small full-time population and limited resources—at this point in time doesn't feel the risk posed by these hazards is high enough to justify the cost to further mitigate for them. After TS Irene, there were two buyouts of vulnerable structures which mitigated most of the vulnerability to the built environment from inundation flooding. Additionally, Stratton has very little Special Flood Hazard Area because of its terrain and elevation. The town feels that they deal adequately and comfortably with ice and snow, and that their new salt shed mitigates any

issues by allowing them to store more salt than they previously were able to. Snow and Ice are something that the Town is very accustomed and comfortable handling. Stratton has chosen to profile high wind events, despite them scoring lower than Ice and Snow, because both Snow and Ice are something that the Town is very accustomed to and comfortable handling as they currently do. Heat and earthquake are not hazards that Stratton feels pose enough risk to consider mitigation. Cold is something they feel their population is accustomed to dealing with, along with the fact that their emergency shelter equips them to handle anyone who might lose power and need a warm place to get shelter. Drought, landslides, wildfire, hail and invasive species do pose some risk to Stratton, but not enough that they feel the need to mitigate for these hazards at the current time. There is no public school in Stratton, so they did not feel the need to address infectious disease outbreak. Current methods of handling most hazards are deemed adequate at this time, though the town may choose to address these hazards in the future.

All this being said, Stratton is a unique town in the Windham region for a couple of reasons: Only 11.4% of the town land is not either publicly conserved open space or privately held resort lands. As well, the Stratton Mountain Resort has a full-time road crew and security crew that monitor all resort lands and deal with issues that arise on those lands. The Resort handles any road repairs or hazards that face the Resort land without the town needing to expend themselves to cover this. The Town and Resort help each other when there is a dire need, but overall, the town is only responsible for owned roads and public infrastructure in the 11.4% of Stratton that is outside of the publicly conserved and privately owned land. Additionally, the watershed above the town is primarily undeveloped National Forest land, so impact to their watershed from upstream development is very minimal. As well, with a high second home population, there is a large tax base for the town with fewer expenses than towns that have public schools to fund. This means that when problems arise, funding is not as much of a concern as it is in some other towns in the region. Therefore, most of the prior vulnerabilities such as undersized culverts and roadway concerns have been addressed prior to now and since TS Irene. Stratton did have just over $1 million in damages from Tropical Storm Irene, which is significant. They did a significant amount of mitigation work following TS Irene. The main project was the Penny Ave. bridge over Pike Hollow Brook and the Kidder Brook culvert upgrade on Mountain Rd. The remainder of repairs after Irene included various washout repairs, small culvert replacements and debris removal. Overall, with these considerations and the mitigation work they have already done in recent years, Stratton is a less vulnerable town that primarily has remaining concerns with fluvial erosion risk associated with large and flashy rain events occurring more frequently in recent years.

Identifying and Profiling Hazards

The following sections include a narrative with a Description, Geographic Area of the Hazard, Impact, Extent, Probability, and discussion of Past Occurrences of two natural hazards affecting Stratton.

Fluvial Erosion

Fluvial Erosion Description
Fluvial erosion is the destruction of river banks caused by the movement of rivers and streams, when stream power overcomes resistance of bed and bank material. This can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. This occurs when the stream 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, leading to erosion.

Gravity and water power are the forces driving fluvial erosion. Factors that allow the force of gravity to overcome the resistance of earth material to erosion include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, removal of trees and other vegetation and earthquake shaking. Major erosion events are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompany these events. The historic relationship between the streams and the existing roads are the root of the reason for the conflicts that exist today. The vulnerability in Stratton is mostly affecting the infrastructure; there luckily aren't many buildings impacted by fluvial erosion or flooding in Stratton., and this just happens to be how the town developed over the years. Existing homes and roads on the landscape have existed for 200 years or more, so cannot be easily closed or relocated.

Fluvial erosion damage behind a home on Stratton-Arlington Road due to Tropical Storm Irene, September 2011. Photo courtesy of Chris Liller, Stratton Road Foreman.

The historic road network of many Vermont towns and villages typically follows waterways. This historic settlement pattern creates vulnerability for the road network, infrastructure and development within and along what are called River Corridors. River Corridor mapping was released by the Vermont Agency of Natural Resources in early December 2014; small stream mapping was released in January 2016. This mapping delineates fluvial erosion hazard areas and includes a 50-foot buffer beyond those designated areas. For small streams, a 50-foot buffer from top-of-bank on either side of the waterway constitutes the River Corridor. This mapping can assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones. Stratton does not currently have a fluvial erosion bylaw, but plans to add this to their floodplain regulations in the near future.

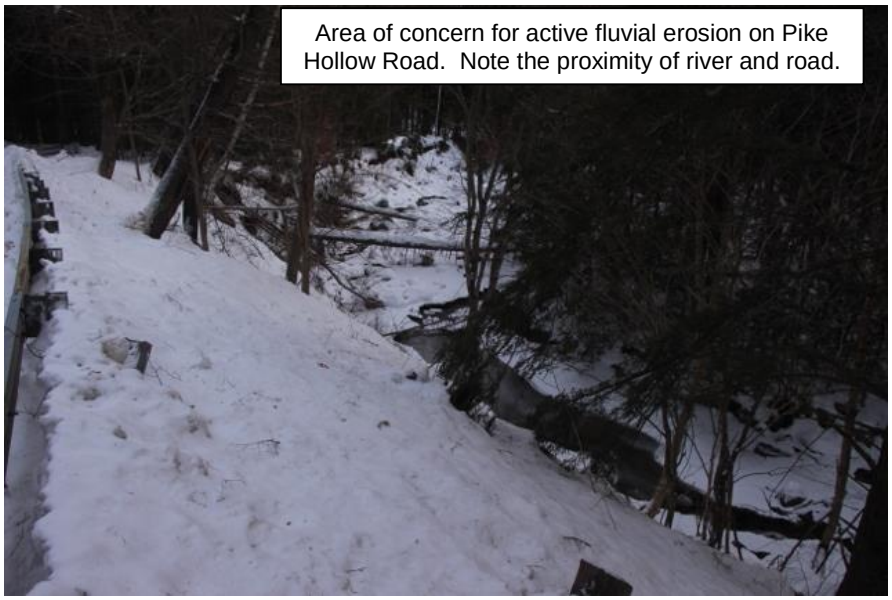
Area of concern for fluvial erosion on West Jamaica Road. Note the proximity of river and road.

Impact of Flooding and Fluvial Erosion

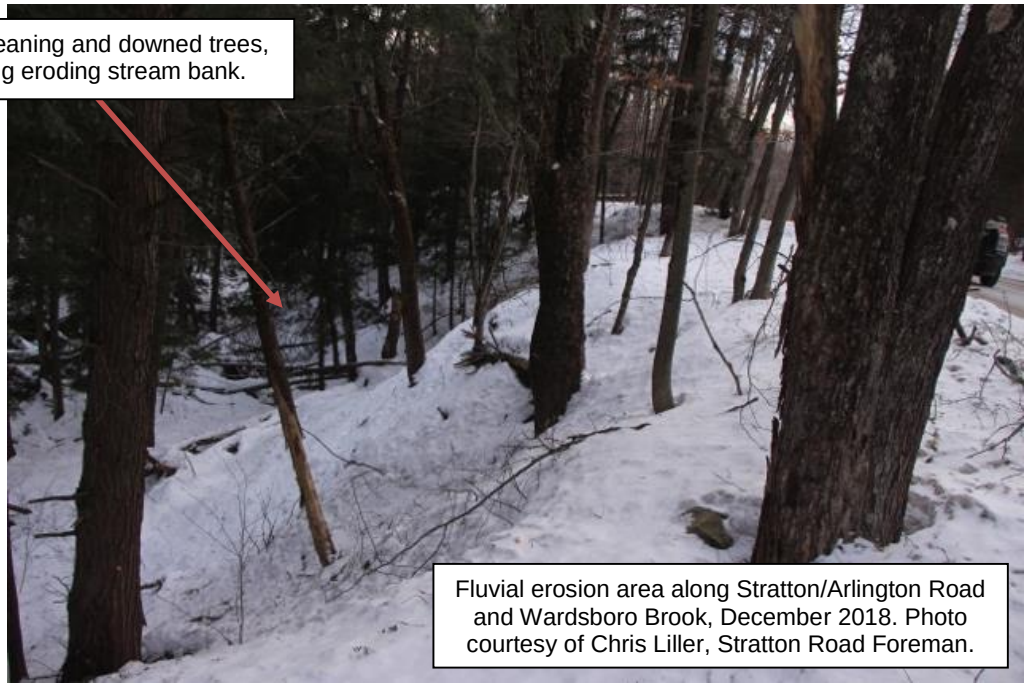
There is very limited FEMA designated floodplain throughout the whole of Stratton, due to the hilly and mountainous terrain.

There are two areas that the Road Foreman is concerned about with future fluvial erosion risk. The first area of concern is on Pike Hollow Road where the Brook currently is very close to the Road. There is a drop-off where the elevation from the road to the Brook is approximately 40' and this would affect approximately 2-300' of the Road, if there was a slope failure from fluvial erosion.

Area of concern for active fluvial erosion on Pike Hollow Road. Note the proximity of river and road.



The other area of concern is on Stratton/Arlington Road and is about 500' south of an area that was fixed after Irene. It's another bank where the stream runs right next to the Road with an approximate 30-40' drop-off and it would affect 3-400' of Road potentially.



Fluvial erosion area along Stratton/Arlington Road and Wardsboro Brook, December 2018. Photo courtesy of Chris Liller, Stratton Road Foreman.

Flash floods typically occur in high elevation drainage areas as a result of summer thunderstorm activity. Drainage ditches and culverts are the biggest concern for local flash flooding events. Other areas of concern during flooding events are homes located along small brooks throughout town that are subject to rise during quick flash flooding events. Plan participants noted that there has been an increase in flash floods in recent years that cause washouts of road shoulders, but generally nothing too serious. They attribute the rise in larger bursts of rain events to climate change.

The town of Stratton is vulnerable to flooding, especially along Ball Mountain Brook and Wardsboro Brook. The potential for flooding in Stratton is magnified by its mountainous terrain, which increases the velocity of runoff. Narrow valleys then channel water and transform small streams into raging bodies of water. Roads, such as West Jamaica Road and Stratton-Arlington Road can be damaged during large rain events because of the steeply sloping terrain above them.

– 2014 Stratton Town Plan

Ice jam flooding is fairly common in Vermont in the early springtime, generally around March. The heavy rainfall, combined with runoff from snowmelt due to the mild temperatures, results in flooding of rivers, streams and creeks, mainly from the formation of ice jams. Stratton doesn't have mapped current or historic ice jams.[8] There are also no locally known problem spots for ice jams. This may be because of Stratton's higher elevation, whereas ice jams form more in lower elevation floodplain areas where waterways and debris have been able to collect and build up.

Extent

The extent of a flood event can vary from a minor event due to a typical rain event or could be a major event as a result of rapid snow melt in spring, rain on frozen ground, or as a result of a

[8] CRELL Ice jam database/map http://icejams.crrel.usace.army.mil/apex/f?p=524:5:0::NO

tropical depression or storm. Town historians claim that the extent of flooding is such that brooks may breach their banks and flow onto land and down roads. It's important to note that this report is looking at flooding data for this section in the light that flooding is the cause of fluvial erosion.

The highest recorded measurement on the West River at the nearest stream gauge to Stratton (in Jamaica, VT) was 14.87 feet, which was measured on December 31, 1948.[9]

Extent for thunderstorms/heavy rain events: The tables below shows the top 10 rain events at a former USGS weather monitoring station in West Wardsboro. This table shows that TS Irene in 2011 was the highest 1-day precipitation value between 1978 and 2012. Most stations take their observations in the morning (7 and 8am are the most common times), so the precipitation would have fallen between 7am on the previous date to 7 am on the date listed in the table.

Maximum 1-Day Total Precipitation[10] for West Wardsboro, VT		
Rank	Value (inches)	Ending Date
1	6.22	8/29/2011
2	4.75	9/17/1999
3	4.55	7/16/2000
4	4.42	10/9/2005
5	4.22	7/14/1996
6	4	3/14/1993
7	3.86	9/28/1985
8	3.85	10/1/2010
9	3.7	4/16/2007
10	3.69	8/7/1990
Period of record: 1978-09-01 to 2012-03-31		

To give context to this data, the "Precipitation Frequency Estimates" table below allows one to determine the event frequency based on the rainfall amount. This table puts Irene (24-hour value) at between a 25 and 50-year event for Stratton. It is important to remember that precipitation levels vary throughout the region.

The table below is specific for Stratton, and has the values associated with the size of an event in order to determine the storm frequency[11]. This is for reference. Stratton should consider what size event is reasonable to set standards to build to, for both infrastructure and buildings. Some experts advise that towns should be using the 10 year one hour or two-hour frequency estimates to reflect the monsoon type storms that are seen in the region. Infrastructure built for 24 hour events often can't keep up with high intensity storms leading to erosion and street flooding. This should be a consideration in the future.

[9] USGS Stream gauge 01155500 West River at Jamaica, VT (66 years of record) http://waterwatch.usgs.gov/index.php.
[10] Data provided by the NOAA, Northeast Regional Climate Center at Cornell University. http://www.nrcc.cornell.edu/. 10/10/18.
[11] NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: Stratton, VT <https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=vt> accessed 10/10/18.

PRECIPITATION FREQUENCY ESTIMATES (in inches)										
by duration for ARI (years):	1	2	5	10	25	50	100	200	500	1000
5-min:	0.306	0.358	0.444	0.515	0.613	0.689	0.764	0.848	0.959	1.04
10-min:	0.433	0.508	0.629	0.73	0.869	0.976	1.08	1.2	1.36	1.48
15-min:	0.51	0.597	0.74	0.859	1.02	1.15	1.27	1.41	1.6	1.74
30-min:	0.713	0.834	1.03	1.2	1.42	1.6	1.77	1.97	2.22	2.42
60-min:	0.916	1.07	1.33	1.54	1.83	2.05	2.27	2.52	2.85	3.1
2-hr:	1.21	1.41	1.73	2	2.38	2.66	2.95	3.27	3.69	4.01
3-hr:	1.41	1.64	2.02	2.34	2.77	3.11	3.44	3.82	4.33	4.71
6-hr:	1.8	2.11	2.62	3.04	3.62	4.07	4.51	5.05	5.76	6.3
12-hr:	2.26	2.67	3.35	3.92	4.69	5.29	5.89	6.66	7.68	8.46
24-hr:	2.76	3.29	4.16	4.88	5.88	6.65	7.42	8.45	9.82	10.9
2-day:	3.28	3.93	4.99	5.86	7.07	8	8.93	10.2	11.9	13.2
3-day:	3.63	4.34	5.49	6.45	7.76	8.78	9.8	11.2	13.1	14.5
4-day:	3.91	4.66	5.87	6.88	8.26	9.33	10.4	11.9	13.8	15.3
7-day:	4.66	5.46	6.77	7.86	9.35	10.5	11.7	13.2	15.2	16.8
10-day:	5.43	6.26	7.62	8.76	10.3	11.5	12.7	14.2	16.2	17.8
20-day:	7.86	8.77	10.3	11.5	13.2	14.5	15.8	17.2	19	20.4
30-day:	9.84	10.8	12.4	13.7	15.6	17	18.4	19.6	21.3	22.6
45-day:	12.2	13.3	15	16.4	18.4	19.9	21.4	22.6	24.2	25.4
60-day:	14.1	15.2	17	18.5	20.6	22.2	23.8	25	26.6	27.8

Extent of Fluvial Erosion

The first being on Pike Hollow Road. There is a section where the brook currently is very close to the road. I would estimate the elevation from the road to the stream is approximately 40' and this would affect approximately 2-300'.
The other area is on Stratton/Arlington Road and is about 500' south of an area that was fixed after Irene. Its another bank where the stream runs right next to the road with an approximate 30-40' dropoff and it would affect 3-400' of road potentially. I'll snap some pictures of these with my phone and send them to you later today.

Probability of Fluvial Erosion

Fluvial erosion is highly likely and exists in Stratton, especially due to the damage caused by TS Irene in 2011, where fluvial erosion hazard flooding de-stabilized many steep-sloped areas and washed out riparian zones next to roads and streams. Fluvial erosion is directly associated with flooding and large scale rain events and spring snow melt. Inundation flooding events do not present a hazard in Stratton, but fluvial erosion caused by flooding does present a hazard. With a high elevation drainage area, Stratton is subject to flash flood events that erode stream banks and adjacent areas. There are events every year, especially during spring snow melt and late summer season rains.

Past Occurrences

Since 1996, when National Climatic Data Center detailed records start, there have been 41 flood events in Windham County, Vermont. Stratton experiences routine spring flooding, but this is not always documented. There have been 16 Presidential Disaster Declarations in Windham County since 1953. Of these, 7 were severe storms, 5 were floods, 2 hurricanes, 1

snow event and 1 severe ice storm.[12] The only declaration that Stratton was a part of, as far as plan participants are aware, is Tropical Storm Irene in 2011.

Disaster Declarations for Windham County, VT

Disaster Number	Incident Begin Date	Incident End Date	Declaration Date	Incident Type	Title	Disaster Close Out Date
4356	10/29/2017	10/30/2017	01/02/2018	Severe Storm and Flooding	SEVERE STORMS AND FLOODING	
4043	5/20/2011	5/20/2011	11/8/2011	Severe Storm(s)	SEVERE STORMS AND FLOODING	
4022	8/27/2011	9/2/2011	9/1/2011	Hurricane	TROPICAL STORM IRENE	
3338	8/26/2011	9/2/2011	8/29/2011	Hurricane	HURRICANE IRENE	3/10/2014
1816	12/11/2008	12/18/2008	1/14/2009	Severe Ice Storm	SEVERE WINTER STORM	10/15/2014
1698	4/15/2007	4/21/2007	5/4/2007	Severe Storm(s)	SEVERE STORMS AND FLOODING	3/13/2013
1559	8/12/2004	9/12/2004	9/23/2004	Severe Storm(s)	SEVERE STORMS AND FLOODING	1/4/2011
1488	7/21/2003	8/18/2003	9/12/2003	Severe Storm(s)	SEVERE STORMS AND FLOODING	1/4/2011
3167	3/5/2001	3/7/2001	4/10/2001	Snow	SNOW	2/28/2005
1336	7/14/2000	7/18/2000	7/27/2000	Severe Storm(s)	SEVERE STORMS AND FLOODING	6/30/2008
1307	9/16/1999	9/21/1999	11/10/1999	Severe Storm(s)	TROPICAL STORM FLOYD	6/30/2008
1124	6/12/1996	6/14/1996	6/27/1996	Flood	EXTREME RAINFALL AND FLOODING	2/23/2005
1101	1/19/1996	2/2/1996	2/13/1996	Flood	ICE JAMS AND FLOODING	2/17/2005
518	8/5/1976	8/5/1976	8/5/1976	Flood	SEVERE STORMS, HIGH WINDS & FLOODING	4/16/1981
397	7/6/1973	7/6/1973	7/6/1973	Flood	SEVERE STORMS, FLOODING, & LANDSLIDES	11/12/1976
277	8/30/1969	8/30/1969	8/30/1969	Flood	SEVERE STORMS & FLOODING	5/26/1972

Detail on Specific Flooding Events that have Affected Western Windham County:
June 9, 2015 - A moist and unstable air mass ahead of an advancing cold front led to the developing of thunderstorms during the early afternoon hours on Tuesday, June 9th across eastern New York. As the thunderstorms organized into small lines, some of the thunderstorms produced wind damage, mainly to trees and power lines. These thunderstorms reached southern Vermont by the midafternoon hours and produced a report of wind damage near Halifax. Trees and wires were reported down during a thunderstorm on McMillan Road in Halifax. Thunderstorms ended over the region by the late afternoon, as the cold front crossed the region from west to east.

July 14, 2014 - As a strong area of low pressure moved across upstate New York on Monday, July 28th, repeated rounds of thunderstorms occurred during the afternoon and evening hours. This led to flash flooding across northern Windham County, as small streams and creeks rapidly overspread their banks. In addition, the Williams River reached flood stage due to the rapid surge in water. Although the worst of the flooding remained north of Windham County in Windsor County, many residents reported this flooding to be the worst seen in the area since Tropical Storm Irene in 2011. Heavy rain from thunderstorms led to flash flooding in Windham. The access road to the Tater Hill Golf Course was washed out as a result of the flooding.

[12] FEMA tool: Data Visualization: Disaster Declarations for States and Counties: Windham County, VT http://www.fema.gov/data-visualization-disaster-declarations-states-and-counties Accessed 5/14/18.

July 7, 2014 - A warm and humid air mass was in place across southern Vermont on the afternoon of Monday, July 7th. A cluster of showers and thunderstorms moved from upstate New York into southern Vermont during the mid-afternoon hours. These thunderstorms had previously weakened, but were still associated with very strong winds aloft. As these thunderstorms interacted with the high terrain of the southern Green Mountains, they produced gusty winds. These winds caused damage to trees and power lines near Readsboro. The thunderstorm continued eastward towards the Connecticut River Valley, but did not produce any additional severe weather before exiting the state to the east.

September 12, 2013 - A series of cold fronts moved towards the region on Thursday, September 12th. Despite some periods of cloudiness, a warm and humid air mass ahead of the approaching boundaries allowed for moderate amounts of instability to be in place. Along and ahead of the boundaries, several lines of showers and thunderstorms developed and moved across the region during the afternoon and early evening hours. In addition to a large amount of cloud to ground lightning, a few of the thunderstorms became severe, with damaging wind gusts. Several trees were downed across the region.
Some areas that received repeated showers and thunderstorms experienced flash flooding as well, with roads washed out and/or closed as a result. The hardest hit areas were within the town of Brattleboro. Two to four inches of rain in a short period of time was reported in the areas that experienced flash flooding.

September 1, 2013 - A moist and humid air mass was in place across the region on Sunday, September 1st. A surface frontal boundary was situated across eastern New York into southern New England during the morning hours. During the day, the frontal boundary slowly lifted northward. With enough instability in place due to daytime heating, some showers and thunderstorms developed along this frontal boundary. The showers and thunderstorms tracked over the same locations during the afternoon hours across southern Vermont. As a result of the persistent heavy rain, flash flooding occurred in downtown Wilmington. A mudslide also occurred due to the heavy rainfall. By the evening hours, the showers and thunderstorms were located north of the region and beginning to weaken, and the threat for flash flooding ended.

July 10, 2013 - Warm moist air over the northeast provided the ingredients for heavy rainfall, and saturated ground from record May and June rainfall made the region vulnerable to flooding. Showers and thunderstorms developed during the afternoon and evening of July 2 2013, producing heavy rainfall moved repeatedly across southeast Vermont, with isolated flash flooding.

Tropical Storm Irene – August 28, 2011 - The Federally Declared Disaster DR-4022, Tropical Storm Irene, tracked northeast across eastern New York and western New England during Sunday, August 28th, producing widespread flooding, fluvial erosion, and damaging winds across the region, including Stratton. Tropical Storm Irene caused rivers and streams to overflow. Stratton was isolated for several days after the storm due to road washouts. Stratton's vulnerability lies in the fact that the roads leading out of Stratton, through surrounding towns, are vulnerable because of their location along waterways; this includes Stratton Arlington Road, Pikes Falls Road, West Jamaica Road, and portions of Route 100. There was a lengthy power outage after the storm, and this also meant that the landline phones were down, which made communications impossible for some areas without cell coverage.

Route 100 in Windham County was closed due to flooding and wash outs. Portions of Route 100 remained closed after the flood waters receded due to significant damage. The North Branch Deerfield River runs along a portion of Route 100 from the Mount Snow area to Wilmington. Along Dover Road, one house was destroyed and floated down the North Branch Deerfield River and other houses were destroyed or significantly damage. Much of the road was reported washed away. ||A woman drowned when the car she was in became trapped by flood waters from the North Branch Deerfield River in Wilmington. The time of her death is unknown. Rainfall amounts generally averaged 4 to 8 inches. Much of the rain which fell occurred within a 12-hour period, beginning early Sunday morning, and ending Sunday evening. Strong winds also occurred across southern Vermont, with frequent wind gusts of 35 to 55 mph, along with locally stronger wind gusts exceeding 60 mph. The strongest winds occurred from the north to northeast during the morning hours, then from the west to northwest during Sunday evening. The combination of strong winds, and extremely saturated soil led to numerous downed trees and power lines across the region. This also resulted in widespread long duration power outages. In particular, the approximate number of customers affected by power outages included: Windham County, 18000. President Obama raised the federal match share to 90% from 75% for TS Irene relief, therefore lowering the state and local shares by 7.5% each. Total received by Stratton from FEMA Public Assistance for damaged infrastructure during Tropical Storm Irene was $1,030,499.06 (including Federal and State reimbursements). The main project was the Penny Avenue bridge over Pike Hollow Brook was PW 0912 and the Kidder Brook culver on Mountain Rd was PW 3012. The remainder of damages included various washout repairs, small culvert replacements and debris removal. The Penny Avenue bridge replacement had all engineered and was on the shelf awaiting funding before the storm, which washed it out, so that project was able to be expedited.

Kidder Brook washout of Mountain Road during Tropical Storm Irene, September 2011. Photo courtesy of Chris Liller, Stratton Road Foreman.

May 20, 2011 - Showers and thunderstorms developed in a moist and unstable air mass across the region. Storms across a portion of Windham County resulted in flash flooding in the Saxtons River area. A wash out was reported on Bemis Hill Road at Westminster Road south of Saxtons River.

August 5, 2008 - The passage of a strong upper level disturbance, combined with a moist and unstable air mass in place, led to the development of numerous thunderstorms across southern Vermont during Thursday afternoon on August 7th, some of which contained large hail. In addition, locally very heavy rainfall led to flash flooding in some areas.

April 15-21, 2007 - Flash floods and inundation flooding over a period of several days - The Town of Halifax got 8 inches of snow in the morning of April 15, followed by 6-8 inches of rain. The snow caused a berm at the Town Offices holding in the rainwater which caused a lot of inundation flooding. Rain and snow caused damage to roads and utility lines across Windham County. Across the state, nearly $3.6 million was obligated as part of the FEMA Public Assistance Program.

June 29, 2006 - After being nearly stationary while deepening for several days, an upper-level trough from the Great Lakes to the lower Ohio Valley was accelerating eastward at daybreak on June 29. An associated weak low pressure over Lake Erie trailed a cold front through the Ohio Valley. During the day, this system moved rapidly eastward and touched off thunderstorms in the warm, humid air mass over western New England in the early evening. Torrential rainfall produced flash flooding in Windham County.

October 8, 2005 - On October 8 at daybreak, a nearly stationary cold front was over southwestern New England. The air over the northeastern United States was very moist. Low pressure in the vicinity of the eastern Carolina states moved slowly north northeast along the cold front. Heavy rain fell over southern Vermont through the early morning hours of October 9. During this period, there was over 6 inches of rainfall in southern Vermont, triggering widespread flooding. Several evacuations of people from their homes occurred. Route 100 in was closed in portions.

October 29, 2003 – Areas of low pressure moved northeast along a frontal boundary across New York and western New England from Sunday night, October 26th into Monday night, October 27th. Rainfall ranged from 1 1/2 to 2 1/2 inches with the greatest amounts in and east of the Green Mountains.

August 3, 2003 – A tropical air mass was in place over southern Vermont on August 3. With a strong disturbance over the Great Lakes adding weak lift to a very unstable atmosphere, scattered showers and thunderstorms erupted during the afternoon hours. A slow moving storm over Windham County produced Doppler radar estimated rainfalls of 3 to 4 inches in about four hours. The torrential rains took a toll, washing out roads in the city of Londonderry. County Highway 121 was washed out in the Town of Windham. Massive flooding occurred in the city of Grafton at the base of Fire Pond and Hinkley Brook roads, where water, debris and mud washed those roads out. The raging debris knocked a house off its foundation and damaged several other ones. This was the same area affected by the infamous Flood of 96 which was even more severe. Heavy rains also washed away a small covered bridge in Grafton.

September 28, 2002 - The remnants of Tropical Storm Isidore moved northeast from the Ohio Valley on Friday, September 27th into New York state during the afternoon of the 27th and across central Vermont during Friday night, September 27th. Heavy rain accompanied this system with generally between 1 1/2 and 2-inches of rainfall reported. Amounts were locally higher in the mountains. Earlier in the month, September 14-15, the remnants of Tropical Storm Hannah resulted in rainfall of around an inch across the same area. No flooding was reported with either event.

July 2000 - A stalled frontal boundary across extreme southern Vermont interacted with a strong upper level disturbance from July 15 into early July 16. The result was a slow-moving low pressure area which formed over Virginia. This low pumped a deep layer of tropical air into the region and produced the second widespread heavy rainstorm of the summer. Two to four

inches of widespread rain fell, with locally higher amounts across the higher terrain of Windham County. Specific amounts included 3.00 inches at Bennington and 5.17 inches at West Wardsboro, in Windham County. This rain produced enough runoff to cause the Battenkill to exceed the six-foot flood stage by about a foot at Arlington, Bennington County, a 47 year high. The swelled river flooded the Batten Kill Canoe company and adjacent river property. Also, the Deerfield River rose 6 feet above unofficial flood stage in Wilmington, Windham county. Several roads were reported under water.
The widespread heavy rain event set the stage for more widespread flooding later Sunday. The air remained very moist and unstable in wake of the rainstorm. More thunderstorms erupted late in the day across southern Vermont. These storms moved very slowly, trained over the same region, and were further enhanced by the steep terrain. The thunderstorm rainfall, as well as the earlier rainstorm, dumped in excess of 8 inches locally at Newfane, Windham county. Since the ground was already saturated, the heavy rains from the thunderstorms produced flooding and flash flooding across the region. In Shaftsbury, Bennington county, County Route 67 was washed out. U.S. Route 7 was closed due to flooding and rockslides. Numerous other roads were closed, some even washed out. In the city of Bennington, more roads were flooded or washed out.
In Windham County, a five-mile stretch of State Route 30 was closed due to flooding and residents were evacuated. Street flooding was reported at Brattleboro. Severe damage took place on South Wardsboro and Steep Way Roads. A home suffered mud damage as mud - laden water had flowed through the house.
Lightning from a thunderstorm struck a man while he was jogging in the city of Bennington, injuring him.

September 17, 1999 - The remnants of Hurricane Floyd moved up the eastern seaboard on September 16 and during the early hours on September 17. The storm brought both high winds and heavy rainfall to Southern Vermont, which included a large swath of 3 to 6 inch amounts. Specific rainfall amounts included 2.91 inches in Bennington, 3.89 inches in Sunderland, 4.54 inches at Peru and 5.70 inches at Brattleboro. The rain produced significant flooding across the region, which proved destructive. Many smaller tributaries reached or exceeded bank full. Water from the Millbrook in Weathersfield washed away a portion of State Route 5. The World's Fair in Tunbridge was cancelled for the first time in many years.
Winds from the passage of Floyd were estimated to have gusted to over 60 mph, especially over hill towns. The combination of the wind and very saturated ground, produce widespread downing of trees and power lines across much of Southern Vermont. A woman was injured on Tavern Hill in Putney, Windham County when a tree came crashing down on her Volvo, destroying the vehicle. Some trees fell on vehicles and houses. The rain and wind produced power outages across the region. As many as 2,000 people lost power in Southern Vermont.

June 19, 1998 - Thunderstorms with torrential downpours produced flash floods across parts of Windham County. Shoulders of routes 100 and 112 were washed out near Jacksonville and Halifax. Flooding also occurred in the Putney area and at Rawsonville. Several mountain roads were washed out throughout the County.

In 1996, Between Saturday morning July 13 and Sunday morning July 14 rainfall from three to five inches was common across southern Vermont resulting in significant damage and a Presidential Declaration of Emergency. Flooding occurred throughout New England causing millions of dollars in damage. The remnants of Hurricane Bertha tracked from the Mid-Atlantic region northeast to Quebec, Canada. Several roads and streams were flooded throughout the region, including low-land flooding along the Hoosic River in Bennington County. Scattered

power outages also occurred over the area, when strong winds downed water-laden tree branches onto wires.

During 1976, flooding occurred throughout New England, as result of Hurricane Belle, causing millions of dollars in damage.

In 1973 there was an extreme rainfall event from June 28-30 that affected all areas of Vermont except the northwest section. Rainfall amounts as much as 6 inches in 24 hours in some locations. This was the largest rain event since the 1927 flood. Highway damage was extensive in the south-central, southeastern, and northeastern areas of the State. Three persons were killed in the 1973 flood, and damage was estimated at $64 million. Sizable crop loss was reported, and damage to State highways was estimated to be $10 million. The entire State was declared a disaster area.[13] Route 100 was completely washed out, as was Fowler Road. Kentfield Road was badly damaged. After this event, there was extensive dredging, berming and windrowing in an attempt to control channel location and reduce future flood impacts.

In 1938 major hurricane flooding took out a portion of Penny Avenue which was the connector to Pike Hollow Road; this portion of Penny Avenue was not re-established.

The Vermont Flood of 1927 was the deadliest flooding event in the history of the State; eighty-four people were killed with over $28 million in property damage. The Spring Floods of 1938, which had an effect on all of New England, caused $113 million in damage, killed 24 people and made 77,000 people homeless. During this flood alone, the main street of Hooksett, New Hampshire was 18 to 20 feet underwater.

Sources used
Local knowledge of areas of concern and impacts, Discussions and emails with Stratton Road Foreman and Town Clerk between August 2018 and January 2019, *Ball Mountain Brook Corridor Plan* completed May 2007

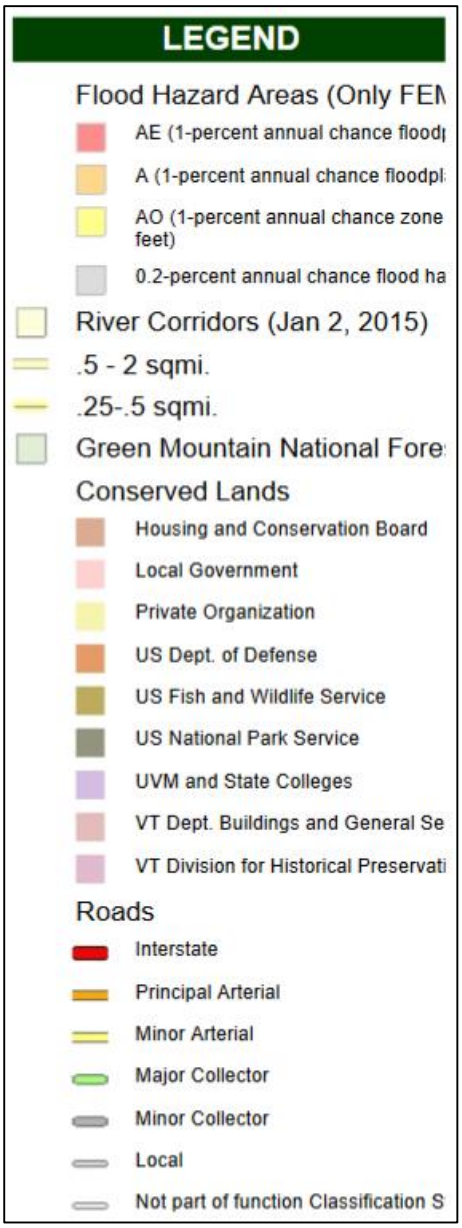
Geographic Area of Hazard/Location/Occurrence of Fluvial Erosion and Flooding/Special Flood Hazard Area and River Corridor Mapping

The river Corridor mapping (included in this plan) shows the ANR defined River Corridors, which are likely to have fluvial erosion. The map also points out some of the issues discussed in the text of particular problem spots. Mitigation projects on private land require the consent of the land owner to complete.

[13] USGS "Vermont Floods and Droughts" information page http://md.water.usgs.gov/publications/wsp-2375/vt/. Accessed 4/3/15.

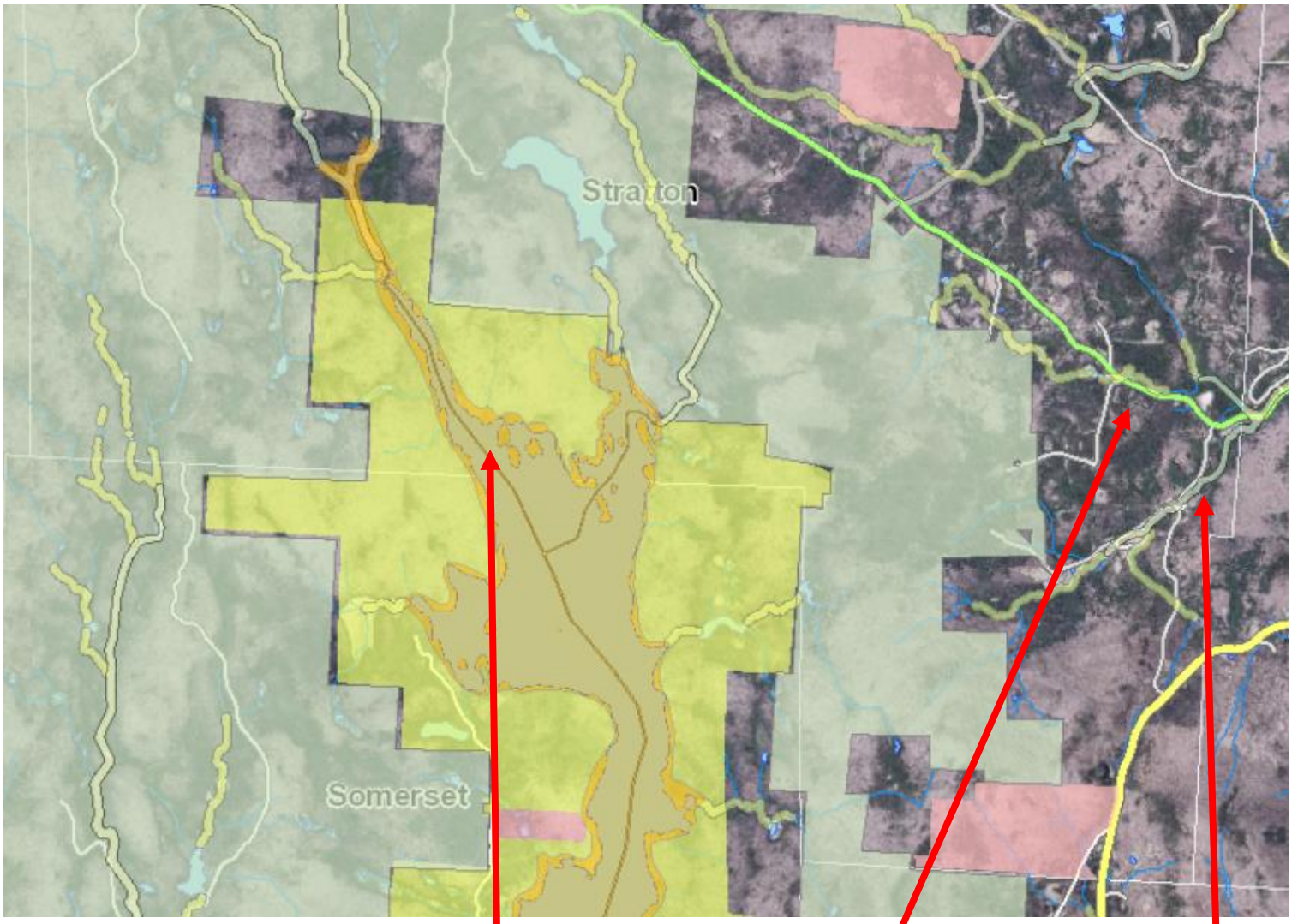
FEMA has mapped “A” zones in Stratton. “A” zones do not have Base Flood Elevations determined. Properties within the SFHA, that have a mortgage, are required to carry flood insurance, and properties without a mortgage are advised to. Stratton’s participation in the NFIP gives residents access to discount flood insurance through the National Flood Insurance Program (NFIP). The Flood Hazard Summary Sheets on FloodReady Vermont’s website says there are 0 structures in the Special Flood Hazard Area.

The maps on the following pages were created using the Vermont Agency of Natural Resources ‘Natural Resources Atlas. The legend here pertains to these accompanying maps. These maps are show the town in two north south sections. FEMA SFHA is shown in orange. The floodplains shown in these maps are based on the FEMA Flood Insurance Rate Maps (FIRMs) available through the FEMA Map Service Center.[14] This map shows the River Corridors that Vermont Agency of Natural Resources (ANR) has mapped. The ANR defined River Corridor also includes a 50-foot setback requirement on all streams with a watershed between .5 and 2 square miles. Together the mapped area and the small stream buffers constitute the River Corridor. River Corridors encompass an area around the present channel where fluvial erosion, channel evolution and down-valley meander migration are most likely to occur. The first map shows the northern half of Stratton and the second map is the southern half.



[14] FEMA Map Service Center https://msc.fema.gov/portal

The below map shows the Special Flood Hazard Areas (SFHAs) in orange (A zone) and the River Corridors in cream color. In the northern portion of Stratton, shown below, SFHA is located on Ball Mountain Brook along Pikes Falls Road. River Corridor is scattered along many smaller streams throughout Stratton. The shaded portions of Stratton indicate various ownership of conserved lands.



The feeder stream and northern portion of Somerset Reservoir lies in Stratton. SFHA is designated for the Reservoir and upstream area. Somerset Reservoir serves Somerset Dam, which is a hydroelectric dam owned by Great River Hydro.

Wardsboro Brook is close to Stratton-Arlington Road in this area. Some trees have been coming down along the bank indicating active fluvial erosion.

The Town completed a bank stabilization project here after experiencing a large amount of fluvial erosion after TS Irene in 2011

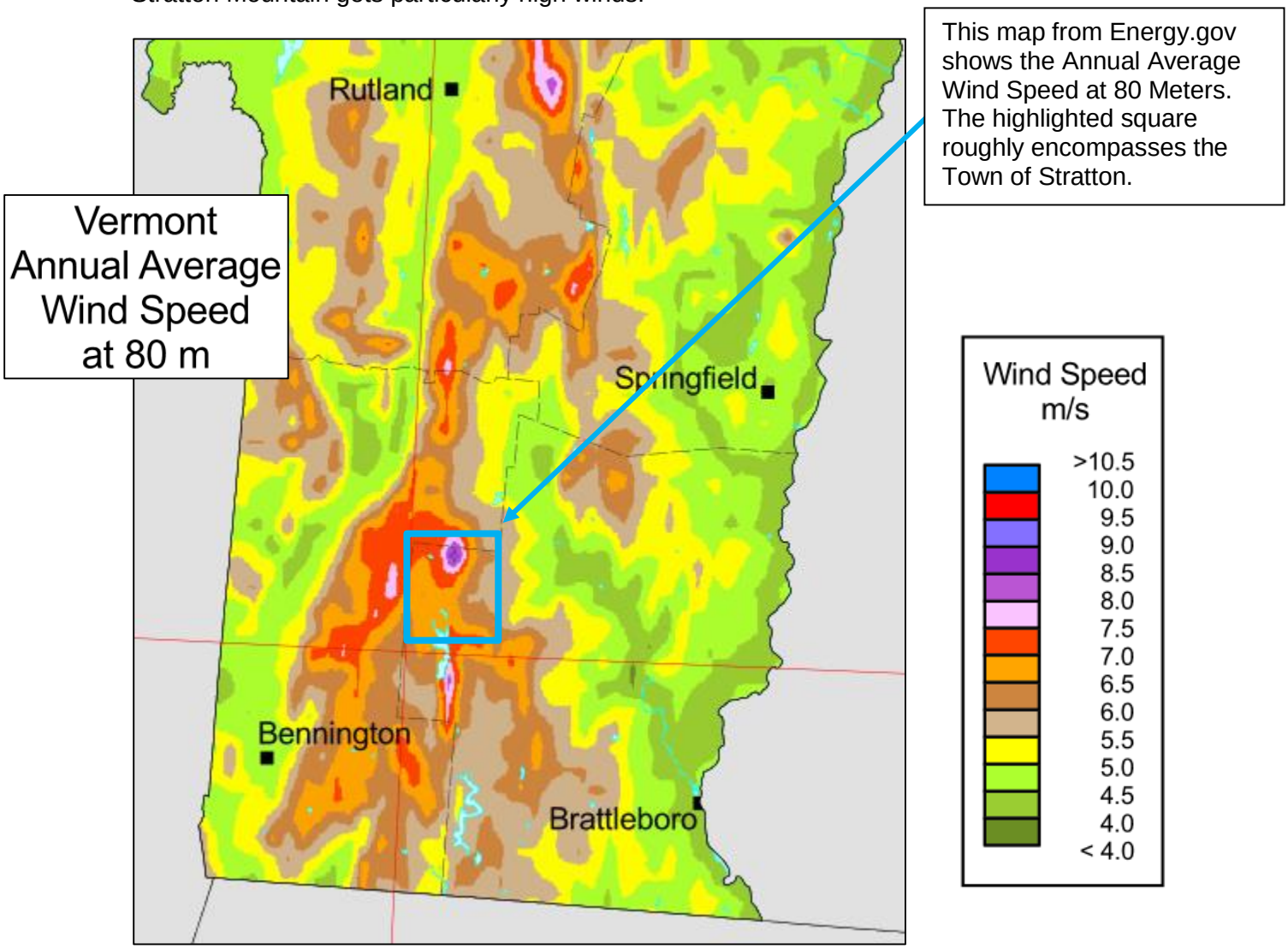
High Winds

Description and Impact

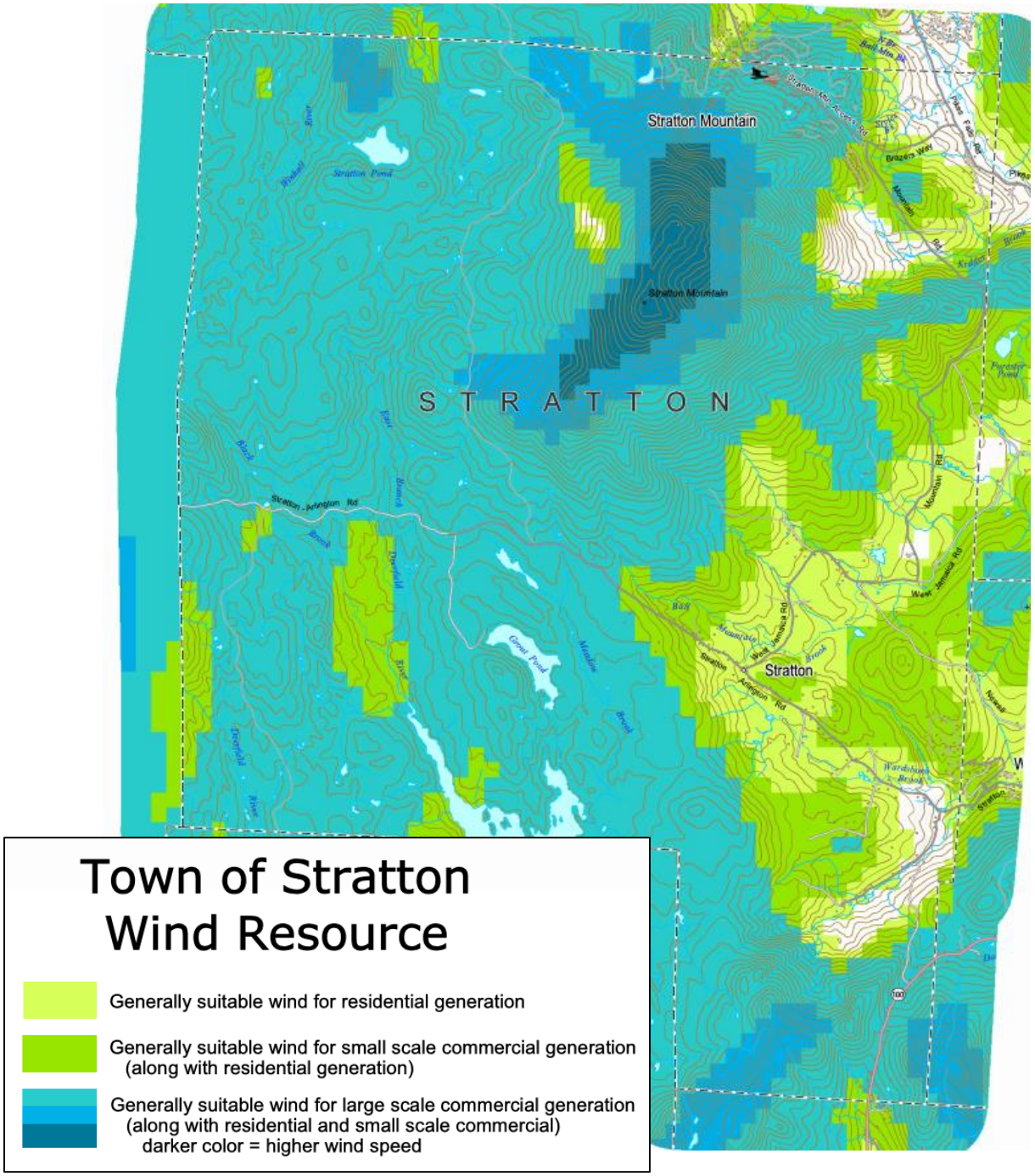
High winds are fairly common in Vermont all across the state. High wind events that are sufficient enough to cause damage to property and taking down trees can occur at any time of year. High wind can damage roofs, uproot trees, break branches from trees and take down power lines anywhere in Town. High winds can be associated with thunderstorms, snowstorms, hurricanes, tropical storms, or just wind storms. High winds tend to sweep through the region after the passage of a weather front. The National Climatic Data Center data indicates that 30 high wind events have occurred in Windham County since 1996.

Geographic Area of the Hazard

High wind events are not localized and can affect any part of the Town. Higher elevations are more susceptible. Stratton is a particularly high elevation town, with Stratton Mountain being the highest point in the Windham Region. The below map shows annual average wind speeds for southern Vermont south of Rutland. This gives an idea of wind speed in the town in comparison to its surroundings. The purple area within the highlighted square shows that Stratton Mountain gets particularly high winds.



For a more localized look at wind speed, the below map shows wind power opportunity correlated only to wind speed[15]. Stratton Mountain having the highest wind speed, but relatively high wind speed throughout much of the Town, with the exception of the most densely developed areas of the residential development at the Stratton Mountain Resort and in the populated part of the Town outside of the Resort.



[15] This map was developed by the Windham Regional Commission for use by the Town and Region in energy planning efforts. It is available online at: https://drive.google.com/drive/u/1/folders/0B2c_6utSGstLZjMtSHFHU3JlRnM.

Extent

Winds are brought into the region mainly due to low pressure systems coming out of the Canadian zone, or high pressures coming off the Gulf Coast.

Extent/magnitudes of Hurricanes and Tropical Storms are ranked using the Saffir-Simpson Scale in the Western Hemisphere, as follows: CAT1=74-95 mph winds, CAT2=96-110 mph winds, CAT3=111-129 mph winds, CAT4=130-156 mph winds, Tropical Storm=39-73 mph winds, Tropical Depression=0-38 mph winds.

Probability

The Hazard Mitigation Plan participants ranked wind as being highly likely, or having a 100% probability of occurring within any given year. Wind storms of varying degrees are experienced every year.

There are many trees in close proximity roads, buildings and power lines throughout the town. Mountain Road has a higher probability of downed trees because it has more trees along it than other roads. Mountain Road also has very few homes along it and there are no power lines on a portion of Mountain Road which means less of an issue when a tree falls in that stretch of the road. Stratton-Arlington Road also has no power lines from about ¾ of a mile east of Grout Pond Road, so downed trees past that point are not an issue on power lines. That being said, otherwise in Stratton trees on power lines is an issue at times during and after wind events or ice and snow events, meaning power outages are a secondary effect and a hazard to vulnerable populations.

Past Occurrences

Aug. 28, 2011 - Tropical Storm Irene tracked north northeast across eastern New York and western New England during Sunday, August 28th, producing widespread flooding, and damaging winds across the region. Strong winds occurred across southern Vermont, with frequent wind gusts of approximately 30 mph in Grafton. The strongest winds occurred from the north to northeast during the morning hours, then from the west to northwest during Sunday evening. The combination of strong winds, and extremely saturated soil led to numerous downed trees and power lines across the region. This also resulted in widespread long duration power outages.

November 14, 2003 - A low pressure area deepened as it tracked east across the Great Lakes region into the Saint Lawrence Valley on November 13 and continued to deepen as it moved into the Canadian Maritimes by early November 14. A steep pressure gradient between this storm and high pressure building across the Ohio Valley resulted in high winds which knocked trees down in Stratton, Windham County during the predawn hours on November 14.

Mar. 10, 2002 - The pressure gradient between deep low pressure over Ontario, and high pressure off the southeast coast, produced a strong southerly flow across southern Vermont on the evening of March 9. Then, a strong cold front moved across the region shortly after midnight, early on March 10th. A line of showers and embedded thunderstorms accompanied the front. Strong winds ahead of and along the front produced some damage across Windham

County. Law enforcement personnel reported a large number of trees and power lines down throughout the county.

December 12, 2000 - An area of low pressure developed across the Tennessee Valley late on December 11th. The storm then rapidly deepened as it moved northeast into the Ohio Valley, Saint Lawrence Valley and eventually across the Canadian Maritimes on December 12th. The pressure difference between this intensifying storm and a large arctic high pressure building over the Southeast, produce a high wind event across southern Vermont on December 12th. The strongest winds with the storm came after the passage of the cold front, during the midday hours. A strong westerly wind brought down large limbs, trees and power lines across Bennington county. Large limbs were blown down at Stratton Mountain in Windham county.
September 16, 1999 - The remnants of Hurricane Floyd moved up the eastern seaboard on September 16 and during the early hours on September 17. The storm brought both high winds and heavy rainfall to Southern Vermont. Winds from the passage of Floyd were estimated to have gusted to over 60 mph, especially over hill towns. The combination of the wind and very saturated ground, produce widespread downing of trees and power lines across much of Southern Vermont. A woman was injured on Tavern Hill in Putney, Windham County when a tree came crashing down on her Volvo, destroying the vehicle. Some trees fell on vehicles and houses. The rain and wind produced power outages across the region. As many as 2,000 people lost power in Southern Vermont. Over $175,000 in damages countywide.

Nov. 27, 1997 - The passage of a cold front produced strong winds across southern Vermont during the early morning hours of November 27. Winds gusting to 40-50 miles an hour downed trees and power lines in Bennington and Windham Counties. Approximately 1,500 customers lost power for a six- to eight-hour period.

Jul 20, 1996 - An unusually intense low pressure system tracked across the northern Great Lakes to Quebec, Canada during July 19 and 20. The system generated strong northwest winds, which downed trees and power lines over parts of Windham County in southern Vermont.

Feb. 24, 1996 - A rapidly deepening low pressure system moved from southern New Jersey northeast to northern Maine by the morning of February 25. This system brought damaging winds to southern Vermont including Bennington and Windham counties, which downed many trees across the area and produced scattered power outages.

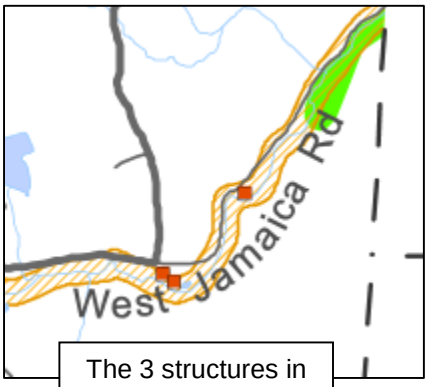
Jan 19, 1996 - An intense area of low pressure located over the Mid-Atlantic Region on Friday morning January 19th produced damaging winds across southern Vermont. This storm was associated with a strong southerly flow which resulted in scattered reports of downed trees, limbs and power lines.

Sept. 21, 1938 - Hurricane Igor hit the region of Southeast Vermont to include the Town of Stratton, paralyzing the region and the state for weeks. As it was coming, packing winds over 100 miles an hour, authorities were unaware of the magnitude so no evacuation procedures were instituted and very few precautions were taken. As a result, over 600 people lost their lives and tens of thousands were left homeless. Wind, rain and flash flooding wiped out trees, church steeples and buildings, leaving behind nearly $400 million in damage statewide.

ASSESSING VULNERABILITY

Structures in the SFHA

There are 0 buildings within FEMA-designated Special Flood Hazard Areas (SFHAs).[16] There are 3 structures that lie in the River Corridor. The inset map here and the map on the following page shows the location of these three structures. The affected structures are clustered along West Jamaica Road close to the Jamaica town line. Vulnerabilities that exist in Stratton are primarily to roads and other associated infrastructure. There are no Tier II facilities located in either the SFHA or the River Corridor.



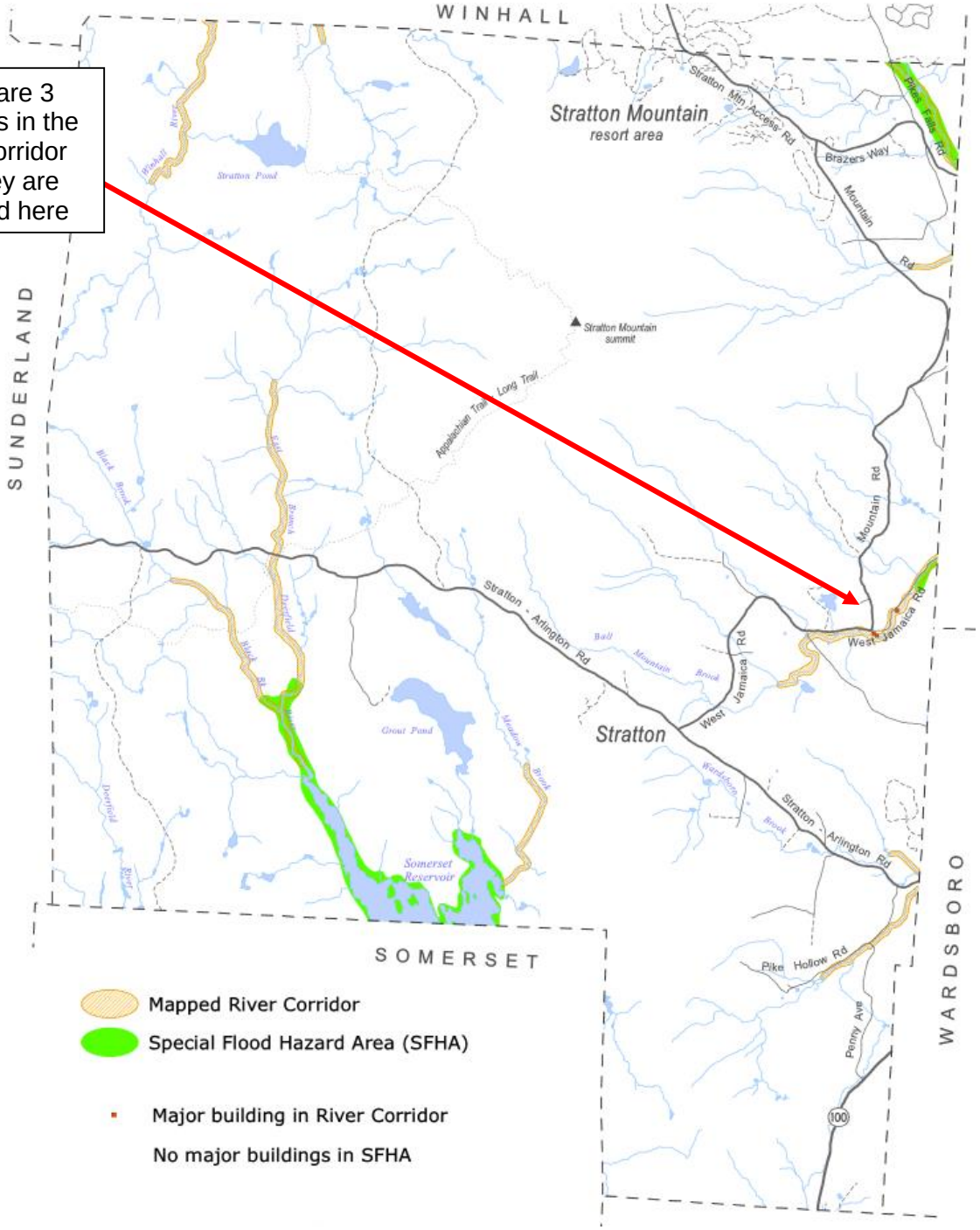
The 3 structures in the River Corridor

Example of a structure located between West Jamaica Road and Ball Mountain Brook.

[16] 2018 Flood Hazard Summary Sheet for Whitingham

Properties within SFHAs, that have a mortgage, are required to purchase flood insurance. Stratton's participation in the National Flood Insurance Program (NFIP) gives residents access to discount flood insurance through the National Flood Insurance Program. Flood insurance can still be purchased privately, however, it is more expensive. Development in SFHAs must meet additional construction standards as outlined in Stratton's floodplain regulations, which is part of their zoning ordinance and was most recently adopted in 2016.

There are 3 structures in the River Corridor and they are clustered here



Repetitive Loss Structures

According to FloodReady.Vermont.gov, Stratton has no repetitive loss claims.[17] A Repetitive loss structure is an NFIP-insured structure that has had at least 2 paid flood losses of more than $1,000 each in any 10-year period since 1978.[18] Severe repetitive loss (SRL) structures are NFIP-insured buildings that, on the basis of paid flood losses since 1978, meet either of the loss criteria described in the SRL section. SRL properties with policy effective dates of January 1, 2007 and later will be afforded coverage (new business or renewal) only through the NFIP Servicing Agent's Special Direct Facility (SDF) so that they can be considered for possible mitigation activities. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- 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
- 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.

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

The National Flood Insurance Program (NFIP) is a voluntary program organized by 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 NFIP was instituted in 1968 to make flood insurance available in those communities agreeing to regulate future floodplain development. As a participant in the NFIP, a community must adopt regulations that: 1) require any new residential construction within the 100-year floodplain to have the lowest floor, including the basement, elevated above the 100-year flood elevation; 2) allow non-residential structures to be elevated or dry flood proofed (the flood proofing must be certified by a registered professional engineer or architect); 3) require anchoring of manufactured homes in flood prone areas. The community must also maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed.

In return for adopting floodplain management regulations, the federal government makes flood insurance available to the citizens of the community. 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

[17] Report listing repetitive losses is available here:
<http://floodready.vermont.gov/sites/floodready/files/documents/cisrpt_RL%206.26.18.PDF>
[18] https://www.fema.gov/national-flood-insurance-program/definitions

policies are pre-FIRM, which means that flood insurance premiums for many will increase over the ensuing years.

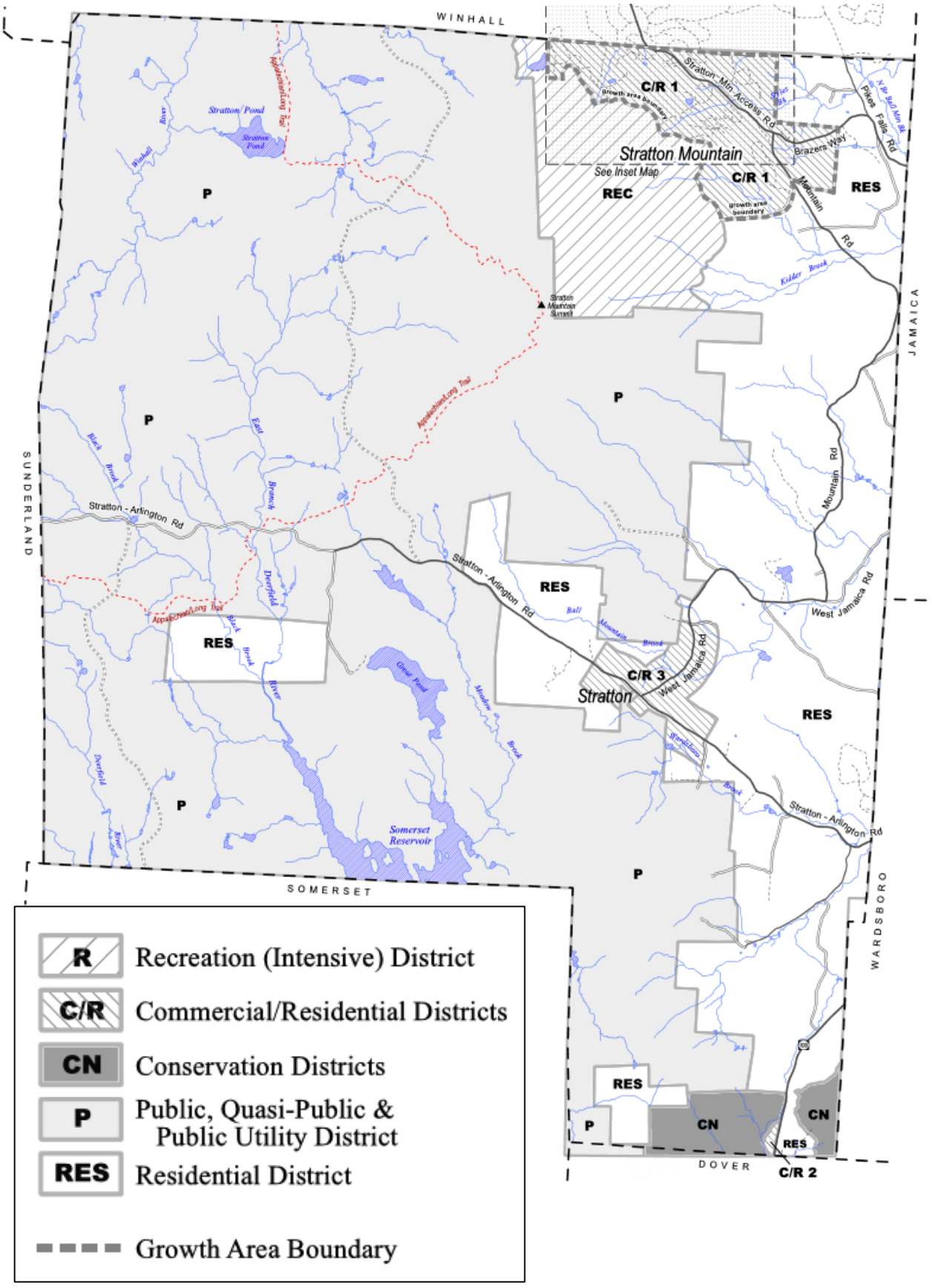
While the NFIP floodplain management criteria are administered by states and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Stratton joined the NFIP on January 31, 1975 and is a member in good standing (CID 500321). The latest floodplain ordinance was adopted on February 8, 2016 and is in the zoning ordinance. The latest Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) referred to in the development of this plan have an effective date of September 28, 2007.

The latest record indicates that there are two (2) active NFIP policies in Stratton. These policies have a total value of $450,000. There have been zero (0) NFIP claims filed in Stratton since they joined the NFIP.[19] Stratton may want to do public outreach to encourage the purchase of flood insurance for people in the River Corridor and the FEMA 500-year floodplain (Zone X on the FIRMs). Flood insurance is reasonably priced in these areas, and covers damage from fluvial erosion, as well as inundation flooding. Nearly 20% of flood insurance claims nationally are for flood damage to buildings located outside the SFHA.

The Town works with the elected officials, Windham Regional Commission, the state and FEMA to correct any compliance issues and prevent further NFIP compliance issues through continuous communications, training and education.

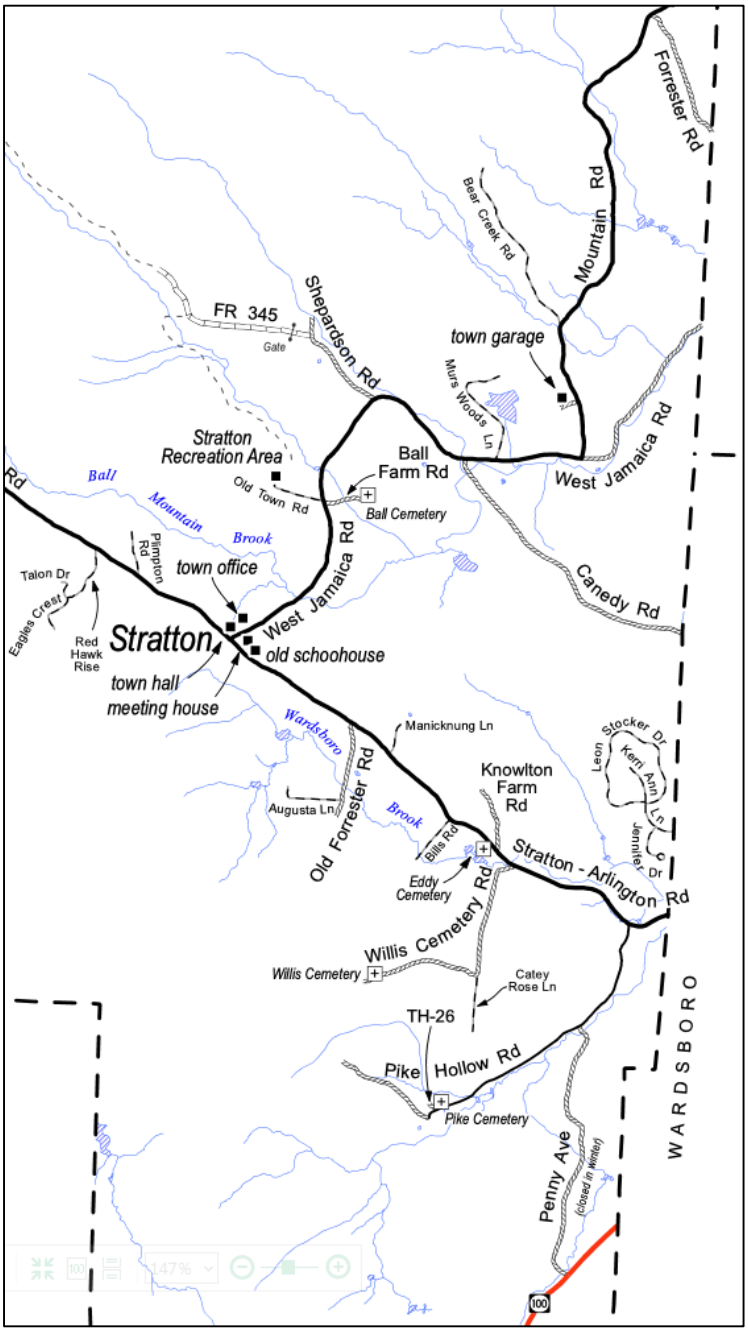
[19] FEMA NFIP Insurance Report, June 2018, accessed September 12, 2018. http://floodready.vermont.gov/sites/floodready/files/documents/cisrpt_NFIP%206.26.18.PDF

Proposed Land Use Map from 2014 Stratton Town Plan



Vulnerable Community Assets in Stratton

There are two areas of built development in Town, the southwestern corner and the Stratton Mountain Resort in the northeastern corner. Both areas are shown below. The below maps show where community facilities are located in Stratton. None are located in vulnerable locations.



Vital community facilities in Stratton include:

- Town Office (Emergency Operations Center)
- Town Hall (Emergency Shelter)
- Town Garage
- Fire Station

Development Trends

The Town population has been steadily increasing over the years. The population of Stratton rose between 2000 and 2010 from 138 to 216 people, an increase of 59%. In 2010, of the 1,447 housing units in Stratton, 1,340 units or approximately 93%, were seasonal second homes[20]. This shows how much Stratton's population can vary between ski season and non-ski season. Stratton is a Vermont ski mountain town. Most of the newly built homes are for second home owners.

Stratton does have zoning. The development pattern has not changed appreciably over the years, outside of the resort lands; development has merely extended along the road frontages in all sections of town. The Town gets approximately ten building permit applications per year. The Existing Land Use map, shown earlier in this Plan, shows the dominant land use on each parcel. Because there is no sewer system, lots have a required 2-acre minimum size. This keeps development relatively spread out. Residential development is occurring primarily along the town's rural roads. Stratton is fortunate not to have a historic pattern of locating roads along waterways, which means there are less vulnerable road miles than in some other towns in the region.

[20] Windham Regional Commission Town Profile 2018: Stratton

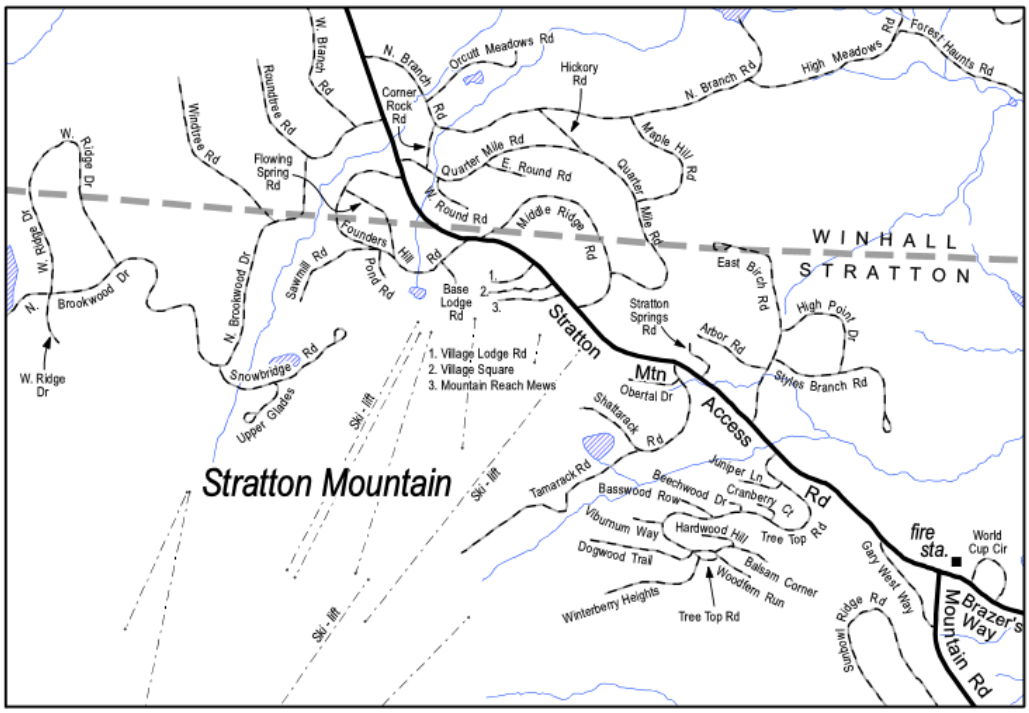
There is very little commercial development in Stratton. There is also no public school. Stratton Mountain Resort has a master plan that allows for more development, including residential development, that has yet to be built. Stratton Resort has their own sewage treatment facility, and a much denser development pattern than is seen outside the Resort. Stratton Resort also has a core, which includes a commercial area with shops and restaurants. Unless you're working for yourself of the resort, most people commute outside of the town for work. Manchester is one of the closer larger towns for employment.

Because of the large amount of conserved land in Stratton, there is not much new growth expected outside of the resort.

The only land not in forest cover is at the Stratton Resort and around the scattered homes in the Town. There is a narrow strip on the eastern boundary of Stratton that is not public or semi-public land. Within this boundary lie the Stratton Mountain Resort Complex and the limited amount of land that can be developed. The Town does not have a commercial center, with the exception of the commercial area at the resort complex. There is a substation of the Londonderry Post Office in the resort area. Industry, other than recreation and limited logging, is not present. Stratton is a residential town.

- 2014 Stratton Town Plan

This map shows the dense development pattern of the Stratton Mountain Resort:



MITIGATION STRATEGY

Local Hazard Mitigation Goals for this Plan

The Hazard Mitigation Goals as outlined below were agreed on by consensus among the Hazard Mitigation Planning Committee during meetings for the development of this plan.

- Reduce the loss of life and injury resulting from all hazards.
- Reduce the impact of hazards on the town's water bodies, natural resources, and historic resources.
- Reduce the economic impacts from hazard events.
    - Minimize disruption to the road network and maintain access,
    - Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters,
    - Ensure that community infrastructure is not significantly damaged by a hazard event.
    - Being proactive in implementing any needed mitigation projects for public infrastructure such as roads, bridges, culverts, municipal buildings, etc.
- Encourage hazard mitigation planning to be incorporated into other community planning projects, such as the Town Plan, Capital Improvement Plan, and Town Local Emergency Operations Plan.
- Ensure that members of the general public continue to be part of the hazard mitigation planning process.

Town Plan (2014) Policies and Recommendations that Support Mitigation

The 2014 Stratton Town Plan presents an indirect focus on mitigation, which is highlighted by the number of policies and action items that relate to mitigation. I will highlight them here, but not include the entire section that they are a part of:

GOAL 5: NATURAL AND HISTORIC FEATURES
Policies of Goal 5

1. To protect wetlands, which in turn protects wildlife habitat, the retention of surface runoff, and provides
for scientific and educational values of these areas.

2. To keep shorelines and banks of permanent streams in natural vegetation.

3. To protect flood hazard areas.

Action Items under Goal 5

1. It is the policy of the Town of Stratton to regulate the use of land above 2500 feet of elevation so that the resources and / or conditions are not threatened, and the public good is upheld.

2. Slopes greater than 25% should remain in forest cover; slopes exceeding 15% should not be planned for intensive development unless served by municipal / community sewer and water systems.

3. Areas characterized by shallow soils should not be planned for intensive development.

4. Forests should be utilized in a manner that will not significantly reduce their ecological function of replenishing surface and ground water.

5. It is the policy of the Town of Stratton to protect its waters by restricting development in:

- watersheds of upland streams
- watersheds characterized by steep slopes
- aquifer recharge areas, and
- Grout Pond and Stratton Pond watersheds

6. Permanent water courses, lakes, ponds and shorelines should be retained in their natural condition. In logging operations, cutting along stream banks should be minimized to reduce erosion and siltation.

GOAL 6: LAND, WATER AND AIR RESOURCES

To maintain and improve the quality of air, water, wildlife and land resources.

Stratton's air, water, mineral and land resources should be planned for use and development, according to the principles set forth in 10 VSA Section 6086 (a).

Action Items under Goal 6

1. Limit development to low densities on soils characterized by seasonal high water table, hardpan, areas of significant ground water recharge, and steep slopes.

5. Areas characterized by unstable soils, i.e., muck, peats, clays or silts, shall not be planned for intensive development.

6. Lands within flood hazard areas shall be devoted to agricultural and open space uses. = Where continuation of only agriculture and open space use is feasible, only those forms of development which do not restrict or divert the flow of water or endanger the health, safety and welfare of the public or riparian owners during periods of flooding shall be permitted.

GOAL 14: FLOOD RESILIENCE

To encourage a flood resilient community.

Objectives of Goal 14

To ensure that Stratton is as flood resilient a community as it can be.

Policies of Goal 14

1. New development in identified flood hazard, fluvial erosion, and river corridor protection areas should be avoided. If new development is to be built in such areas, it should not exacerbate flooding and fluvial erosion.

2. The protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion should be encouraged.

3. Flood emergency preparedness and response planning should be encouraged.

Action Items under Goal 14

1. Consider augmenting flood hazard area regulations with fluvial erosion hazard areas.

THE FUTURE
Minimizing Flood Hazards

In order to minimize the effects of flooding, Stratton should look to protect its flood storage areas, as well as work to minimize runoff. Upland headwater areas should be protected from significant development to maintain their runoff storage capacity. Fortunately for Stratton, most of its upland areas are part of the Green Mountain National Forest. Minimizing stormwater runoff through protection and construction of wetlands and less impervious cover can help to lower flood peaks downstream. This will help to protect both the roadways infrastructure and flood hazard areas downstream.

FLOOD RESILIENCE PLAN

Promoting Flood Resilience in Stratton

Flood Hazard Regulation

Stratton's Flood Hazard regulations set the development standards required by the National Flood Insurance Program (NFIP). They would be strengthened by adding additional river corridor protections (FEH zones).

Any updates to the Stratton's Flood Hazard regulations that were more restrictive than they are now would apply only to new development and new protection areas. Existing development would be grandfathered and could continue to operate within the area, until it suffers major damage or is substantially improved, at which point it has to come into compliance with flood regulations. Potential strategies to protect the Flood Hazard area could cover a wide range of options, including:

- Increasing Development Standards – Communities can choose to increase the requirements for new developments in the floodplain while still allowing all or most forms of development.
- Examples include limiting fill or impervious surface and encouraging stormwater controls, such as rain gardens, to minimize flood peaks.
- Additional River Corridor Protection Areas – Some communities have created an area that extends beyond the mapped flood hazard areas. Often this River Corridor Protection Area uses fluvial erosion hazard data as part of its basis, but can also include simple setbacks from rivers in all parts of the community as a way to deter development in areas that may erode in the event of severe flooding. Other locally known areas that flood can be included in these protections such as confluences and gravel deposition areas.

- Future revisions to the Stratton Flood Hazard regulations will require input from the community regarding the level of regulation they believe is necessary to protect citizens and their buildings from severe flood hazard events. Communities have a broad range of flexibility in which to regulate the flood hazard area.
- For example, a community could prohibit commercial development in the floodplain everywhere except a village, because in some communities such a restriction would be damaging to the village center.

Non-regulatory approaches
Stratton could also pursue riparian easements as a way to protect floodplains from development and preserve flood storage. The Vermont Land Trust and Vermont River Conservancy have worked in several towns in the region to develop river corridor easements along the Saxtons River and Whetstone Brook.

Goals

1. To protect the citizens, property and economy of Stratton and the quality of their streams as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas and beyond.

Planning Principles, Policies and Strategies

1. Only agriculture, recreational and open space uses should be allowed in floodplains and/or river corridors.
2. New development within the town's 100-year floodplain and mapped river corridors is prohibited, excluding properly designed outbuildings and renovations that meet the requirements for Flood Hazard regulation as stipulated by the Federal Emergency Management Agency.
3. Ensure that any new development allowed creates "no adverse impact" through design and mitigation measures.
2. Reduce impervious cover that leads to flash flooding, and increase retention and infiltration of rain.
3. Lessen the conflict between roads and streams by moving the roads when possible, abandoning redundant bridges, or upsizing water crossings.
4. Adopting road and bridge standards to the 50 or 100-year storm level.
5. Work with the US Forest Service to address flooding on a watershed basis.
6. Reconnect floodplains and streams through berm removal or intentional lowering of streambanks.
7. Promote emergency planning for flood response.
8. Update and re-adopt the FEMA Hazard Mitigation Plan (HMP) every five years to ensure access to FEMA programs and funding.

Recommendations

1. The Planning Commission should strengthen Stratton's Flood Hazard regulations to mitigate risks to public safety, critical infrastructure, historic structures and municipal investments from inundation and erosion.
2. The Planning Commission or Selectboard should work with VTrans on improving the flood
2. capabilities of state-owned infrastructure or town infrastructure.

3. Work with Stratton's Emergency Coordinator and Selectboard to continue to develop emergency preparedness procedures.
4. Implement mitigation actions as identified in the Hazard Mitigation Plan, especially for flood prone areas.

Ongoing Mitigation and Maintenance Efforts

There are certain ongoing efforts in the town that serve to either mitigate for hazards, assist with readiness of town to deal with a hazard, or both. Those efforts are listed here:

1. Leaf removal, tree trimming and ditch cleaning are maintenance activities done every spring by the road crew. If ditches are being eroded, the crew may also stone line them.

2. The town manages a local emergency operations center (EOC) during disasters.

3. The town maintains one emergency shelter at the Town Hall, and it is capable of being an overnight shelter.

4. Stratton is a member in good standing of the National Flood Insurance Program. The floodplain ordinance is kept compliant and the town maintains SFHA maps at the town office.

Identification of Mitigation Actions

The Stratton Hazard Mitigation Planning participants identified the following hazard mitigation activities based on an evaluation of hazard event vulnerability not addressed by existing hazard mitigation initiatives and the feasibility of new activities.

Mitigation actions are listed in priority order by hazard. Actions were prioritized by the plan participants. These are new actions so any shifts in prioritization of actions came out through the multi-year plan development process. The following criteria were used in establishing project priorities. The ranking of these criteria is largely based on the best available information and best judgment as many projects are not fully scoped out at this time. Prioritization was done during the meetings for the plan development in discussions among participants and guided by WRC's Emergency Planner. Actions relating to future development were considered, but the plan participants did not find them to be feasible at this time due to lack of political will/community support.

- Does the action reduce damage?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures or structures critical to town operations?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?
- Is the action legal?
- Does the action offer reasonable benefits compared to its cost of implementation?
- Is the action environmentally sound?

Cost-Benefit Analysis

As part of public involvement discussions, there was a rough cost/benefit analysis done for each action listed in the table and those results are shown in the table. The below cost and benefits tables address the priorities for the mitigation strategies that are stated in the Mitigation Actions Table. This was how the mitigation actions were assessed by the Hazard Mitigation Planning participants. Priority was assessed somewhat independently of cost/benefit and was based more on the perceived need of each action and availability of funding, versus what the action costs and benefits.

At the time of applying for FEMA's PDM-C, FMA or HMGP grant programs, each project listed below will undergo full benefit-cost analysis (BCA) methodology, version 5.1 or higher to maximize savings. Whenever possible, Stratton will utilize 406 mitigation funding.

Cost Estimates

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

Benefit Estimates

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

Mitigation Actions Identified by the Hazard Mitigation Planning participants

HAZARD	ISSUE AND ACTION	RESPONSIBLE PARTY	TIME-FRAME	FUNDING SOURCE	MITIGATION OR PREPAREDNESS	COST / BENEFIT	PRIORITY	STATUS
Fluvial Erosion	Upgrade culvert on Mountain Road at Little Kidder Brook. This will be a box culvert that will replace a steel culvert that is in bad shape. This is a hard site because the culvert is so deep.	Road Foreman	Dependent on grant award timeframe, but hopefully 2020. This project will take place in the summertime and take 3-4 weeks.	VTrans Structures Grant	Mitigation	High / High	High	Currently applying for VTrans grants for this project. ANR has already looked at this and been deemed a good solution. Cost is estimated at $500,000.
Fluvial Erosion	Upgrade culvert on Mountain Road at the intersection of Mountain Road and Bear Creek Road. This is the replacement of two steel culverts that were installed side by side and are also failing, and also possibly includes road straightening.	Road Foreman	Dependent on grant award timeframe, possibly 2022 or 2023	VTrans Structures Grant	Mitigation	High / High	High	We are investigating straightening the road due to the culvert being on a sharp corner. We are currently working with ANR and VTrans on designing this project, which means cost is yet unknown for sure.
Fluvial Erosion	Bank stabilization of 150' along Pike Hollow Road is the needed action. The issue is that this area will eventually fall into the stream if no action is taken, and this will likely occur during another big rain and fluvial erosion event. This section of needed stabilization is on private land.	Town Road Foreman would hire private contractors to do work, but he would oversee the job.	Hope to do this project in 2023	Vtrans or FEMA grants	Mitigation	High/ High	Medium	This project is in the early discussion phase now. The Road Foreman is keeping an eye on it and will be speaking to ANR to get advice on a best fix for this stretch.

HAZARD	ISSUE AND ACTION	RESPONSIBLE PARTY	TIME-FRAME	FUNDING SOURCE	MITIGATION OR PREPAREDNESS	COST / BENEFIT	PRIORITY	STATUS
Fluvial Erosion	Update the current Floodplain regulations to include River Corridors	Town with assistance from WRC and ANR	2020	EMPG	Mitigation	Low/High	Medium	In discussion phase within the Town staff and Selectboard
Fluvial Erosion from Beaver Activity	Install 3 beaver grates to prevent beaver dams from plugging culverts: on Stratton Arlington Road (1), on Stone Chimney Road (1) and on Pikes Falls Road (1). The problem is that the water is encroaching the roads as the beavers dam the area. Culverts could also get plugged during a large rain event.	Town Road Crew	2020	Town Funds	Mitigation	Low/High	Medium	Road Foreman has these projects on his radar.
Wind	Bury power lines to future Town Recreation Center	Town to subcontract for electrical work	By 2023 plans will be made if not progress on building.	Town Funds	Mitigation	Low/ Med	Medium	Town is in discussion phase about plan for the site. They have met with GMP. There is consideration for pavilion at the site.
Wind	Take down some vulnerable White Pines near the town garage, and possibly some close to the town office.	Town and possibly contract those out that are near power lines	Complete by 2023	Town funds	Mitigation	Low/ High	Medium	Tree trimming is a part of general maintenance but some trees near power lines must be handled by specialists.
All Hazards	Establish and maintain a vulnerable populations list	Town Clerk and EMD	2018-2019	Town Funds	Preparedness	High / Low	Medium	Town Clerk will develop this list and work with other town staff, and road crew to check on people during and after events.

HAZARD	ISSUE AND ACTION	RESPONSIBLE PARTY	TIME-FRAME	FUNDING SOURCE	MITIGATION OR PREPAREDNESS	COST / BENEFIT	PRIORITY	STATUS
All Hazards	Coordinate with Consolidated Communications (land line phone service provider) to provide permanent backup power to the phone switching box for landline service in Stratton. Most residents must have landline phone service because the cell service is sporadic in Stratton. With a power outage, the phones don't work and people are cut off.	Town Clerk / Selectboard and Consolidated Communications	During 2019	Town Funds	Mitigation and Preparedness	High / Low	Medium	This action would enable the town to have the capability to support the phone system itself and the phone company would not have to come out and set up temporary generators with every power outage. This action is in the discussion phase internally with the town at this point.

Implementation of Mitigation Actions / Capabilities

Barriers to Implementation:

1. Aging population of full time residents
2. Limited population base, though this also lowers risk
3. Emergency planning (EMD) is a volunteer –reliance upon volunteers can be risky in terms of turnover and availability
4. Not a lot of industry or commercial entities in Stratton
5. Much of the land in Stratton is permanently preserved, so development opportunities are limited.
6. Stratton does not currently regulate development in the River Corridor through its zoning, which limits control of this hazardous area.
7. Limited emergency response training for town staff and volunteers.
8. No designated assistance organization for the town elders.
9. There is no Conservation Commission in town
10. It takes so long to get hydraulic study which lengthens time to decrease vulnerability
11. Transportation projects can get drawn out for 2-3 years between getting an engineering study, getting engineering design work completed, and getting funded
12. Boards are the same all the time and finding replacements or new members is difficult
13. Stratton Fire Department is small

Capabilities to build upon for implementation:

1. Budgetary constraints are less limited in Stratton than in other towns. There is a large second home population at Stratton to build the tax base, but there is not the demand for services from that population as they are not full-time residents.
2. 2 full-time and 1 seasonal road crew staff
3. 3 full-time town staff; clerk, treasurer and assistant treasurer
4. Grant writing capacity among town staff is strong.
5. Two different populations in town. The local population is good about looking out for each other. The second homeowners rely on locals to watch their homes. The Resort homes are less of a concern because they have their own associations to watch their homes, but others not at the resort can be vulnerable because they don't have full-time resident. Road Crew knows the property maintenance entities in the area and gets in touch with them if they notice an issue at a second home. Neighborly attitude amongst locals.
6. Active Selectboard
7. Active Planning Commission
8. Well-functioning EOC
9. Windham Regional Commission assistance when needed
10. Floodplain ordinance in place. Town could update floodplain ordinance to include River Corridors and/or more restrictive standards.
11. Zoning Board of Appeals
12. Residents are generally the hearty and self-sufficient type

Recognizing that there is no place that doesn't have barriers to overcome in project implementation, Stratton should focus on engaging around emergency management at the town level. There are a limited number of committed volunteers and staff who make this town function well. They are invested and plan to remain in the area. The Town has a hard time recruiting new volunteers. Stratton is not struggling financially, though they have a small full-time population. They are located along Route 100, which is a semi-major travel corridor of the region, yet many residents live on back dirt roads that can be difficult to access during certain

times of the year. This lends to a “do it yourself” mentality that serves Stratton positively. Their vulnerability lies in the fact that the surrounding towns transportation routes are quite vulnerable in places, which can mean that Stratton can get cut off.

The town looks to and works closely with the Windham Regional Commission. They look to the Regional Plan policies for guidance on land use decisions which influence their town plan policies and goals. The town works closely with VT Department of Environmental Conservation Agency of Natural Resources and the Army Corps of Engineers when mitigating any work in streams or rivers. Additionally, the town adopts the latest VTrans Road Standards for road/culvert/bridge improvement projects. With the support of these agencies and the Commission, Stratton is capable of carrying out all of the mitigation actions outlined in this plan.

Existing Planning Mechanisms / Integration

The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the Town of Stratton. The Hazard Mitigation Planning participants analyzed these programs for their effectiveness and noted improvements needed. Stratton uses all of the tools listed below to help plan for current and future activities with the town. For example: the Local Emergency Management 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. Town Road and Bridge Standards are followed by the town and Stratton completed their last culvert inventory in 2017. In the development of this plan, the latest 2014 Town Plan was used.

As Stratton goes through the update process for the planning mechanisms outlined in the table below, they will look to the Hazard Mitigation Plan’s Table of Actions and Risk and Vulnerability Assessments to help guide land use district decisions, and guide goals and policies for those districts. They have agreed to this. At the Town Meeting every March, policies and action items in the Town Plan will be reviewed and integrated into hazard mitigation activities as needed. The Local Emergency Management 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 handled by the identified responsible party identified. 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 including the projects in the Mitigation Actions Table. This will assist with ensuring that this plan is utilized and project follow-through occurs.

Stratton will soon begin updating the Town Plan, and in doing so the hazard mitigation plan will be considered and incorporated as appropriate. The LEMP is updated yearly and was updated last in 2018. Other mitigation/emergency planning related documents and their status are outlined in the below table:

Type of Existing Authority / Policy / Program / Action	Description	Effectiveness/Enforcement/ Hazard that is addressed	Gaps in Existing Protection/Improvements Needed
Town Plan	Plan for coordinated town-wide planning for land use, municipal facilities, etc.	Flood Resilience is addressed	Current Town Plan incorporates flood resiliency. Town Plan was completed by Planning Commission with assistance from the Windham Regional Commission. Will next be updated in 2019.
Town Local Emergency Management Plan	Municipal procedures for emergency response	Incident Command; Hazard Annexes included	LEMP and adopted by Town Select board in 2018; next LEMP should include new template and all of the appendices. LEMP is completed by Town Clerk and Selectboard.
School Emergency Response Protocol	School procedures for emergency response	N/A No public school in Stratton	N/A
LEPC 6 Hazardous Materials Plan	Procedures for hazmat emergency response at regional level	LEPC 6 has the plan	Continued involvement with the LEPC; LEPC should update their hazmat event plan.
Mutual Aid – Emergency Services	Agreement for regional coordinated emergency services	Keene (NH) Dispatch; EMS – Rescue Inc. contract with Stratton, out of West Townshend facility; Stratton Mountain Rescue serves the mountain; Mutual Aid agreements with Wardsboro, Winhall and Dover for fire support; Police – contract with Windham County Sheriff Department.	None identified
Mutual Aid – Public Works / Road Crew	This would address sharing of equipment or services between towns.	There are no formal agreements in place at this time. As needs arise towns help each other.	It would be beneficial for all towns to have formalized agreements in place before needs arise. Not having this creates unnecessary legwork during and following events. Stratton doesn't have anything formalized, but towns help each other out.
Road Standards	Design and construction standards for roads and drainage systems	Adopted new VTrans Road Standards in 2013.	No gaps identified. Stratton Road Crew will continue to comply with the most recent Town Road and Bridge standards set by VTrans.
Zoning regulations	Regulates the division of land, standards for site access and utilities	Zoning in place, updated fairly often	Zoning was adopted in 2016 to be in compliance with the town plan. Next zoning update should include River Corridors.

Type of Existing Authority / Policy / Program / Action	Description	Effectiveness/Enforcement/ Hazard that is addressed	Gaps in Existing Protection/Improvements Needed
Sewage Regulations	Regulates on-site sewage systems	State Regulations apply	None Identified
Flood Hazard Area Regulations	Regulates development in FEMA identified SFHAs	In zoning bylaw	Revised in 2007 to include new FEMA DFIRM's. Will be updated to include River Corridors.
Maintenance Programs	Bridge & Culvert Inventory	Updated in 2017	Town should update their culvert inventory.
Building Code	Regulates building construction standards	No building codes in place	NA
Wetland protection – VT Wetland Rules	Protected by 1990 Vermont Wetland Rules	Protection of environment, water resources, wildlife, biota	None identified

PLAN MAINTENANCE PROCESS

Monitoring and Updating the Plan – Yearly Review

Once the plan is approved and adopted, the Town Clerk, along with interested and appointed volunteers and stakeholders, will continue to work with the Windham Regional Commission to monitor, evaluate, and update the plan throughout the next 5-year cycle. The plan will be reviewed annually before Town Meeting Day at a Selectboard meeting along with the review of the town's Local Emergency Management Plan (LEMP). 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. Windham Regional Commission's emergency planner will assist the Town Clerk in Stratton with this review, as requested by the Town. Progress on actions will be kept track using a table that WRC will provide to the Emergency Committee 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.

Plan Maintenance – 5 Year Update and Evaluation Process

The Hazard Mitigation Plan is dynamic. To ensure that the plan remains current and relevant, it is important that it undergo a major update periodically as required in 44 CFR § 201.6(c)(4)(i). This update process will be thorough and occur every five years. This update will include a thorough evaluation of the plan and incorporate any new requirements that FEMA has for Hazard Mitigation Plans. Participants outlined below will work with the Emergency Planner at the Windham Regional Commission (WRC) in accordance with the following procedure:

1. The Stratton Selectboard will appoint a team to convene a meeting of the hazard mitigation planning committee. The town's Town Clerk will chair the committee, and other members should include local officials such as Selectboard members, fire chief, zoning administrator, constable/police chief, road commissioner, Planning Commission members, health officer, interested stakeholders, etc. The Town Clerk will work with the

Windham Regional Commission Emergency Planner and be the point person for the Town.

2. The WRC Emergency Planner will guide the Committee through the update process. This update process will include several advertised public meetings. At these meetings the Committee will use the existing plan and update as appropriately guided by the WRC Emergency Planner to address:
   - Update of hazard events and data gathered since the last plan update.
   - Changes in community and government processes, which are hazard-related and have occurred since the last review.
   - Changes in community growth and development trends and their effect on vulnerability.
   - Progress in implementation of plan initiatives and projects.
   - Incorporation of new mitigation initiatives and projects.
   - Effectiveness of previously implemented initiatives and projects.
   - Evaluation of the plan for its effectiveness at achieving its stated purpose and goals.
   - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report, and their effect on capabilities of the town.
   - Evaluation of hazard-related public policies, initiatives and projects.
   - How mitigation strategy has been incorporated into other planning mechanisms
   - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
   - Impacts of climate change and how the local environment is changing due to climate impacts

3. From the information gathered at these meetings, and other interactions the Emergency Planner has with the Town, along with data collected independently during research for the update, the WRC Emergency Planner will prepare the updated draft in conformance with the latest FEMA Region 1 *Local Hazard Mitigation Plan Review Crosswalk* document.

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

5. Changes will be incorporated into the Plan by the WRC Emergency Planner.

6. 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 to provide comments both electronically and in hard copy. The draft plan will simultaneously be distributed electronically to adjacent towns for review and comment.

7. Public and adjacent town comments will be incorporated by the WRC Emergency Planner. The final draft will be provided to the Town Clerk, and interested individuals that participated in the update, for final review and comment, with review comments provided to the Committee and incorporated into the plan.

8. WRC Emergency Planner will finalize the plan with any remaining comments from the Emergency Management Director and others, and submit electronically to DEMHS and FEMA.

9. The Plan will be reviewed by the VEM State Hazard Mitigation Officer (SHMO) and FEMA Region 1.

10. SHMO and FEMA comments will be addressed in the plan by the WRC Emergency Planner.

11. The plan will be resubmitted as needed until the plan is approved pending adoption. Once the plan is approved by FEMA, it will be ready for adoption.

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

13. The final adopted plan will be submitted by the WRC Emergency Planner to DEMHS and FEMA.

14. FEMA will issue final approval of the adopted plan and the five year clock will begin again.

Post-Disaster Review/Update Procedure

Should a declared disaster occur, a special review will occur amongst the Selectboard, the Town Clerk, the WRC Emergency Planner, and those involved in the five year update process 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.

Continued Public Participation

Maintenance of this plan and implementation of the mitigation strategy will require the continued participation of local citizens, agencies, and other organizations. To keep the public aware of 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
    - Public Works
    - School
    - Fire & Rescue
    - Emergency Management/ 911 Coordinator
- Post the hazard mitigation plan on the town website
- Selectboard will review current 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 bulletin board, website, newspaper, etc.

APPENDIX

1. Adoption Certificate
2. Website advertisement for Draft Hazard Mitigation Plan (posted 9/5/17-9/17/17)
3. Email sent to adjacent towns for public comment on the draft plan, and response from Brattleboro
4. Flyer advertising availability of Draft Hazard Mitigation Plan for public comment
5. Email sent 1/9/19 to town staff and Hazard Mitigation Planning Committee for review of the draft
6. Response received from 1/9/19 comment solicitation from town and Hazard Mitigation Planning Committee on the draft plan
7. Website advertisement for October 28, 2018 Hazard Mitigation Committee meeting at Stratton Town Office
8. October 28, 2018 Hazard Mitigation Committee meeting sign-in sheet
9. October 28, 2018 Meeting agenda
10. October 28, 2018 Meeting flyer that was posted around town

Certificate of Adoption
Town of Stratton, VT
Selectboard

A Resolution Adopting the Local Hazard Mitigation Plan for the Town of Stratton, VT

WHEREAS, the Town of Stratton, VT has worked with the Windham Regional Commission to identify natural hazards, analyze past and potential future damages due to natural disasters, and identify strategies for mitigating future damages; and

WHEREAS, The Town of Stratton, VT Local Hazard Mitigation Plan analyzes natural hazards and assesses risks within the community; and

WHEREAS, the Town of Stratton, VT Local Hazard Mitigation Plan recommends the implementation of action(s) specific to the community to mitigate against damage from natural hazard events; and

WHEREAS, the Town of Stratton, VT authorizes responsible agencies to execute their responsibilities to implement this plan for the purposes of long term risk reduction and increased community resiliency and;

WHEREAS, the Town of Stratton, VT will follow the Plan Maintenance Process outlined in this plan to assure that the plan stays up to date and compliant; and

NOW, THEREFORE BE IT RESOLVED that the Town of Stratton, VT adopts the *Town of Stratton Local Hazard Mitigation Plan* as well as future revisions and maintenance required by 44 CFR 201.6 and FEMA for a period of five (5) years from the date of this resolution.

Duly adopted this _____ day of _____.
date *month, year*

Selectboard

_____
Al Dupell, Chair

_____
Larry Bills, Vice Chair

_____
Chris Liller

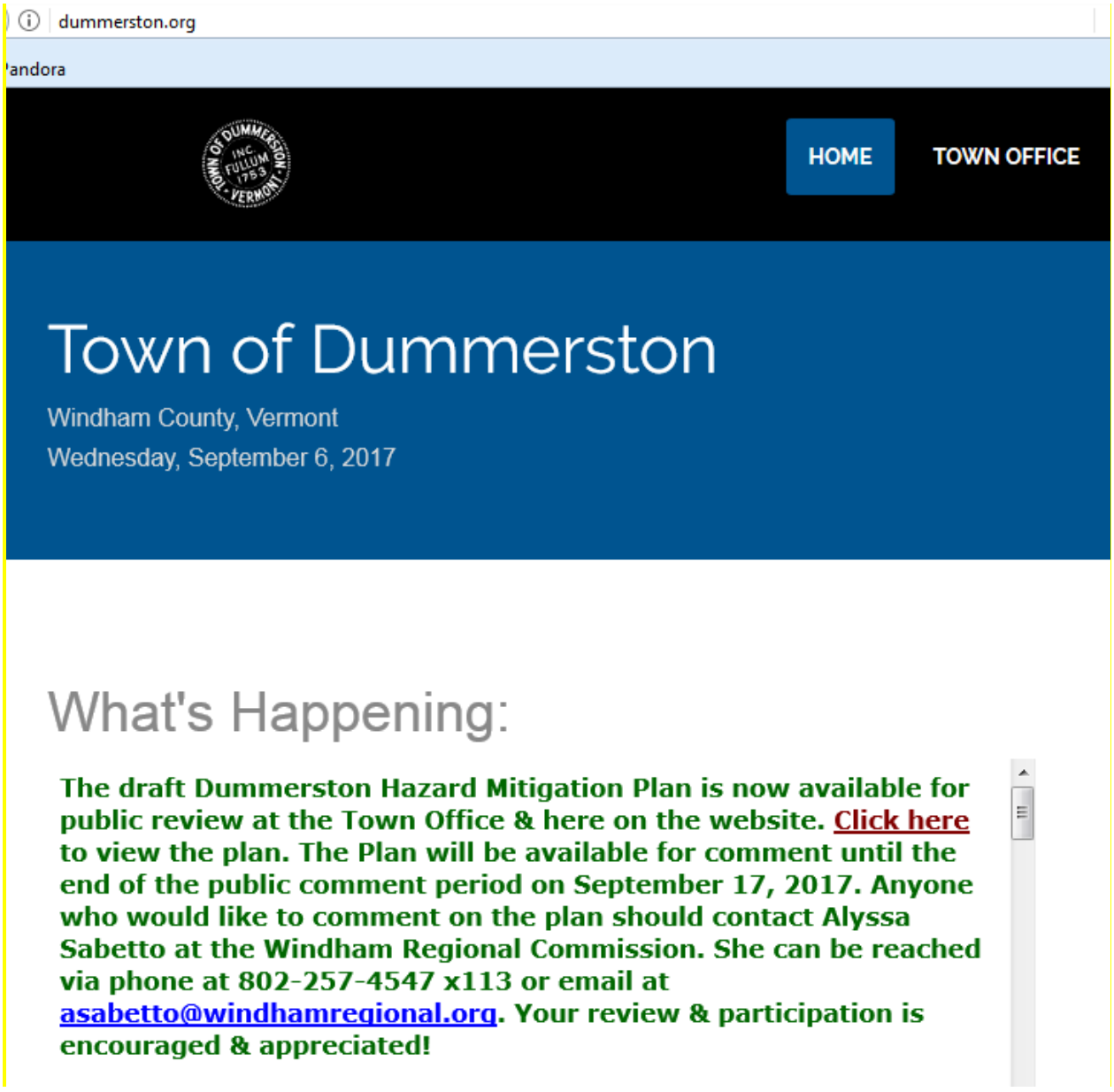
_____
Greg Marcucci

_____
Kevin Robinson

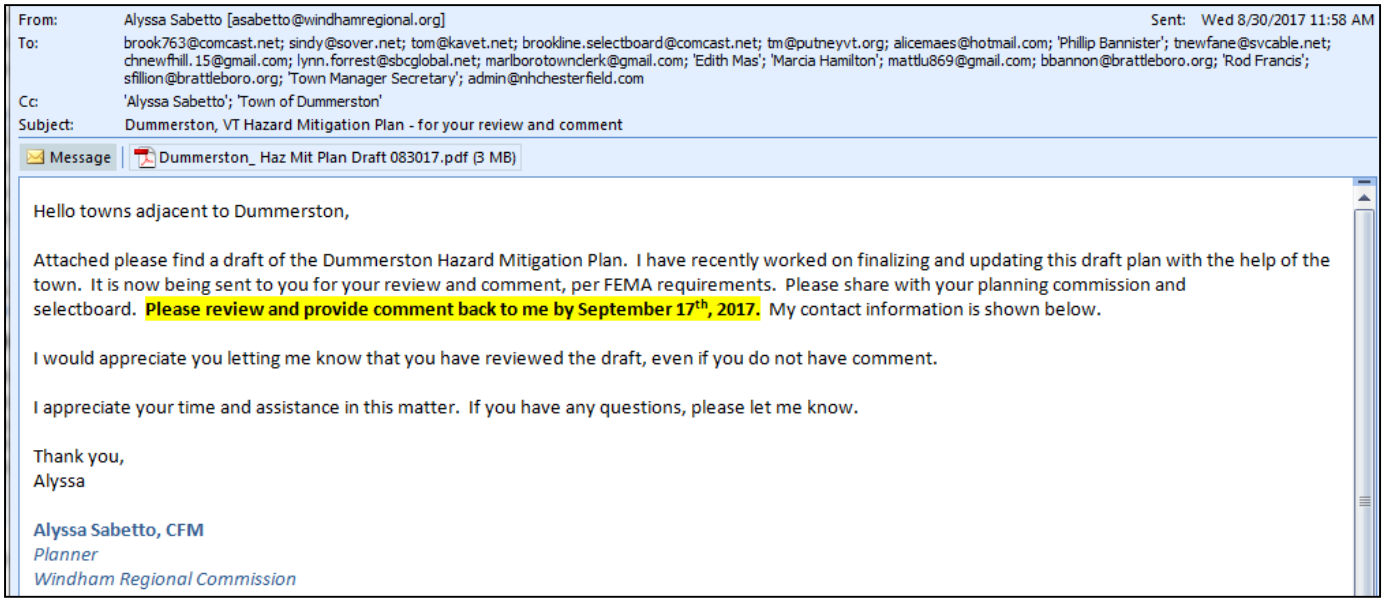
ATTEST

_____
Kent Young, Town Clerk

2. Website advertisement for Draft Hazard Mitigation Plan (posted 9/5/17-9/17/17)



3. Email sent to adjacent towns for public comment on the draft plan



From: Alyssa Sabetto [asabetto@windhamregional.org] Sent: Wed 8/30/2017 11:58 AM
To: brook763@comcast.net; sindy@sover.net; tom@kavet.net; brookline.selectboard@comcast.net; tm@putneyvt.org; alicemaes@hotmail.com; 'Phillip Bannister'; tnewfane@svcable.net; chnewfhill.15@gmail.com; lynn.forrest@sbcglobal.net; marlborotownclerk@gmail.com; 'Edith Mas'; 'Marcia Hamilton'; mattlu869@gmail.com; bbannon@brattleboro.org; 'Rod Francis'; sfillion@brattleboro.org; 'Town Manager Secretary'; admin@nhchesterfield.com
Cc: 'Alyssa Sabetto'; 'Town of Dummerston'
Subject: Dummerston, VT Hazard Mitigation Plan - for your review and comment
Message | Dummerston_ Haz Mit Plan Draft 083017.pdf (3 MB)

Hello towns adjacent to Dummerston,

Attached please find a draft of the Dummerston Hazard Mitigation Plan. I have recently worked on finalizing and updating this draft plan with the help of the town. It is now being sent to you for your review and comment, per FEMA requirements. Please share with your planning commission and selectboard. **Please review and provide comment back to me by September 17th, 2017.** My contact information is shown below.

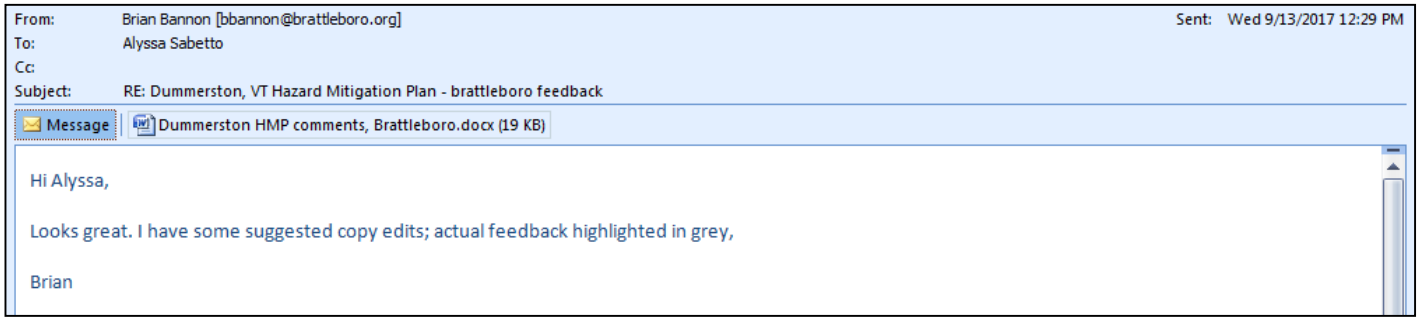
I would appreciate you letting me know that you have reviewed the draft, even if you do not have comment.

I appreciate your time and assistance in this matter. If you have any questions, please let me know.

Thank you,
Alyssa

Alyssa Sabetto, CFM
Planner
Windham Regional Commission

One response with changes was received from the adjacent Town of Brattleboro (the attached information in the email was incorporated into text of the plan)



From: Brian Bannon [bbannon@brattleboro.org] Sent: Wed 9/13/2017 12:29 PM
To: Alyssa Sabetto
Cc:
Subject: RE: Dummerston, VT Hazard Mitigation Plan - brattleboro feedback
Message | Dummerston HMP comments, Brattleboro.docx (19 KB)

Hi Alyssa,

Looks great. I have some suggested copy edits; actual feedback highlighted in grey,

Brian

4. Flyer advertising availability of Draft Hazard Mitigation Plan for public comment

Stratton Hazard Mitigation Plan

PUBLIC COMMENT PERIOD

The draft Stratton Hazard Mitigation Plan is now available for public review at the Stratton Town Office and on the town website: www.townofstrattonvt.com

The Plan will be available for comment until the end of the public comment period on February 11, 2019.

Anyone who would like to comment on the plan should contact Alyssa Sabetto at the Windham Regional Commission. She can be reached via phone at 802-257-4547 x113 or email at asabetto@windhamregional.org. We encourage your review and participation!

5. Email sent 1/9/19 to town staff and Hazard Mitigation Planning Committee for review of the draft

Wed 1/9/2019 12:04 PM

Alyssa Sabetto <asabetto@sover.net>

Stratton Local Hazard Mitigation Plan for internal town comment until Jan 23

To townclerk@townofstrattonvt.com; garage@townofstrattonvt.com; rmulkey@hermitageclub.com; dupe67@myfairpoint.net; rob@vtbarns.com; 2dogbeer@gmail.com

Cc 'Alyssa Sabetto'

Stratton_ Haz Mit Plan... 7 MB

Hello Stratton,

Attached is the first draft of the Stratton Local Hazard Mitigation Plan. **This draft is just being passed around at this point for internal town review and is not yet out for public comment. Please review the attached draft and provide comment back to me by January 23rd.** I'll incorporate comments and then put the plan out for public comment. You can mark up the attached document using track changes, call me with comments or email me back a list of comments.

Please note that the yellow highlighted sections of the plan are not yet completed for Stratton and are awaiting further information.

Kent and Chris – If there is anyone that is not getting this email that should, please forward it on to them.

Thank you,
Alyssa

Alyssa Sabetto, CFM
Planner

6. Response received from 1/9/19 comment solicitation from town and Hazard Mitigation Planning Committee on the draft plan

Tue 1/22/2019 12:18 PM

townclerk@townofstrattonvt.com

RE: Stratton Local Hazard Mitigation Plan for internal town comment until Jan 23

To Alyssa Sabetto

You replied to this message on 1/22/2019 12:43 PM.

Hi Alyssa,
Sorry for the delay - Looking at page 6 and 7, there are some highlighted areas which appear to apply to Dummerston or another town on the MA border. Also no draft plan was posted or submitted - no Conservation Committee exists and the surrounding towns listed are incorrect, so this must all be assoc. with another Town.
On Page 25 - the caption reads Enery.com - is it supposed to be energy.com?
Page 34 - You state that Stratton has no Zoning - we do have Zoning - Our Zoning Regs are available on the website.
Later in that paragraph you said we get about 2 Zoning Applications - I would increase that to 10.
Page 39 example (2nd bullet) discussed minimizing comercial development in flood plains - we have no Commercial Residential Zones in a flood plain.
You can remove the VTAlert I spoke with the person you recommended and I don't think we will follow through with that.
I will get back to you after lunch with the rest of my review.
Thanks! Kent

RE: Stratton Local Hazard Mitigation Plan for internal town comment until Jan 23

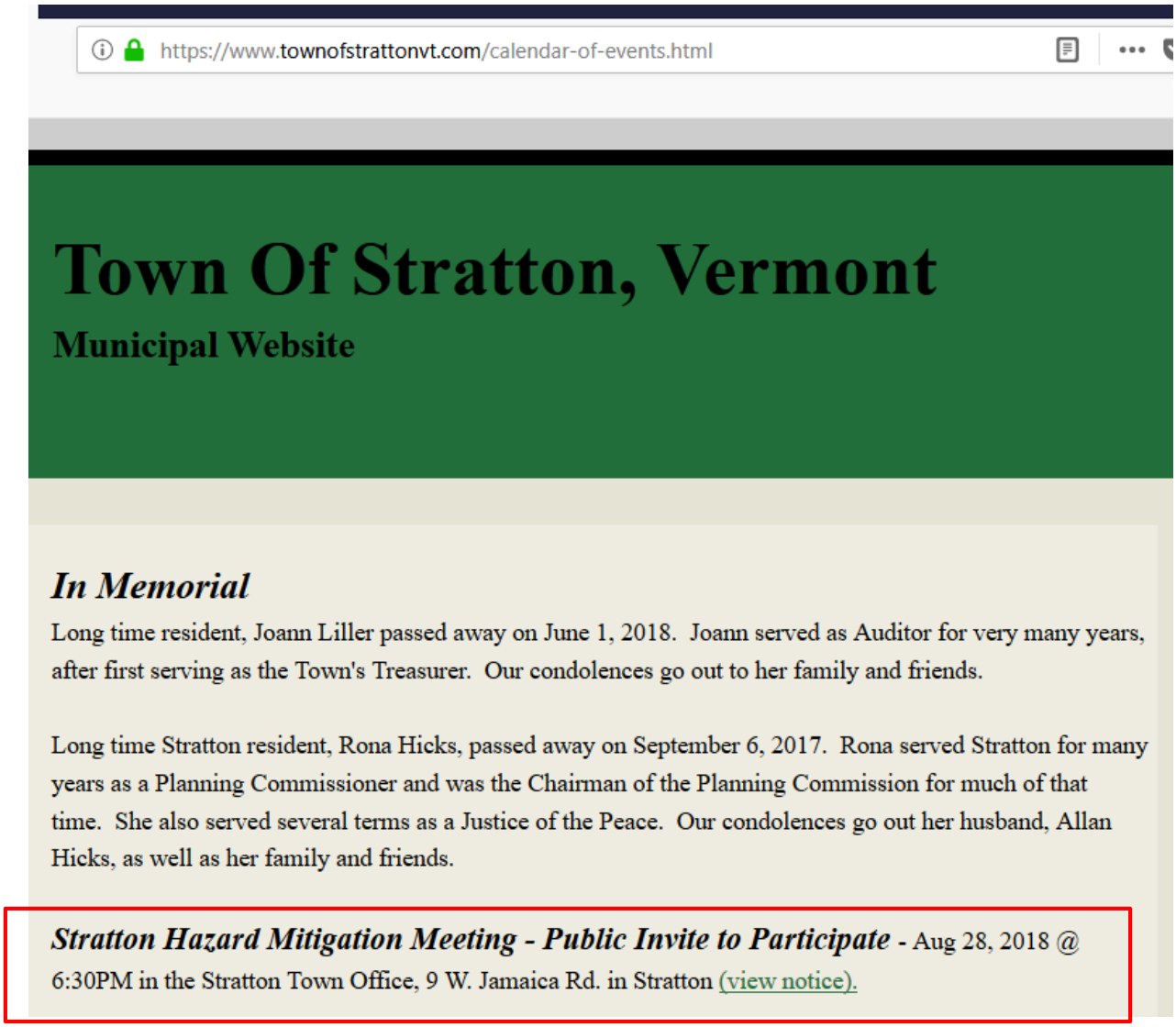
To Alyssa Sabetto

You replied to this message on 1/22/2019 3:58 PM.

Okay - ready for more comments? 1) Pg 45 - Barriers to Implementation: #4 - add "of" to not a lot industry..
and #6 It sounds like there is no Zoning, so perhaps say that Stratton has not implemented additional zoning regulations for River Corridors. Or something similar.
Page 46 - Existing Planning - 1st paragraph - "competed" should be "completed" last culvert inventory...
Page 46 Existing Planning Mechanisms.... 2nd paragraph - 3rd sentence - At the Town Meeting every March..... (I am unsure what you are talking about, as this is not done at Town Meeting - Are you intending it to be done at a Selectmen's Meeting in March as indicated later in this doc?
Page 47 - Mutual Aid - Public Works / Road Crew last column - You mention Whitingham - do you mean Stratton?
Pg 49 #6 2nd line should be "the draft plan to provide"
Page 51 5th bullet - do you mean current instead of past committee members? And last bullet - remove Facebook
Appendix - I see the highlights and assume this is fill to be corrected accordingly, but 7 should be Stratton Town Office (not Whitingham....)
Page 54 thru 57 - same - assume Dummerston is an example

Looks good - Thanks for all the work (Will you be helping us with the LEOP next month?)
ake care!
Kent

7. Website advertisement for August 28, 2018 Hazard Mitigation Committee meeting at Stratton Town Office



8. October 28, 2018 Hazard Mitigation Committee meeting sign-in sheet

Stratton, VT Local Hazard Mitigation Plan Development Meeting
August 28, 2018
Location: Stratton Town Office

SIGN IN SHEET

Name and email address	Affiliations – Please list all	Town where you live
Chris Liller chrislille@yahoo.com	Stratton Highway Dept	Stratton
Kent Young townclerk@townofstrattonvt.com	Stratton Planning Chair & Town Clerk	Stratton
Kevin Robinson kevinrobinson@mypowerpoint.net	Stratton Select Board	Stratton

9. October 28, 2018 Meeting agenda

Stratton Hazard Mitigation Plan &
Community Resiliency Meeting
Stratton Town Office – August 28, 2018

Agenda

1. Introduce the Hazard Mitigation Plan

a) Purpose
b) Process

2. Hazards

a) Complete Hazard Ranking Table / Worksheet
b) Discuss past events that should be included in the plan
c) Mark up the town vulnerability/hazard location map as a group

3. Mitigation Actions

a) Review/edit Mitigation Goals
b) Complete Mitigation Actions Table as a group
c) Identify gaps and capabilities with implementation

4. Other Updates

a) Discuss recent mitigation work completed by the town
b) Discuss development trends – new developments, upcoming developments
c) Review of other elements and address questions that weren't discussed

5. Next Steps

10. October 28, 2018 Meeting flyer that was posted around town

Stratton Hazard Mitigation / Resiliency Plan

Public Meeting Announcement

Date: Tuesday, August 28th, 2018

Time: 6:30-9:00 PM

Location: Stratton Town Office, 9 West Jamaica Road, Stratton, VT 05360

Come help create Stratton's Local Hazard Mitigation Plan! What hazards does the town face? What actions can the town take now to lower vulnerability before the next natural hazard strikes?

For more information contact
Alyssa Sabetto at 802-257-4547 x113

WINDHAM REGIONAL COMMISSION