TOWN OF ST. GEORGE, Vermont
2017 All-Hazards Mitigation Plan

Annex 12
to the
2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan

Prepared by:

The Chittenden County Regional Planning Commission

and the

Town of St. George, Vermont

Adopted by the Town of St. George Selectboard on October 19, 2017

Approved by FEMA on November 6, 2017

U.S. Department of Homeland Security
FEMA Region I
99 High Street, Sixth Floor
Boston, MA 02110-2132

FEMA

NOV 06 2017

Lauren Oates
State Hazard Mitigation Officer
Vermont Department of Public Safety
45 State Drive
Waterbury, Vermont 05671-1300

Dear Ms. Oates:

We would like to acknowledge the participating jurisdictions and the State of Vermont for their dedication and commitment to mitigation planning. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I Mitigation Planning Team has completed its review of the 2017 Chittenden County, Vermont Multi-Jurisdictional All-Hazards Mitigation Plan and determined it meets the requirements of 44 C.F.R. Pt. 201. This plan approval includes the following participating jurisdictions that provided a copy of their resolution adopting the plan. The newly approved jurisdictions are highlighted in **bold.**

Bolton	Buel's Gore	**Burlington**	Colchester
Essex Town	Essex Junction Village	Hinesburg	Huntington
Jericho	Milton	Richmond	**Saint George**
Shelburne	South Burlington	Underhill	Westford
Williston	Winooski		

With this plan approval, the communities above are eligible to apply to the Vermont Division of Emergency Management & Homeland Security for mitigation grants administered by FEMA. Requests for mitigation funding will be evaluated individually according to the specific eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in your community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

Approved mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Complete information regarding the CRS can be found at http://www.fema.gov/national-flood-insurance-program-community-rating-system, or through your local floodplain administrator.

NOV 06 2017

The 2017 Chittenden County, Vermont Multi-Jurisdictional All-Hazards Mitigation Plan must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of March 6, 2017** in order to maintain eligibility for mitigation grant funding. We encourage Chittenden County Regional Planning Commission communities to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Josiah "Jay" Neiderbach at (617) 832-4926.

Sincerely,

Paul F. Ford
Acting Regional Administrator

PFF: jn

cc: Ben Rose, Recovery and Mitigation Section Chief, VT DEMHS
Stephanie Smith, Hazard Mitigation Planner, VT DEMHS

Enclosure

Town of St. George

21 Barber Road • St. George, Vermont 05495 • Tel: (802) 482-5272 • Fax: (802) 482-5548

CERTIFICATE OF ADOPTION
Date: October 19, 2017

TOWN OF ST. GEORGE VERMONT SELECTBOARD
A RESOLUTION ADOPTING THE 2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #12, the 2017 Town of St. George All-Hazards Mitigation Plan (Plan).

WHEREAS, the Town of St. George has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #12, the 2017 Town of St. George All-Hazards Mitigation Plan** which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of St. George has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for **the 2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #12, the Town of St. George All-Hazards Mitigation Plan (Plan)** under the requirements of *44 CFR 201.6;* and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for the Town of St. George; and

WHEREAS, the **Plan** recommends several hazard mitigation actions (projects) that will provide mitigation for specific natural hazards that impact the Town of St. George with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this **Plan** will make the Town of St. George eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by the Town of St. George Selectboard:

1. The **2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #12, the 2017 Town of St. George All-Hazards Mitigation Plan (Plan)** is hereby adopted as an official plan of the Town of St. George;

2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and

4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of St. George this 19 day of October 2017.

Charles Scott, Selectboard Chair

Nina Friscia, Selectboard Vice Chair

Harry Bowen, Selectboard Member

Jeff Pillsbury, Selectboard Member

Wayne Ring, Selectboard Member

ATTEST

April Pillsbury, Town Clerk

Executive Summary

Hazard Mitigation is a sustained effort to permanently reduce or eliminate long-term risks to people and property from the effects of reasonably predictable hazards. The purposes of this updated Local All-Hazards Mitigation Plan are to:

- Identify specific natural, technological and societal hazards that impact the Town of St. George;
- Prioritize hazards for mitigation planning;
- Recommend town-level goals and strategies to reduce losses from those hazards; and
- Establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

This plan is a local annex to the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan*. **In order to become eligible to receive various forms of Federal hazard mitigation grants, a Chittenden County municipality must formally adopt its Local All-Hazards Mitigation Plan along with the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan*, or develop and adopt an independent, stand-alone Local All-Hazards Mitigation Plan.**

Section 1: Introduction and Purpose explains the purpose, benefits, implications and goals of this plan. This section also describes municipal demographics and development characteristics, and describes the planning process used to develop this plan.

Section 2: Hazard Identification expands on the hazard identification in the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan* with specific municipal-level details on selected hazards.

Section 3: Risk Assessment discusses identified hazard areas in the municipality and reviews previous federally-declared disasters as a means to identify what risks are likely in the future. This section presents a hazard risk assessment for the municipality, identifying the most significant and most likely hazards which merit mitigation activity. The top three Hazards by type with the most risk in St. George are:

Natural Hazards:	Severe Winter Storm, Wildfire, Fluvial Erosion
Technological Hazards	Power Loss, Multi Structure Fire, Water Service Loss
Societal Hazards	Epidemic, Economic Crisis, Crime

Section 4: Vulnerability Assessment discusses buildings, critical facilities and infrastructure in designated hazard areas, vulnerable populations, and the issue of estimating potential losses.

Section 5: Mitigation Strategies is the heart of this All Hazards Mitigation Plan. This section begins with an overview of goals and policies in the *2012 St. George Town Plan* that support hazard mitigation. This is followed by an analysis of existing municipal actions that support hazard mitigation, such as planning and zoning, and public works. This section presents the following municipal all-hazards mitigation goals:

1) Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and

injury resulting from all hazards.

2) Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
3) Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan and as identified generally in the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan.
4) Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and stormwater management and the planning and development of various land uses.
5) Maintain existing municipal plans, programs, regulations, bylaws and ordinances that directly or indirectly support hazard mitigation.
6) Consider formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5), as well as incorporation of proposed new mitigation actions into the municipality's/town's bylaws, regulations and ordinances, including, but not limited to, zoning bylaws and subdivision regulations and building codes.
7) Consider formal incorporation of this Local All-Hazards Mitigation Plan, particularly the recommended mitigation actions, into the municipal/town operating and capital plans and infrastructure, utilities, highways and emergency services.

This section includes the following Mitigation Actions planned by the Town:

Category A: Improve capabilities of existing road infrastructure to mitigate Fluvial Erosion and Severe Rainstorm

- Action A-1: Improve infrastructure of Willow Brook Lane

Category B: Implement Roads Stormwater Management Plan consistent with Vermont Municipal Roads General Permit (MRGP) to mitigate Severe Rainstorms, Fluvial Erosion and Water Pollution

- Action B-1: Obtain MRGP and develop Roads Stormwater Management Plan
- Action B-2: Implement Roads Stormwater Management Plan and file annual reports

Category C: Explore benefits of adopting Flood Hazard and/or River Corridor / River Corridor Protection Area Regulations in Town Zoning Bylaws to mitigate Flooding and Fluvial Erosion

- Action C-1: Consider adoption of flood hazard bylaws and joining National Flood Insurance Program
- Action C-2: Consider adoption of River Corridor or River Corridor Protection Area in Bylaws

Finally, this section includes an Implementation Matrix to aid the municipality in implementing the Mitigation Actions and annual monitoring and evaluation of this Plan.

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[Note: See appendices of Chittenden County Multi-Jurisdictional AHMP for weblinks to the various data sources used to generate many of the tables noted above.]

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SECTION 1: INTRODUCTION AND PURPOSE

1.1 Purpose and Scope of this Plan

The purpose of this Local All-Hazards Mitigation Plan is to assist this municipality in identifying all hazards facing their community and in identifying strategies to begin to reduce the impacts of those hazards. The plan also seeks to better integrate and consolidate efforts of this municipality with those outlined in the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan as well as efforts of quasi-governmental organizations such as Local Emergency Planning Committee, District #1 and the Chittenden County Regional Planning Commission.

This annex, when used with the appropriate sections of the Chittenden County All-Hazards Mitigation Plan, constitutes an All-Hazards Mitigation Plan for the Town of St. George. Community planning can aid significantly in reducing the impact of expected, but unpredictable natural and human-caused events. The goal of this plan is provide hazard mitigation strategies to aid in creating disaster resistant communities throughout Chittenden County.

1.2 Hazard Mitigation

The Vermont State All-Hazards Mitigation Plan of 2013 defines hazard mitigation as

> *any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. The Federal Emergency Management Agency (FEMA) and state agencies recognize that it is less expensive to prevent disaster or mitigate its effects than to repeatedly repair damage after a disaster has struck. This plan recognizes that communities have opportunities to identify mitigation strategies and measures during all of the other phases of Emergency Management—Preparedness, Mitigation, Response and Recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where they are most severe and to identify actions that can be taken to reduce the severity of the hazard.*

Hazard mitigation strategies and measures can reduce or eliminate the frequency of a specific hazard, lessen the impact of a hazard, modify standards and structures to adapt to a hazard, or limit development in identified hazardous areas.

1.3 Hazard Mitigation Planning Required by the Disaster Mitigation Act of 2000

Hazard mitigation planning is the process that analyzes a community's risk from natural hazards, coordinates available resources, and implements actions to reduce risks. According to 44 CFR Part 201, Hazard Mitigation Planning, this planning process establishes criteria for State and local hazard mitigation planning authorized by Section 322 of the Stafford Act as amended by Section 104 of the *Disaster Mitigation Act of 2000*. Effective November 1, 2003, local governments now have to have an approved local mitigation plan prior to the approval of a local mitigation project funded through federal Pre-Disaster Mitigation funds. Furthermore, the State of Vermont is required to adopt a State Pre-Disaster Mitigation Plan in order for Pre-Disaster Mitigation funds or grants to be released for either a state or local mitigation project after November 1, 2004.

There are several implications if the plan is not adopted.

- Flood Mitigation Assistance Grant Program (FMAGP) funds will be available only to communities that have adopted a local Plan
- A community without a plan is not eligible for HMGP project grants but may apply for planning grants under the 7% of HMGP available for planning.
- For the Pre-Disaster Mitigation (PDM) program, a community may apply for PDM funding but must have an approved plan in order to receive a PDM project grant.

  Under Vermont's Emergency Relief Assistance Fund rules, contributions from the State to cover the non-Federal share of a municipality's FEMA Public Assistance project costs varies depending on whether a community has a plan. A community without a plan would have to cover 17.5% of the overall project cost, but a community with a plan would have to cover only 7.5% to 12.5% of the cost if it had a plan in place.

1.4 Benefits

Adoption and maintenance of this Plan will:

- Make certain funding sources available to complete the identified mitigation initiatives that would not otherwise be available if the plan was not in place.
- Ease the receipt of post-disaster state and federal funding because the list of mitigation initiatives is already identified.
- Support effective pre and post-disaster decision making efforts.
- Lessen each local government's vulnerability to disasters by focusing limited financial resources to specifically identified initiatives whose importance has been ranked.
- Connect hazard mitigation planning to community planning where possible, such as in emergency operations plans, comprehensive plans (aka "town plans"), capital improvement plans and budgeting, open space plans, and stormwater master plans.

1.5 All-Hazards Mitigation Plan Goals

The Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan establishes the following general goals for the county as a whole and its municipalities:

1) Hazard mitigation planning should take into account the multiple risks and vulnerabilities of the significant hazards in the County due to its mixed urban-suburban-rural nature, its economic importance to the State and its significant presence of public and private infrastructure.
2) Promote awareness amongst municipalities, residents and business in the county of the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and stormwater management and the planning and development of various land uses.

3) Ensure that regionally-initiated mitigation measures are consistent with municipal plans and the capacity of municipalities to implement them.

4) Encourage municipalities to formally incorporate their individual Local All-Hazards Mitigation Plan into their municipal plan as described in 24 VSA, Section 4403(5), as well as incorporate their proposed mitigation actions into their various bylaws, regulations and ordinances, including, but not limited to, zoning bylaws and subdivision regulations and building codes.

5) Encourage municipalities to formally incorporate elements of their Local All-Hazards Mitigation Plan, particularly their recommended mitigation strategies, into their municipal operating and capital plans & programs, especially, but not limited to, as they relate to public facilities and infrastructure, utilities, highways and emergency services.

6) Educate regional entities on the damage to public infrastructure resulting from all hazards and work to incorporate hazard mitigation planning into the regional land use and transportation planning program conducted by the Chittenden County Regional Planning Commission.

7) Maintain existing mechanisms or develop additional processes to foster regional cooperation in hazard mitigation, specifically and emergency management planning, generally.

1.6 Town of St. George: Population and Housing Characteristics

The Town of St. George *(cf. Figure-1.1*) is a small municipality located in the southern part of Chittenden County. It is bordered on the west by Shelburne, on the south by Hinesburg, and on the east and north by Williston. The town encompasses 3.66 square miles.

Based on U.S. Census data, the University of Vermont's Center for Rural Studies reports a population of 674 in St. George. The population primarily resides in mobile homes and single-family homes clustered along Route 2A. Other residents live in single family homes scattered to the east. Selected population characteristics are as follows:

Table 1-1 Town of St. George, selected population characteristics, 2010 Census

Category	Number	%
Total Population	674	100
Median Age	33.8	--
Population age 65 years and over	67	9.9
Population (and %) under 10 years old	80	11.9
Population (and %) in group quarters	0	0.0

U.S. Census Bureau, 2010 Census of Population and Housing, Population and Housing Unit Counts

The following shows the types of housing within St. George, also based on the 2010 U.S. Census data:

Table 1-2 Town of St. George, selected housing unit data, 2010 Census

Category	Number	%
Total Housing Units	292	100
Occupied housing units	275	94.2
Vacant housing units	17	5.8
Vacant housing units used for seasonal, recreational or occasional use	3	1.0
Detached 1-unit housing units	138	50.5
Housing units with 5 or more units in structure	0	0.0
Mobile homes	133	48.7
Housing structures built in 1939 or earlier	22	8.1

U.S. Census Bureau, 2010 Census of Population and Housing, Population and Housing Unit Counts

Population trends for the town are as follows: *(cf. Figure 1.2)*,

Year	Population
1960	108
1970	477
1980	677
1990	705
2000	698
2010	674
2014	708

April 1 census counts for 1960, 1970, 1980, 1990, 2000 and 2010; July 1 estimates for 2014

1.7 Summary of Planning Process

As noted above the update of this municipal All Hazard Mitigation Plan (AHMP) was part of the planned update of the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and the municipal AHMPs that are annexes to the Multi-Jurisdictional Plan. The CCRPC, with funding provided by the State of Vermont via a FEMA Hazard Mitigation Grant, began this update process in the spring of 2015.

1.7.1 Development of the 2017 St. George All Hazards Mitigation Plan

In October 2015, CCRPC staff met with then-Town Administrator Barbara Young and Road Commissioner Neil Boyden to review the update process, hazard matrices, and other information on the progress, logical next steps, and continued relevance of the mitigation strategies laid out in the 2011 plan. Additionally, the following municipal plans and reports were reviewed:

1. 2012 St. George Town Plan
2. Town of St. George zoning bylaw
3. Information from Vermont Agency of Natural Resources on fluvial erosion hazards and flood hazards
4. FEMA Information on previous disasters
5. Information from Vermont Agency of Natural Resources on fluvial erosion hazards and flood hazards
6. Information from the Vermont Agency of Transportation on town roads, bridges, culverts, and high crash locations.
7. Information from the Vermont Department of Emergency Management and Homeland Security on prior disaster and hazardous materials reporting.

Demographic information for this Plan was updated by a CCRPC intern in 2015. New information, relative to the 2011 AHMP, from review of the Land Development regulations and the Comprehensive Plan was incorporated into Section 5. Information on prior disasters, fluvial erosion hazards and flood hazards and various transportation data was incorporated into Sections 2, 3 and 4. Throughout the plan development process CCRPC staff sent rough drafts of the plan to numerous town staff to review for accuracy and conferred with these same staff regularly via phone and email. CCRPC staff produced new versions of the 2011 maps and also produced new maps desired in this 2017 update.

On August 31, 2016, CCRPC staff met with the new Town Administrator Maggie Kerin to review the latest draft Plan. On September 6, 2016, CCRPC staff met with Town Administrator Maggie Kerin, Road Commissioner Neil Boyden, Selectboard Chair Charles Scott, PC and DRB Chair Scott Baker, DRB and PC member Connie Kendall, and Don Kendall to discuss the latest draft Plan and update. On April 6, 2017, CCRPC staff met with Town Administrator Maggie Kerin and Road Commissioner Neil Boyden to discuss plan updates and adoption process.

1.7.2 Opportunities for involvement in the planning process and formal public review and governing body approval

Emergency management planners are obligated to provide opportunities for the general public, neighboring communities, local, regional and state agencies, development regulation agencies and other interests to be involved in the review and development of Hazard Mitigation Plans.

Additionally, the CCRPC, as a public agency is obligated to provide public notice and opportunities for input into its programming and processes. With regard for public involvement in the develop of the first drafts of this Municipal AHMP *prior to release of public drafts*, there was no formal solicitation process to recruit or invite the public to come to staff level meetings wherein the first process of updating data in the old 2011 Plan. That being said, however, the public has been free to review the 2011 Plans on the CCRPC website since they were first posted in 2011. Additionally as noted in Section 1.10.2.4 of the Multi-Jurisdictional AHMP, in the period before the first municipal draft AHMPs were publicly released in August 2016 (see below) there were twelve public meetings held by the CCRPC Board and the Plan Update Committee wherein the overall Hazard Mitigation planning process was discussed including the content and purpose of the local, Municipal AHMPs as well as the planned timeline for their development starting in 2015 and extending well into 2016. *[Note that opportunities for public review and development of the Multi-Jurisdictional AHMP are described in Section 1.10.2 of the that document.]*

Commencing with an August 5**,** 2016 press release and with a comment deadline of August 19, 2016, the CCRPC issued a press release and also posted to all of the electronic bulletin boards of Front Porch Forum in every municipality in the County to solicit and receive comments on the first drafts of this Town of St. George All-Hazards Mitigation Plan as well as the AHMPs of the other 18 municipalities in the County. On August 5, 2016, emails to the same state agency staff and executive directors of neighboring Regional Planning Commissions as noted above, were also sent to encourage their review and comment. The public, agency staff and RPC staff were directed to provide comments to Dan Albrecht, Senior Planner at the CCRPC.

With regard to opportunities for public involvement and input from neighboring communities in development of individual Local All-Hazards Mitigation Plans including this Plan for the **Town of St. George,** opportunities were as follows:

a) On August 5, 2016, the CCRPC posted all the first drafts of the 18 local AHMPs on the CCRPC website and via various means (press release, electronic newsletter, etc) made the public aware of the opportunity to comment. The public was advised to send comments directly to Dan Albrecht, CCRPC Senior Planner by August 19, 2016.
b) On August 5, 2016, the CCRPC staff sent direct emails to the Agency staff noted above notifying them as well of the opportunity to review the 18 local AHMPs posted on the CCRPC website and encouraging them to send any comments directly to Dan Albrecht, CCRPC Senior Planner by August 19, 2016.
c) On August 5, 2016, direct emails were also sent to the municipal Mayors/ Managers/ Administrators and/or Clerks of the abutting 12 communities outside of Chittenden County (South Hero, Georgia, Fairfax, Cambridge, Stowe, Waterbury, Duxbury, Fayston, Lincoln, Starksboro, Monkton and Ferrisburgh), notifying them of the opportunity to review the 18 local AHMPs posted on the CCRPC website and encouraging them to send any comments directly to Dan Albrecht, CCRPC Senior Planner by August 19, 2016.

No comments were received on the draft Town of St. George AHMP prior to the August 19th deadline. Additionally, no inquiries were received concerning this AHMP after August 19th through December 31, 2016 while the Plan was posted on the CCRPC website.

1.7.3 Submission of drafts to VDEMHS and FEMA for Review and final adoption process

On June 3, 2016, the first draft of the Plan was sent to the Vermont Department of Emergency Management and Homeland Security (VDEMHS) for review. Comment and required revisions were received from VDEMHS on August 8, 2016. CCRPC staff, working in concert with municipal staff, then made revisions to the Plan to address the required revisions and formal submissions to VDEMHS and FEMA then progressed as follows:

On August 29, 2017, the revised final draft annex was submitted to VDEMHS for review and forwarding to FEMA for formal review and approval pending municipal adoption

On October 4, 2017 FEMA Region One issued a notice that the Town of St. George AHMP was approved pending adoption by the relevant municipal governing body.

On October 9, 2017, CCRPC staff provided the final versions of the Multi-Jurisdictional Plan and this Municipal Annex to the Town Administrator for distribution to the Town of St. George Selectboard members and also provided draft language for a resolution of adoption to be discussed at a regularly scheduled and properly warned Town of St George Selectboard meeting

On October 19, 2017 the revised annex was adopted by the Selectboard and a copy of the resolution sent to VDEMHS and FEMA Region One on October 26, 2017.

On November 6, 2017 FEMA issued a letter that the Town of St. George's Plan was approved.

1.7.4. Monitoring, Evaluation and Updating of the Plan

Section 6 of the Multi-Jurisdictional AHMP document provides extensive details on the role each municipality and the Chittenden County RPC will play to be certain that progress on the implementation of this local AHMP is monitored and evaluated and that the AHMP is updated as needed and no later than its anticipated expiration in early 2022. In short, the Town of St. George will:

- in the fall of 2017 and each fall thereafter, respond to CCRPC's questionnaire seeking information on the status (progress, problems if any, etc.) of each identified mitigation strategy detailed in Section 5;
- in the fall of 2018 and the fall of 2020, provide information to aid CCRPC in its more comprehensive review of the Multi-Jurisdictional AHMP and this local AHMP which will address issues such as goals, risks, resources, implementation problems, and partners; ; in partnership with the municipalities, the CCRPC will make the public aware of the availability of these review documents (via press releases, posting on the CCRPC website, electronic newsletters, one formal announcement in a paper of general

circulation in the County, and other mechanisms) and provide detailed instructions on how to provide comment on these reviews;

- provide at least one representative of the municipality to participate as a member of the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan Update and Review Committee which, after the current Plan update process is completed, to resume meeting in 2018; and
- participate in the Plan update process (assumed to commence in 2020 and conclude in early 2022).

Finally, it should be reemphasized that the Town of St. George may review and update their own programs, initiatives and projects more often by working directly with the State Hazard Mitigation Officer (SHMO) based on changing local needs and priorities. Formal changes to individual municipal annexes may be made at any time by each municipality's governing body in order to reflect changing conditions, priorities, and opportunities during the five-year life cycle of their single jurisdiction plan.

SECTION 2: HAZARD IDENTIFICATION

Detailed descriptions of the natural, technological, and societal hazards affecting the municipalities of Chittenden County are contained in Section 2 of the *Multi-Jurisdictional All-Hazards Mitigation Plan*. Designated and non-designated hazard areas are described in Section 3 of this annex. Vulnerability of structures and infrastructure to hazards is also described in Section 4 and depicted in *Figure 4.1*.

2.1.1 Profiled Hazards

This Plan profiles six (6) Natural Hazards: Severe Winter Storm, Flooding, Fluvial Erosion, Severe Rainstorm, Extreme Temperatures and Wildfire. Prior to this discussion of Hazards and the subsequent analysis of Risk and Vulnerability, it will be first helpful to summarize the general state of knowledge regarding Location, Extent and Impact in the Town of St. George.

Hazard (section of MJAHMP where discussed)	**Are Location data available?**	**Are Extent data available?**	**Are Impact data available?**
Severe Winter Storm (2.1.1.1)	No, occurs across the municipality and not mapped	No, only long-term data is at single point of National Weather Service station in South Burlington	Yes, if FEMA declares disaster. See 3.3 below.
Flooding (2.1.1.3)	Yes, 100 & 500-year flood areas delineated in the municipality. *See Figure 2.1*	*Yes, but only at a few discrete locations with gauge data such as U.S. Army Corps of Engineers for Lake Champlain	Yes, if FEMA declares disaster but co-mingled with fluvial erosion and severe rainstorm hazards events. See 3.3 below.
Fluvial Erosion (2.1.1.4)	Yes, fluvial erosion hazards areas (now termed river corridor protection areas) are mapped in the municipality. *See Figure 2.1.*	Though fluvial erosion is considered a significant hazard in the municipality, the number of feet-acres of soil lost in any one event has not been recorded nor is there a record with such data.	Yes, if FEMA declares disaster but data co-mingled with flood and severe rainstorm events. See 3.3 below.
Severe Rainstorm (2.1.1.2)	No, occurs across the municipality and not mapped. Damage locations are mapped	*Yes, but only long-term data is at single point of National Weather Service	Yes, if FEMA declares disaster but data co-mingled with flood and fluvial

	but damages can just as easily be a function of poorly designed road and/or driveway drainage as it is a function of heavy rain exceeding infrastructure capacity.	station in South Burlington.	erosion events. See 3.3 below.
Extreme Temperatures (2.1.1.5)	No, occurs across the municipality and not mapped.	*Yes, but only at single point of National Weather Service station in South Burlington	†Data not systematically collected on impacts.
Wildfire (2.1.1.6)	No, occurs across the municipality and not mapped.	Some compiled data on a countywide basis as shown in the Multi-Jurisdictional Plan but no systematic data collected after 2010.	‡Data not systematically collected on impacts.

** It is useful to note that while this NWS data is reliable it represents one discrete location in a county that has an area of 620 square miles in area. Likewise, while there are likely other systematic point-specific records being collected by individuals, business or organizations these data do not appear to be easily accessible. Finally, even if such data were accessible, only if the data was collected by mutually compatible means would it be useful.*

†An intensive search of municipal public works records may reveal documentation of some prior repair or labor costs associated with frozen or burst sewer and/or water pipes caused by Extreme Cold. However, such analysis would show where past events happened not the location of inadequately buried pipes which might be vulnerable to future events.

‡ An intensive search of fire department records may reveal documentation of locations and acres burned caused by Wildfire. However, such analysis would show where past events happened but would not show the location of areas susceptible to future events (warnings by the US Forest Service and local fire departments are not location-specific) nor the location of individuals who are likely to unwisely burn trash or leaves or fail to extinguish a campfire during dry conditions.

This Plan profiles several Technological Hazards. Prior to this discussion of Hazards and the subsequent analysis of Risk and Vulnerability, it will be first helpful to summarize the general state of knowledge regarding Location, Extent and Impact in Town of St. George for these hazards.

Hazard (section of MJAHMP where discussed)	**Are Location data available?**	**Are Extent data available?**	**Are Impact data available?**
Water Pollution (2.2.1)	Impaired streams that lack adequate biota are identified.	Phosphorus-loading for general locations is known but non-point sources are varied and dispersed.	Annual budgetary impacts to individual municipalities are significant but vary depending upon

		A road erosion inventory was performed in 2016. Problem sites have been identified and will be prioritized in late 2017.	location and whether they are an MS4 permitted community. St. George is not an MS4. The municipality, however, is subject to the requirements of the pending Municipal Roads General Permit.
Hazardous Materials Incident (2.2.2)	Storage locations are known (see listing below of addresses). Incidents occurring during transportation could occur anywhere.	Rough estimates of spill amounts are recorded.	No formal data readily available on cleanup costs.
Power Loss (2.2.3)	Outage locations not mapped	During an actual outage, some data are recorded on duration although typically this is stated as, "x,000 customers within the power company's service area".	Outage data are broad, and refer to total customers within a county.
Invasive Species (2.2.4)	Several species known to occur, but no systematic mapping has taken place.	No formal damage has been documented to date	No formal damage has been documented to date
Multi-Structure Fire (2.2.5)	Could happen anywhere within the more developed portions of the municipality	Data not formally collated across agencies	Data not formally collated across agencies
Major Transportation Incident (2.2.6)	Depending upon type of incident, could happen anywhere	No formal database of damages.	Varies depending upon type of incident.
Water Supply Loss (2.2.7)	There is no municipal water	Data not formally collated across	Data not formally collated across

	supply system.	agencies	agencies
Sewer Service Loss (2.2.8)	There is no municipal wastewater system.	Data not formally collated across agencies	Data not formally collated across agencies
Natural Gas Service Loss (2.2.9)	There is limited or no natural gas service.	Information for this rare occurrence not publicly available.	No formal damage has been documented to date.
Telecommunications Failure (2.2.10)	Depending upon type of incident, could happen anywhere	Information for this rare occurrence not publicly available.	No formal damage has been documented to date
Other Fuel Service Loss (2.2.11)	Distribution points of fuels such as firewood, fuel oil and propane are individual addresses and not mapped nor publicly available.	No formal loss of service has been documented.	No formal damage has been documented to date

The following discussion of societal hazards is based upon qualitative information from discussions with Chittenden County law enforcement professionals as well as quantitative data from the State of Vermont.

Hazard (section of MJAHMP where discussed)	**Are Location data available?**	**Are Extent data available?**	**Are Impact data available?**
Crime (2.4.1.1)	Significant incidents could happen anywhere in the municipality.	Data collection is not standardized across municipalities.	Significant socio-economic impacts
Economic Recession (2.4.1.2)	Would occur across the community.	Historic data on unemployment levels & poverty rates	Longer lasting impacts hard to measure below county level
Terrorism (2.4.1.3)	The FBI does not share a list of potential targets.	Unknown but assumed to be significant if incident occurs	Unknown but assumed to be significant if incident occurs
Civil Disturbance (2.4.1.4)	County-wide. Significant incidents can happen anywhere. The likelihood of an event may not be geographically	No formal damage has been documented to date	No formal damage has been documented to date

	likely but rather related to the type of event (political event, sporting event, protest, etc.)		
Epidemic (2.4.1.5)	Could happen anywhere	Data not formally collated across agencies	Other than 1917 Influenza epidemic no formal damage has been documented to date
Key Employer Loss (2.4.1.6)	Depending upon type of employer	No formal database of damages.	No formal database of key employer loss is maintained

Detailed descriptions of the natural, technological, and societal hazards affecting the municipalities of Chittenden County are contained in the Multi-Jurisdictional All-Hazards Mitigation Plan. Designated and non-designated hazard areas are described in Section 3 of this annex. Vulnerability of structures and infrastructure to hazards is also described in Section 4 and depicted on Map 3-1. Hazardous substances are addressed below. In other municipal annexes, transportation incidents are also discussed, but St. George contains no high-accident locations (as defined by the Vermont Agency of Transportation), and there are no inventoried bridges in the town, so no further discussion of transportation incidents is needed.

SECTION 3: RISK ASSESSMENT

3.1 Mapped Hazard Areas

3.1.1 Flood Hazard Areas

There are few flood hazard areas in the Town of St. George. A tributary stream to the LaPlatte River passes briefly through the town, along the western boundary with the Town of Shelburne. The 100-year floodplain for this stream has been mapped in St. George. The nearest home or structure is located about one-quarter mile from this stream area and the 100-year floodplain. Note, however, that the Town does not currently participate in the National Flood Insurance Program. It is currently exploring joining the NFIP as well as adopting formal flood hazard bylaws. (See section 5.4.2).

A simple GIS intersection analysis reveals farmland located within the floodplain; however, without detailed studies at each location, it is not currently possible to predict how many cubic yards of productive soils would be a net loss during a flood event.

Figure 2.1 shows the current extent of the FEMA-FIRM flood hazard area in St. George, as well as structures, infrastructure, and critical facilities located in the flood hazard area.

3.1.2 Fluvial Erosion Hazard and River Corridor Areas

During development and adoption of both the 2005 and 2011 Multi-Jurisdictional Plan and the County' municipal AHMPs, threats from stream erosion were identified as Fluvial Erosion Hazard (FEH) Areas through the analytical lens of Stream Geomorphic Assessment or SGA. The SGA approach is still used by the Vermont Agency of Natural Resources but the Vermont General Assembly adopted two related terms that are now used in managing fluvial erosion hazards. ANR now identifies and maps two different hazards. ANR now identifies and maps:

- *River Corridor (RC)* which is the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition, as that term is defined in 10 V.S.A. §1422, and for minimization of fluvial erosion hazards, as delineated by the Agency in accordance with the ANR Flood Hazard Area and River Corridor Protection Procedures.
- *River Corridor Protection Area (RCPA)* means the area within a delineated river corridor subject to fluvial erosion that may occur as a river establishes and maintains the dimensions, pattern, and profile associated with its dynamic equilibrium condition and that would represent a hazard to life, property, and infrastructure placed within the area. The river corridor protection area is the meander belt portion of the river corridor without an additional allowance for a riparian buffer to serve the functions of bank stability and slowing flood water velocities in the near-bank region.

Some level of geomorphic assessment has been completed for several streams in St. George. Fluvial erosion hazard areas have been identified for one of these waterways—a tributary of the LaPlatte River. However, local officials indicate that fluvial erosion has not historically been a problem in the identified stream segment, which contains a fairly low volume of water. *Figure*

2.1 shows the progress of geomorphic assessments and identified fluvial erosion hazard areas in St. George. Critical facilities and infrastructure located in the fluvial erosion hazard area are not identified, as the fluvial erosion data has not been finalized.

3.1.3 Repetitive Loss Properties and National Flood Insurance Program

Repetitive loss properties are public or private buildings insured under the National Flood Insurance Program that have made at least two insurance claims of more than $1,000 each during a ten-year period. According to the National Flood Insurance Program, there are no such properties located in the municipality. The Town does not participate in the National Flood Insurance Program; but as noted above, it is now considering taking the steps required to join the program. Also, as noted above, there are no buildings or infrastructure located within the 100-year floodplain.

3.1.4 High Crash Locations

In other municipal annexes, high accident or crash locations are discussed; however, according to the Vermont Agency of Transportation, there are no such locations that meet their thresholds. That said, the Town suggests that at least relatively speaking, the intersection of South Brownell Road and VT Route 116 is a location that sees a fair number of vehicular accidents.

3.2 Other Information

The following hazards are not formally analyzed nor mapped due to the random nature of where such damage occurs; however, they occur with some frequency and therefore are discussed here.

3.2.1 1998 Ice Storm Damage

Areas in the northern portion of the town suffered more tree damage than the rest of the town in the massive 1998 ice storm (DR-1201).

3.2.2 Severe Rainstorms

In prior versions of this Annex and the County Plan, damage to roads, culverts and bridges from thunderstorm events was discussed as either the result of flooding or fluvial erosion. It was assumed that overflowing nearby streams, rivers or lakes were the cause of the damage. Analysis has shown that this damage is caused by intense, localized thunderstorms which cause excessive and rapid water flows on and over paved and gravel roads, roadside ditches, driveway culverts, stormwater systems, etc. In many cases, damaged infrastructure is located nowhere near a formally mapped Floodplain or Fluvial Erosion Hazard Area or River Corridor. This was the case in more recent FEMA-declared disasters in the summer of 2013 and 2015. Because of this new information, CCRPC has decided to add “Severe Rainstorm” to the 2016 Update to the County Plan and its annexed local AHMPs. While past damage locations can sometimes be mapped (depending upon the degree and accuracy of data collection efforts) this may or may not provide any degree of predictability of the potential locations for future events.

High Winds and Lightning

Ridgeline and hilltop homes and homes located in the midst of mature forests are the most vulnerable to damage from falling trees and tree limbs.

3.2.3 High Crash Locations

No High Crash Locations have been identified by the Vermont Agency of Transportation in the Town of St. George.

3.2.4 Road Infrastructure Failure

There are no State-owned long bridges in the Town of St. George, and therefore none that have been assessed for vulnerability to scouring. Some of the most vulnerable infrastructure are road culverts. For a listing of culverts identified as "geomorphically-incompatible" either due to inadequate size or improper alignment, see Table 4.7.

3.2.5 Hazardous Substances

Hazardous material release is discussed as a possible hazard in the Multi-Jurisdictional All-Hazards Mitigation Plan. According to Vermont Emergency Management, there is one reported hazardous material storage site in St. George. Sites that contain large amounts of fuel or store what VEM calls Extremely Hazardous Substances are more likely to cause significant problems in a hazardous materials incident.

According to the 2016 hazardous materials data obtained from VEM, the only Tier II reporting site in St. George is Simon's St. George Store, presumably with regard to underground storage tanks for diesel fuel and gasoline at this gas station/convenience store.

Note, however, that although petroleum product and hazardous materials locations are limited in the town, a buried Vermont Gas high-pressure natural gas transmission pipeline was recently constructed running north-south through the town. Although an accident involving such lines are rare it is a possibility and could cause catastrophic impacts depending upon the exact location.

3.3 Previous FEMA-Declared Natural Disasters and Snow Emergencies

3.3.1 Public Assistance

Since 1990 St. George has received public assistance funding from FEMA for just one natural disaster as follows:

Table 3-1 Town of St. George, FEMA-declared disasters and snow emergencies, 1990-2016

Date (FEMA ID#)	Type of Event	Total repair estimates
January 1998 (DR 1201)	ice storm	$2,519

The Town of St. George was reimbursed at a rate of 75 percent by FEMA for the estimated repair costs, coupled with additional dollars from the State's Emergency Relief Assistance Fund (ERAF), typically averaging 12.5%. Funds provided in response to this natural disaster were used as follows:

- January 1998: widespread debris removal from effects of ice storm.

See *Figure* 3.1. to see locations where repairs funded in part with FEMA Public Assistance took place for disasters between 2001 and 2015. As the map shows, damage has tended to be concentrated in upland areas. Note that some Debris Removal and Protective Measures locations are shown at the location of the municipal office. This indicates assistance was at various locations throughout the municipality, not that damages were incurred at the office.

3.3.2 Individual Assistance funds

As noted in Section 3.3 of the County Plan, due to privacy concerns, the individual homes or businesses which received Individual Assistance funds in connection with the two Federal disasters in 2011 (Spring flooding and Tropical Storm Irene in September) are not public information. However, the names of the streets of such homes or businesses from which claims are filed is available as are the funds provided. That said, with regard to the Town of St. George, there were no Individual Assistance claims between 2011 and 2016.

3.4 Future Events

Although estimating the risk of future events is far from an exact science, CCRPC staff used best available data and best professional judgment to conduct an updated Hazards Risk Estimate analysis, which was subsequently reviewed and revised by town officials in early 2016. This analysis assigns numerical values to a hazard's affected area, expected consequences, and probability. This quantification allows direct comparison of very different kinds of hazards and their effect on the county, and serves as a rough method of identifying which hazards hold the greatest risk. CCRPC staff applied the following scoring system:

Area Impacted, scored from 0-4, rates how much of the municipality's developed area would be impacted.

Consequences consists of the sum of estimated damages or severity for four items, each of which are scored on a scale of 0-3:

- Health and Safety Consequences
- Property Damage
- Environmental Damage
- Economic Disruption

Probability of Occurrence (scored 1-5) estimates an anticipated frequency of occurrence.

To arrive at the overall risk value, the sum of the Area and Consequence ratings was multiplied by the Probability rating. The highest possible risk score is 80.

As explained in detail in Section 3.4 of the Multi-Jurisdictional Plan, for the 2011 Plan, the following Hazards were considered to occur or have the potential to occur with sufficient frequency and/or severity for to be profiled for Risk Estimation in that Plan:

Natural Hazards: **Technological Hazards:** **Societal Hazards:**

- Drought
- Flooding
- Fluvial erosion
- High winds
- Landslide
- Lightning
- Multi-structure urban fire
- Radiological (natural)
- Wildfire
- Winter storm
- Gas service loss
- Hazardous materials incident
- Major transportation incident
- Military ordnance incident
- Power loss
- Radiological incident
- Sewer service loss
- Telecommunications failure
- Water service loss
- Crime
- Civil disturbance
- Economic recession
- Epidemic
- Key employer loss
- Terrorism

For the 2017 update, the CCRPC and its All-Hazards Mitigation Plan Update Committee made slight changes to this list by consolidating some hazards or delineating hazards with more specificity as follows:

Natural Hazards:
- Flooding
- Fluvial erosion
- Severe Rainstorm
- Wildfire
- Severe winter storm
- Extreme Temperatures

Technological Hazards:
- Hazardous materials incident
- Major transportation incident
- Multi-structure fire
- Natural gas service loss
- Water pollution
- Power loss
- Sewer service loss
- Telecommunications failure
- Water service loss
- Other fuel service loss
- Invasive Species

Societal Hazards:
- Crime
- Civil disturbance
- Economic recession
- Epidemic
- Key employer loss
- Terrorism

3.4.1 Natural Hazards

For the 2011 Hazard and Risk Estimation analysis for St. George, the following natural hazards received the highest risk ratings out of a possible high score of 80:
- Severe Winter Storm (45)
- Multi Structure Fire (21)

For the 2017 update, the following natural hazards received the highest risk ratings out of a possible high score of 80 (see Table below):
- Severe Winter Storm (45)

- Severe Rainstorm (44)
- Wildfire (30)

Severe winter storms tend to affect the entire town, and occur more frequently than most other hazards. Although the Town manages only a few roads, those they do manage are mostly gravel and therefore vulnerable to damage from Severe Rainstorms. Lastly, although wildfires are rare, they could cause significant damage as a good portion of the town is heavily wooded, similar to wildfire damage suffered in the neighboring town of Hinesburg in recent years.

Table 3-2 Natural hazards risk estimation matrix, St. George

		Winter Storm	Severe Rainstorm	Wildfire	Fluvial Erosion	Flooding	Extreme Temperatures
Area Impacted							
Key:	0 = No developed area impacted					0	0
	1 = Less than 25% of developed area impacted				1		
	2 = Less than 50% of developed area impacted		3	3			
	3 = Less than 75% of developed area impacted						
	4 = Over 75% of developed area impacted	4					
Consequences							
Health & Safety Consequences							
Key:	0 = No health and safety impact			0	0		0
	1 = Few injuries or illnesses	1	1			1	
	2 = Few fatalities or illnesses						
	3 = Numerous Fatalities						
Property Damage							
Key:	0 = No property damage						0
	1 = Few properties destroyed or damaged				1	1	
	2 = Few destroyed but many damaged	2					
	2 = Few damaged and many destroyed						
	3 = Many properties destroyed and damaged		3	3			
Environmental Damage							
Key:	0 = Little or no environmental damage					0	0
	1 = Resources damaged with short-term recovery	1	1	1	1		
	2 = Resources damaged with long-term recovery						
	3 = Resources destroyed beyond recovery						
Economic Disruption							
Key:	0 = No economic impact				0	0	
	1 = Low direct and/or indirect costs	1					1
	2 = High direct and low indirect costs						
	2 = Low direct and high indirect costs						
	3 = High direct and high indirect costs		3	3			
Sum of Area & Consequences Scores		***9***	***11***	***10***	***3***	***2***	***1***
Probability of Occurrence							
Key:	1 = Unknown but rare occurrence						
	2 = Unknown but anticipate an occurrence						
	3 = 100 years or less occurrence			3			
	4 = 25 years or less occurrence		4		4	4	4
	5 = Once a year or more occurrence	5					
TOTAL RISK RATING							
	Total Risk Rating =	**45**	**44**	**30**	**12**	**8**	**4**
	Sum of Area & Consequences Scores						
	x Probability of Occurrence						

3.4.2 Technological Hazards

In the 2011 Hazard and Risk Estimation analysis for St. George, the following technological hazards received the highest risk ratings out of a possible high score of 80:

- Power Loss (40)
- Telecommunications Failure (21)
- Water Service Loss (20)

For the 2017 update, the following technological hazards received the highest risk ratings out of a possible high score of 80 **(see Table below):**

- Power Loss (40)
- Water Service Loss (28)
- Multi-Structure Fire (27)

Both electrical and telecommunications failures often happen over a wide area and can occur as the result of several different kinds of natural hazards, including winter storms and high winds. Power loss and water service loss are connected. As much of the population of St. George is served by privately-owned but legally 'public' wells and water supplies, a long-term power outage could affect water supply for a large portion of the town. While St. George does not have a traditional densely populated village center nor apartment buildings, there are two large mobile home parks in the town which are potentially vulnerable to a multi-structure fire.

Table 3-3 Technological hazards risk estimation matrix, St. George

		Power Loss	Water Service Loss	Multi-Structure Fire	Hazardous Materials Incident	Major Transportation Incident	Telecommunications Failure	Other Fuel Service Loss	Invasive Species	Sewer Service Loss	Gas Service Loss	Pollution (algal bloom, etc.)
Area Impacted												
Key:	0 = No developed area impacted										0	0
	1 = Less than 25% of developed area impacted					1	1	1	1	1		
	2 = Less than 50% of developed area impacted			2	2							
	3 = Less than 75% of developed area impacted		3									
	4 = Over 75% of developed area impacted	4										
Consequences												
Health & Safety Consequences												
Key:	0 = No health and safety impact								0	0	0	0
	1 = Few injuries or illnesses	1	1		1		1	1				
	2 = Few fatalities or illnesses			2		2						
	3 = Numerous Fatalities											
Property Damage												
Key:	0 = No property damage		0				0	0	0	0	0	0
	1 = Few properties destroyed or damaged	1			1	1						
	2 = Few destroyed but many damaged			2								
	3 = Few damaged and many destroyed											
	4 = Many properties destroyed and damaged											
Environmental Damage												
Key:	0 = Little or no environmental damage	0	0	0			0	0	0	0	0	0
	1 = Resources damaged with short-term recovery					1						
	2 = Resources damaged with long-term recovery				2							
	3 = Resources destroyed beyond recovery											
Economic Disruption												
Key:	0 = No economic impact								0		0	0
	1 = Low direct and/or indirect costs				1	1	1	1		1		
	2 = High direct and low indirect costs	2										
	2 = Low direct and high indirect costs											
	3= High direct and high indirect costs		3	3								
Sum of Area & Consequences Scores		***8***	***7***	***9***	***7***	***6***	***3***	***3***	***1***	***2***	***0***	
Probability of Occurrence												
Key:	1 = Unknown but rare occurrence									1	1	1
	2 = Unknown but anticipate an occurrence				2	2						
	3 = 100 years or less occurrence			3				3				
	4 = 25 years or less occurrence		4				4		4			
	5 = Once a year or more occurrence	5										
TOTAL RISK RATING												
	Total Risk Rating =	**40**	**28**	**27**	**14**	**12**	**12**	**9**	**4**	**2**	**0**	**0**
	Sum of Area & Consequences Scores											
	x Probability of Occurrence											

3.4.3 Societal Hazards

In the 2011 Hazard and Risk Estimation analysis for St. George, the following societal hazards received the highest risk ratings out of a possible high score of 80:

- Epidemic (21)
- Crime (16)
- Economic Recession (16)

For the 2017 update, the following societal hazards received the highest risk ratings out of a possible high score of 80 (see Table below):

- Epidemic (21)
- Crime (16)
- Economic Crisis (16)

The likelihood of an epidemic is difficult to gauge, but its consequences could be severe. Crime also tends to increase in recessions. While the crime rate in St. George is not extreme, crimes such as domestic disturbance and drug use in public places do occur. As St. George lacks a municipal police force, all police response comes from the State Police or the Hinesburg Police Department, which can result in longer response times.

Table 3-4 Societal hazards risk estimation matrix, St. George

		Epidemic	Economic Crisis	Crime	Key Employer Loss	Terrorism	Civil Disturbance
Area Impacted							
Key:	0 = No developed area impacted						
	1 = Less than 25% of developed area impacted			1	1	1	1
	2 = Less than 50% of developed area impacted	2	2				
	3 = Less than 75% of developed area impacted						
	4 = Over 75% of developed area impacted						
Consequences							
Health & Safety Consequences							
Key:	0 = No health and safety impact		0		0		0
	1 = Few injuries or illnesses			1		1	
	2 = Few fatalities or illnesses	2					
	3 = Numerous Fatalities						
Property Damage							
Key:	0 = No property damage	0	0		0		
	1 = Few properties destroyed or damaged			1		1	1
	2 = Few destroyed but many damaged						
	3 = Few damaged and many destroyed						
	4 = Many properties destroyed and damaged						
Environmental Damage							
Key:	0 = Little or no environmental damage	0	0	0	0	0	0
	1 = Resources damaged with short-term recovery						
	2 = Resources damaged with long-term recovery						
	3 = Resources destroyed beyond recovery						
Economic Disruption							
Key:	0 = No economic impact						
	1 = Low direct and/or indirect costs			1			1
	2 = High direct and low indirect costs						
	2 = Low direct and high indirect costs		2		2	2	
	3 = High direct and high indirect costs	3					
Sum of Area & Consequences Scores		***7***	***4***	***4***	***3***	***5***	***3***
Probability of Occurrence							
Key:	1 = Unknown but rare occurrence					1	1
	2 = Unknown but anticipate an occurrence						
	3 = 100 years or less occurrence	3			3		
	4 = 25 years or less occurrence		4	4			
	5 = Once a year or more occurrence						
TOTAL RISK RATING							
	Total Risk Rating =	**21**	**16**	**16**	**9**	**5**	**3**
	Sum of Area & Consequences Scores						
	x Probability of Occurrence						

3.4.4 Hazard Summary

According to the 2017 risk estimation analysis, the three highest rated hazards by type for St. George are:

Natural Hazards

- Severe Winter Storm (45)
- Severe Rainstorm (44)
- Wildfire (30)

Technological Hazards

- Power Loss (40)
- Water Service Loss (28)
- Multi-Structure Fire (27)

Societal Hazards

- Epidemic (21)
- Economic Crisis (16)
- Crime (16)

It should be noted that the highest-rated natural hazard—severe winter storm—could be the cause of the highest-rated technological hazards, power loss and telecommunications failure. St. George's risk for societal hazards is less than for natural and technological hazards. Winter storms are the highest rated hazard for St. George, due in large part to their widespread nature and frequent occurrence.

SECTION 4: VULNERABILITY ASSESSMENT

As discussed in Section 4 of the County Plan, typical vulnerabilities from the County's common hazards consist primarily of:

- damage to public infrastructure especially roads and culverts;
- temporary closures of roads and bridges including from debris;
- temporary loss of power and/or telecommunications
- temporary isolation of vulnerable individuals such as the elderly or those in poverty.

More specifically, these vulnerabilities typically occur in association with the Profiled Natural Hazards as follows:

Table 4-1 Town of St. George: Natural Hazards and typical vulnerabilities

Hazard	**Typical vulnerabilities**	**Occasional additional vulnerability**
Severe Winter Storm	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals	-budget impacts from debris cleanup
Flooding	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals -damage to public infrastructure	-budget impacts from road/bridge closures and repairs to public infrastructure -damages to individuals' properties and businesses
Fluvial Erosion	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals -damage to public infrastructure	-budget impacts from road/bridge closures and repairs to public infrastructure -damages to individuals' properties and businesses
Severe Rainstorm	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals -damage to public infrastructure	-budget impacts from road/bridge closures and repairs to public infrastructure -damages to individuals' properties and businesses
Extreme Temperatures	-damage to public infrastructure -loss of water service	-budget impacts due to needed repairs

Wildfire	-damage to private property	

Relative to the County as a whole the Town of St. George has a higher vulnerability to:

- Severe Rainstorm due to the potential for damages to municipal roads that overwhelm the town's limited budget and
- Wildfire, due to its somewhat remote location and limited capacity to respond.

Table 4-2 Town of St. George: Technological Hazards and typical vulnerabilities

Hazard	Typical vulnerabilities	Occasional additional vulnerability
Major Transportation Incident	-temporary closures of transportation infrastructure -injuries, deaths	-if major event, potential long term closure of infrastructure.
Power Loss	-temporary loss of electrical service -temporary impacts to vulnerable individuals -damage to public infrastructure	-if extended event, damage to perishable goods or business income. -if extensive loss, potential budget impacts to service providers.
Hazardous Materials Incident	-temporary closures of roads and bridges during cleanup.	-if large event, potential high cleanup costs. -injuries to persons
Water Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget impacts to service providers.
Gas Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget impacts to service providers.
Telecommunications Failure	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget impacts to service providers.
Other Fuel Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget impacts to service

		providers.
Sewer Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget impacts to service providers.
Water Pollution	-ongoing budgetary impacts due to permit requirements.	-if repeat events, impacts to tourism-based businesses
Invasive Species	-small but ongoing cost to monitoring level of occurence	-unknown at this point.

Relative to the County as a whole the Town of St. George has a slightly higher vulnerability to:

Water Service Loss as the only 'public' water systems are private systems serving relatively high density mobile home parks.

Table 4-3 Town of St George: Societal Hazards and typical vulnerabilities

Hazard	Typical vulnerabilities	Occasional additional vulnerability
Crime	-increased demands on police services and social services	-injuries -deaths
Epidemic	-temporary closures of schools, businesses, places of assembly -increased demand on medical services	-if an epidemic is widespread and long-lasting, impact could be severe
Key Employer Loss	-loss of economic activity -loss of portion of tax base -increased demands on social services	-effects increased if employer is of significant size
Economic Recession	-loss of economic activity -increased demands on social services -some loss of tax revenue	-effects increased if event is of extended duration
Civil Disturbance	-injuries to persons -damage to public and private property	-budget impacts to police services depending upon severity of event -deaths
Terrorism	-injuries to persons -damage to public and private property	-budget impacts to police services depending upon severity of event -deaths

Relative to the County as a whole there are insufficient data to conclude whether the Town is more vulnerable to one of the six Societal Hazards noted above.

With regard to the vulnerability of critical facilities, infrastructure and vulnerable populations, quantitative and locational data for the Town are available as follows.

4.1 Critical Facilities

The Center for Disaster Management and Humanitarian Assistance defines critical facilities as: "Those structures critical to the operation of a community and the key installations of the economic sector." *Figure 1.4* shows the geographic distribution of some critical facilities and

utilities. The table below identifies critical facilities in St. George excluding critical facilities designated as hazardous materials and petroleum storage sites, which are shown in Section 3.2.5.

Table 4-4 Critical facilities in the Town of St. George

Facility Type	Number of Facilities
Government and Military	1
Water Supply and Treatment	1

Source: VCGI

4.2 Infrastructure

4.2.1 Town Highways

The following is a statistical overview of roads in the Town of St. George. These tables show the range of road types within the town, from highways to unpaved roads. The different road types have different hazard vulnerabilities. Unpaved roads are more vulnerable to being washed out in a flood or heavy storm, while traffic incidents are more likely to occur on large, arterial roads.

Municipal highways, bridges and dams are well mapped in Chittenden County. The following three tables show the diversity of municipal highways and road surface in the Town of St. George.

The Vermont Agency of Transportation divides municipal (town) highways into various classes as follows:

Class 1 town highways are subject to concurrent responsibility and jurisdiction between the municipality and VTrans. Class 1 town highways are state highways in which a municipality has assumed responsibility for most of the day to day maintenance (pot hole patching, crack filling, etc.). The state is still responsible for scheduled surface maintenance or resurfacing. In Chittenden County Class 1 highways are generally paved.

Class 2 town highways are primarily the responsibility of the municipality. The state is responsible for center line pavement markings if the municipality notifies VTrans of the need. The municipality designates highways as Class 2 with approval from VTrans. These are generally speaking the busier roads in a given town second to Class 1. In Chittenden County, most Class 2 highways are generally paved, although in the more isolated areas, these are gravel roads.

Class 3 town highways are the responsibility of and designated by the municipality. These are to be maintained to an acceptable standard and open to travel during all seasons. In Chittenden County, Class 3 roads are both paved or gravel.

Class 4 town highways are all other highways and the responsibility of the municipality. However, pursuant to Vermont State Statutes, municipalities are not responsible for maintenance

of Class 4 town highways. These are generally closed during the winter, and minimally maintained and almost exclusively dirt.

Table 4-5 Town highway mileage by class, Town of St. George

Class 1		Class 2	Class 3	Class 4	State Hwy	Fed Hwy	Interstate	Total 1, 2, 3, State Hwy
		0.350	1.400	0.690	3.603			5.353

Source: data derived from VTrans TransRDS GIS data – surface class and arc length

Table 4-6 Town highway mileage by surface type, Town of St. George

Paved	Gravel	Soil or Graded	Unimproved	Impassable	Unknown	Total
4.43	1.81	0	0	.09	0	6.24

Total Known	Total Unpaved	% Paved	% Unpaved
6.24	1.81	70.99	29.01

Source: data derived from VTrans TransRDS GIS data – surface class and AOTmiles

See *Figure 3.2* for locations of paved vs. gravel and/or soil roads.

4.2.2 Bridges, Culverts, and Dams

Due to a low population and limited numbers of roads relative to other municipalities in the County there are only a few bridges and culverts and dams in St. George. Culvert data is entered into an online database, www.vtculverts. Current records show 20 culverts located and zero bridges on the following municipal roads: Ayer, Barber, Oak Hill, South Brownell and Willow Brook Lane. There are also culverts in the town located on private roads or located along VT Routes 116 or 2A, which are the responsibility of the State of Vermont Agency of Transportation.

As noted in Section 4 of the County Plan, a large portion of the County's stream have had detailed Phase II Stream Geomorphic Assessments conducted. With regards to St. George, studies identify specific stream reaches where fluvial erosion is a concern as well as where infrastructure, primarily culverts, as noted in the table below is at risk.

Table 4-7 Culverts with a geographic compatibility rating of "Mostly Incompatible" or "Incompatible"

Bankfull Width	Compatibility Score	Town	GisRoadName	StreamName
33.33	10	St. George	WILLOW BROOK LN	Sucker Brook
Mostly incompatible *5<GC<10 % Bankfull Width + Approach Angle scores < 2*		*Structure mostly incompatible with current form and process, with a moderate to high risk of structure failure. Re-design and replacement planning should be initiated to improve geomorphic compatibility.*		

Fully incompatible *0<GC<5 % Bankfull Width + Approach Angle scores < 2* ***AND*** *Sediment Continuity + Erosion and Armoring scores < 2*	*Structure fully incompatible with channel and high risk of failure. Re-design and replacement should be performed as soon as possible to improve geomorphic compatibility.*

Information on dams is available from two sources: a database of dams regulated by the Vermont Department of Environmental Conservation (dams capable of impounding more than 500,000 cubic feet of water or other liquid) and the National Dam Inventory maintained by the U.S. Army Corps of Engineers.

There are no dams in St. George that are listed in either of these two databases.

4.2.3 Water, Wastewater and Natural Gas Service Areas

There are no municipal wastewater services, nor private natural gas service lines in the Town. Privately-owned water wells serve each of the town's two trailer parks, and a separate water well also serves four buildings in the Town Center. A large cistern containing several thousand gallons of water is located under the Vermont Ware manufacturing facility and is available to be used for firefighting via a dry hydrant system. There are two community wastewater systems in operation. One serves the mobile home park St. George Villa, and the other serves the Town Center property.

4.2.4 Electric Power Transmission Lines and Telecommunications Land Lines

A VELCO high tension power transmission line runs from south to north through the town (cf. *Figure 1.4*).

4.3 Estimating Potential Losses in Designated Hazard Areas.

The Town of St. George does not participate in the National Flood Insurance Program at this time; however, the Town has considered taking the necessary steps to join NFIP, and may do so in the future. There are no designated hazard areas located in the Town of St. George.

A simple GIS intersection of e-site data with the 2010 floodplain data published by FEMA indicates the following with regards to structures located in mapped flood hazard areas:

- There are 330 structures in the Town of St. George.
- There are no residential structures and no commercial/industrial structures located within the 100-year floodplain.
- This estimate only takes structures into account. It does not account for personal property or business losses.

A simple GIS intersection of esite data with the 2016 River Corridor Protection Area data *(cf. Figure 2-1)* indicates the following with regard to structures vulnerable to Fluvial Erosion:

- There are 330 structures in the Town of St. George.
- There are no residential structures and no commercial/industrial structures located within the River Corridor Protection Area.

- Note that this estimate only takes structures into account, however. It does not account for personal property or business losses.

At this time, a more detailed analysis of potential losses to structures, infrastructure, and agricultural lands cannot be made. Such an analysis would require individual site visits and analysis conducted by both river geomorphologists and structural engineers which is beyond the capacity of the CCRPC due to funding limitations.

4.4 Vulnerable Populations

Like most of the County's rural communities, census data more detailed than the town boundaries is not available to see if there are concentrations of either elderly populations or low-income populations. In other words, the town's boundaries form one single census tract. Demographic information on the relative percentages of vulnerable populations is as follows:

Table 4-8 Vulnerable populations, St. George

	St. George	Chittenden County	Vermont	National
Percent Minority (non-white)[1]	1.8%	7.7%	4.8%	26.7%
Children <18 in poverty[1]	28.7%	11.1%	14.8%	21.6%
Families w/children in poverty[1]	23.7%	10.5%	13.4%	17.8%
Families w/ female householder, no husband present w/children in poverty[1]	53.2%	37.0%	37.4%	40%
Population, age 65+ in poverty[1]	0.0%	6.5%	7.5%	13.4%

[1]*US Census Bureau, 2010-2015, American Community Survey*

Given the coarseness of the available data, CCRPC is not able to determine specific locations with a concentration of vulnerable individuals within the Town of St. George. However, a useful analysis known as a Social Vulnerability Analysis has been prepared by the Vermont Department of Health. Data for the Town are shown in *Figure 4.1*.

The Social Vulnerability Index (SVI) draws together 16 different measures of vulnerability in three different themes: socioeconomic, demographic, and housing/transportation. The 16 individual measures include poverty, unemployment, per capita income, educational attainment, health insurance, children/elderly, single parent households, disability, minority, limited English, location of apartment buildings, mobile homes, crowding, no vehicle access, and population living in group quarters. The measures are combined to create relative vulnerability index. For every vulnerability measure, census tracts above the 90th percentile, or the most vulnerable 10%,

are assigned a flag. The vulnerability index is created by counting the total number of flags in each census tract. It is important to remember that this Social Vulnerability Index is just a first step in screening for populations that may be more or less vulnerable to a variety of hazard. Depending on the situation, different measures could be more or less important and should be looked at more closely. These data are NOT saying that one census tract is more vulnerable than another. Rather it is saying that there is a higher concentration of various vulnerable populations living within a tract and seeks to identify the conditions that make a population vulnerable.

4.5 Land Use and Development Trends Related to Mitigation

As noted at the Introduction, St. George's land use is primarily residential and agricultural. An analysis of GIS data shows the following percentages for land use and the percentages of land allocated to each zoning district.

Table 4-9 Structures compared to zoning, Town of St. George

St. George Structures	Esite Count	Percent		St. George Zoning	Area (mi^2)	Percent
Residential	315	95.45%		Low Density Residential	0.706336	19.30%
Commercial	5	1.52%		Medium Density Residential	0.423812	11.58%
Industrial	3	0.91%		Rural Development	2.134416	58.33%
Institutional / Infrastructure	2	0.61%		Village Center	0.077117	2.11%
Mass Assembly	0	0.00%		Village Center Reserve	0.071167	1.94%
Leisure / Recreation	0	0.00%		Village Neighborhood	0.246668	6.74%
Natural Resources	0	0.00%				
Total:	325	98.48%				
Total Esites:	330			Total Area:	3.659516	

Source: 2015 e911 Data and 2013 Town of St George Zoning Regulations, Note: The structure categories relate to the Land Based Classification System (LBCS) used in the 2011 AHMP not E-911 site types. E-911 site types were assigned to each LBCS category to create synergy between the 2011 AHMP and 2017 AHMP.

4.5.1 Conserved or Undevelopable Parcels

As detailed in the table below, there is little formally conserved land in St. George.

Table 4-10 Conserved Land, Town of St. George

Acres	Acres of Public Land	Percent Public	Acres of Conserved Land	Percent Conserved	Total Public & Conserved	Percent Conserved Land
2,353.59	0	0%	4.77	0.02	4.77	0.020

Source: VLT Data and ANR Public Lands

This 4.77 acres parcel (owned by The Nature Conservancy) in the northwest tip of St. George, is part of an 11.8-acre parcel, which also lies in Shelburne, abutting Shelburne Pond. The Town owns a large 77.8-acre parcel immediately west of the Town Office with acreage split as follows among 3 different zoning districts: 2.3 in the Village Neighborhood; 30 in the Village Center and 45.5 in the Village Center Reserve. Although not formally conserved, a small portion of Village Center portion hosts a restored one-room schoolhouse and a community garden with plans for adding a community playground. Additionally, uses in the Village Center Reserve area are limited to non-commercial enterprises primarily agriculture and forestry.

4.5.2 Recent and Future Development

Topography and the lack of infrastructure combine to slow residential and commercial development. Scattered development of single-family homes is anticipated in various zoning districts, although the rate of development is unknown. At this time, the main way CCRPC has to predict future development is by analysis of municipal zoning bylaws. The only flood hazard area in St. George lies away from roads in the town and under current zoning bylaws cannot be developed due to water quality setbacks in the town's zoning bylaws.

From 2011 through 2014, 11 new housing units have been built, but no new commercial/industrial buildings were constructed. With no new housing units nor new commercial/industrial buildings located in the SFHA, River Corridor or River Corridor Protection Area

As best can be ascertained based upon data maintained by the Chittenden County RPC and the Town of St. George, since the adoption of the last municipal AHMP in 2011, development activity in the Town has not increased vulnerability. Through at least 2021, there is no known or projected development of new buildings or infrastructure anticipated to be constructed in areas known to be particularly vulnerable to Natural Hazards. Lastly, should the town adopt formal flood hazard bylaws or bylaws precluding development in River Corridors, vulnerability will be further reduced.

SECTION 5: MITIGATION STRATEGY

The Town considered a range of mitigation actions across the categories of Planning and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, and Education and Awareness Programs. As is demonstrated in the discussion that follows the Town carries out numerous efforts as part of its day-to-day operations that fit within these categories and address and serve to mitigate the impacts of various hazards. The section concludes within an analysis of which vulnerabilities need additional attention and therefore stipulates discrete tasks to be carried out by the Town during the 5-year period this Plan is in effect to address these vulnerabilities.

5.1 Existing *2012 St. George Town Plan* Goals and Policies that Support Hazard Mitigation

The following selected excerpts illustrate how mitigation is formally promoted and supported through the Comprehensive Plan.

Vermont Electric Co-operative (VEC) supplies electricity in St. George. As new and/or replacement electric distribution and telecommunications lines are required in town, they should be installed underground. This will promote aesthetically pleasing development and increase the reliability of the infrastructure.

It is the stated policy of the Town of St. George that any upgrade, substantial change or reconstruction to VELCO's transmission infrastructure in town must result in the lines being run underground across the village center as identified in the Land Use Plan. In areas not expressly required to be underground along the existing VELCO corridor, no additional lines on separate poles shall be added in order to reduce the undue adverse aesthetic impact from multiple lines and the potential need for additional transmission corridors. This plan requires extensive mitigation for transmission lines above ground. Mitigation includes planting and maintenance by the applicant of street trees along all roadsides on the approaches to screen the transmission lines, with similar plantings to effectively screen the lines and pole towers from adjacent residential properties.

This plan calls for the town to enact regulations that would restrict development on the town's hillsides and ridgelines, both to prevent environmental degradation and to preserve the scenic qualities of the town's rugged terrain.

The town should strengthen its standards governing resource extraction – a recommendation from earlier town plans that has not been implemented – to ensure that any extraction that does occur in the future does not unduly impact environmental quality or the character of the community.

In order to limit the potential for contamination within the town's SPAs, St. George should enact regulations within a groundwater protection overlay district to provide additional review of land uses within the SPAs and restrict development that could contaminate the water supplies.

St. George should support efforts to protect wetlands by ensuring that adjacent land uses do not impair the important habitat, filtration and flood control functions of the town's wetlands.

St. George's soils are prone to erosion and similar impacts to the town's (or neighboring town's) surface waters could occur if construction site erosion and post-construction stormwater run-off are not properly managed when land is being developed.

Establish minimum buffers between development and water bodies or wetlands.

Require buffers between development and sensitive natural features to be maintained in a natural state. Use development envelopes to locate development in order to limit impacts on sensitive natural features and preserve open space. Conserve open space as buffers between neighborhoods outside the village center.

Work cooperatively with Hinesburg, Richmond and Williston to protect and enhance the environmental quality of Lake Iroquois.

Prohibit development in all flood hazard areas and maintain such areas in a natural state.

Establish lot coverage and impervious surface standards for new development to prevent increases in the quantity and rate of stormwater runoff. Limit the post-development rate of stormwater runoff from a property to pre-development levels. Require stormwater management plans for industrial, commercial and large-scale residential development.

Require the implementation of erosion control techniques on construction sites.

Reduce the density of development on steep slopes.

Retain woody vegetation and limit the amount of impervious surface on the town's steep slopes in order to reduce the potential for erosion and associated water pollution.

Build new roads to basic standards appropriate for our climate in order to protect public safety, infrastructure and the environment. Limit the grade of private roads and driveways to allow for safe access by emergency vehicles and to prevent erosion and runoff. Establish design standards for all new roads and drives that will allow for safe access by emergency vehicles while not promoting unnecessarily wide streets or large turning radii.

10. Work with VTrans to calm traffic in order to create a safe, pedestrian-friendly environment, especially for the village center. Support the state's access management efforts by promoting use of shared drives and carefully reviewing the traffic patterns, access points and parking areas proposed for new development near the highways.

Use access management techniques to reduce congestion and maintain safety levels on heavily traveled roads as adjacent lands are developed.

The quality of Ayer Road should be improved to provide a better surface and drainage without changing its character as it serves as an important connector between the west and east side of town.

Enact regulations within a groundwater protection overlay district for the town's Source Protection Areas (SPAs) to provide additional review of land uses and restrict development within the SPAs that could contaminate the water supplies. Improve the existing community water supply infrastructure on the town center property to enhance fire protection capacity and increase the amount of water available. Require the water supply infrastructure within the village center to be constructed to standards adequate for providing fire protection, and require fire ponds and/or dry hydrants within developments not served by public water supplies.

Work to ensure that any upgrade to VELCO's transmission infrastructure in town results in the lines being run underground across the village center planning area as identified in the Land Use Plan. Require new or upgraded electric distribution and telecommunications lines to be installed underground in the village center planning area; require the same elsewhere in town.

Encourage the use of agricultural practices that protect environmental quality.

5.2 Existing Town of St. George Actions that support Hazard Mitigation

The following table illustrates how mitigation activities and plans are carried out by various municipal departments and whether such capabilities are adequate to address hazard vulnerabilities and whether the department, if needed, has the ability to improve policies and programs and programs to unmitigated vulnerabilities.

Table 5-1 Existing municipal capabilities addressing hazard mitigation, Town of St. George

Type of Existing Programs and Policies	**Description /Details**	**1) Adequacy of municipal capabilities to address hazards, 2) and ability to expand upon or improve policies & programs**
Highway Services	Road Commissioner	1) Generally adequate with regard to mitigating the impacts of common hazards. 2) However, the Road Commissioner through the strategies noted below is taking on a stronger role to mitigate damages caused by Severe Rainstorm, Fluvial Erosion and Water Pollution.
Water / Sewer Department	No municipal water or sewer services but several community wells and pumphouses maintained by contractors.	1) Generally adequate with regard to mitigating the impacts of common hazards. 2) No need to expand upon or improve policies & programs.
Planning and Zoning	.2 FTE zoning.	1) Generally adequate with regard to mitigating the impacts of common hazards. 2) No need to expand upon or improve policies & programs with regard to hazards under its purview, although the Town may consider flood hazard review by joining the NFIP.
Residential Building Code / Inspection	No local building code.	1) Generally adequate with regards to mitigating the impacts of common hazards.. New construction must obtain a zoning permit. 2) No need to expand upon or improve policies & programs with regard to hazards under its purview. 3) Note that commercial properties open to the public and all multi-family buildings of 3 units are more must be inspected and permitted by the Vermont Division of Fire Safety.
Town / Municipal Comprehensive Plan	2012	1) As noted at the start of Section 5, several elements of the municipal

		Comprehensive Plan promote Hazard Mitigation. 2) When the Town updates its Plan, it can reference this 2017 AHMP accordingly.
Land Use Regulations	2013, currently being updated.	1) Generally adequate with regard to mitigating the impacts of common hazards. 2) No need, at this time, to expand upon or improve policies & programs with regard to hazards under its purview. Town is considering regulatory measures regarding flood hazard areas and river corridors.
Hazard Specific Zoning (slope, wetland, conservation, industrial, etc.)	Required setback from water bodies	1) Generally adequate with regard to mitigating the impacts of common hazards. 2) Over the next five years, the Town may adopt flood hazard bylaws. 3) Over the next five years, Town may consider adoption of River Corridor or River Corridor Protection Area zoning regulations.
Participation in National Flood Insurance Program (NFIP) and Floodplain/Flood Hazard Area Ordinance	No, but may be forthcoming.	Town is considering joining NFIP. See proposed Mitigation Action below.
Open Space Plans; Conservation Funds	None	

The following table illustrates how Emergency Preparedness, Response & Recovery actions are carried out in the Town.

Table 5-2 Existing municipal emergency services & plans, Town of St. George

Type of Existing Protection	**Description /Details/Comments**
Emergency Response	**Emergency response personnel may have overlapping responsibilities with other town response organizations.**
Police Services	Vermont State Police, part-time contract with Hinesburg Police
Fire Services	Hinesburg VFD
Fire Department Mutual Aid Agreements	Various
EMS Services	Hinesburg Fire & Rescue provides primary EMS; St. Michael's Rescue provides transport ambulance service.

Emergency Plans	
Local Emergency Operations Plan (LEOP)	LEOP 2017
Shelter, Primary	Champlain Valley Union High School
Replacement Power, backup generator	Yes, Generator
Shelter, Secondary:	None designated; if proposed community center is built, consider having Town designate it as a small-capacity shelter.
Replacement Power, backup generator	Installation of generator is recommended, funding permitting, at the Town Office and/or the proposed community center. Town is considering moving forward on this.

5.3 Town of St. George All-Hazards Mitigation Goals

The following goals were first approved by Town of St. George officials for their local 2011 and 2015 AHMPs, and reaffirmed for this 2017 Plan.

1) Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
2) Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
3) Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan and as identified generally in the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan.
4) Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and stormwater management and the planning and development of various land uses.
5) Maintain existing municipal plans, programs, regulations, bylaws and ordinances that directly or indirectly support hazard mitigation.
6) Consider formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5), as well as incorporation of proposed new mitigation actions into the municipality's/town's bylaws, regulations and ordinances, including, but not limited to, zoning bylaws and subdivision regulations and building codes.
7) Consider formal incorporation of this Local All-Hazards Mitigation Plan particularly the recommended mitigation actions, into the municipal/town operating and capital plans & programs especially, but not limited to, as they relate to public facilities and infrastructure, utilities, highways and emergency services.

With regard to a more formal process by which the Town will integrate the requirements of this mitigation plan into the Town's Comprehensive Plan, as required by Vermont law, municipalities must update their Comprehensive Plans every eight years. During the anticipated 2017 update of its Comprehensive Plan, the Town will review the recommended Actions detailed below to see if formal incorporation within the Comprehensive Plan (or any Plan implementation tasks) is warranted.

Additionally, as the CCRPC is tasked with also reviewing and approving each such municipal comprehensive plan for consistency with various requirements in state stature and consistency with the Chittenden County Regional Plan (aka the ECOS 2013 Plan). This review includes a detailed staff critique with recommendations for improvement. This CCRPC review provides another opportunity to formally integrate elements of this local AHMP into the Town's Comprehensive Plan.

With regard to a more formal process by which the Town will integrate the requirements of this mitigation plan while developing the Town's annual capital improvement plans/budgets, from 2017-2022, the Town will review the recommended Actions detailed below to see if formal incorporation within these annual capital plans is warranted prior to annual review and voting by Town residents. Additionally, CCRPC staff can assist the town with drafting grant applications to fund mitigation projects.

5.4 Mitigation Actions

The table below records the strategies from the 2011 Plan and progress on their implementation. This table also encapsulates the Town's decision making with regard to which Actions to continue, which to establish as new actions and which to discontinue. During the development of this Municipal AHMP and its parent Multi-Jurisdictional AHMP, FEMA staff indicated to the CCRPC a need to separate out or remove strategies which are more properly considered to be Preparedness, Response or Recovery strategies rather than Mitigation. Additionally, upon revisiting and reviewing the 2011 actions and devising action for this 2017 local AHMP, CCRPC and municipal staff thought it would be best to focus on known and likely actions with a high likelihood of implementation, versus consideration of more expansive but largely aspirational strategies.

Table 5-3 Progress on the actions of the 2011 St. George All-Hazards Mitigation Plan

Action Primary Responsible Entity	**Task**	**Brief Description**	**Progress since 2011 and recommendations for 2017 Plan**
#1 Continue and Improve Highway, Culvert and Bridge Maintenance Programs			
Highway Contractor, St. George Selectboard	Culvert Upgrades	Upgrade culverts and ditching along roads to mitigate against repeated damages from stormwater or spring snowmelt.	Since 2011, culvert replacement/upsizing continued on Ayer Road, and three culverts were replaced/upsized on Oak Hill Road. For 2017 Plan, will involve stabilizing outfalls, and

			replacing/upsizing culverts on Willow Brook Lane.
Highway Contractor, St. George Selectboard	Continued Monitoring of Vulnerable Infrastructure	Monitor bridges and culverts with erosion and scouring concerns.	MONITORING IS NOT CONSIDERED MITIGATION. REMOVE FROM NEW PLAN
Highway Contractor, St. George Selectboard	Road Improvement	Consider paving certain road sections to lower overall maintenance costs, improve snow plowing speeds and improve overall capability of roads to handle current and projected traffic volumes.	NOT A MITIGATION ACTION. REMOVE FROM 2017 PLAN.
Highway Contractor, St. George Selectboard	Erosion Mitigation	Undertake erosion mitigation projects at various locations	Continue as action within Categories B and C of new proposed 2017 Plan strategies.
#2 Raise public awareness of hazards, hazard mitigation and disaster preparedness			
St. George Selectboard, Hinesburg Fire Chief, VT 2-1-1	Public Awareness of Shelters and VT 2-1-1	In a mailing or other source, inform residents that CVU is the emergency shelter and how to get information in an emergency. Also consider alerting residents to the existence of Vermont 2-1-1 as a resource for information about emergency shelters, evacuation procedures, and other hazard mitigation actions.	NOT A MITIGATION ACTION. REMOVE FROM 2017 PLAN.
#3 Evaluate capabilities of existing and potential public shelters			
St. George Selectboard	Confirm Existing Shelter Capability	Confirm capabilities of existing shelters, maintain same and improve upon if needed.	PRIMARILY PREPAREDNESS & RESPONSE, NOT A MITIGATION ACTION. REMOVE FROM 2017 PLAN.
St. George Selectboard	Town Office Generator	Seek funding for installation of a small generator for use at town offices.	PRIMARILY PREPAREDNESS & RESPONSE, NOT A MITIGATION ACTION. REMOVE FROM 2017 PLAN.
St. George Selectboard	Community	In designing the	PRIMARILY

	Center Generator	proposed St. George Community Center, plan for installation of a panel transfer switch, a small generator, or a non-electricity reliant heating system to enable Center to be used as small-capacity shelter	PREPAREDNESS & RESPONSE, NOT A MITIGATION ACTION. REMOVE FROM 2017 PLAN.

5.4.1 Current Capabilities and Need for Mitigation Actions

The Town Comprehensive Plan's policies and programs that support hazard mitigation and the progress noted above demonstrate the variety of policies and actions forming the foundation of this All Hazards Mitigation Plan. As detailed in the *Table* below, generally, the Town considers its existing capabilities, regulatory structure and programs as adequate to address its vulnerabilities however continuation of existing mitigation actions or the implementation of new actions are warranted for the five-year period in which this Plan is effect.

Table 5-4 Town of St. George: Capabilities to address vulnerabilities from natural hazards

Hazard	**Adequacy of Municipal Capabilities to address associated vulnerabilities (Excellent, Good, Average, Below Average)**	**Additional expansion or improvement in policies & programs needed to address hazard given long-term vulnerability**
Severe Winter Storm	Excellent	No. The Town regards their current hazard mitigation efforts carried out by their contract road maintenance company as well as the Vermont Agency of Transportation as adequate to address these concerns. Winter storms are often the cause of power loss and telecommunications failure.
Flooding	Excellent	**Yes, see actions below.**
Fluvial Erosion	Good	**Yes, see actions below**
Severe Rainstorm	Good	**Yes, see actions below.**
Extreme Temperatures	Good	No, rare occurrence and extent, impact & vulnerabilities are limited.
Wildfire	Excellent	No, rare occurrence and extent, impact & vulnerabilities are limited.

Table 5-5 Town of St. George: Capabilities to address vulnerabilities from technological hazards

Hazard	**Adequacy of Municipal Capabilities**	**Additional expansion or improvement needed to address hazard given long-**

	to address vulnerabilities (Excellent, Average, Below Average)	term vulnerability
Major Transportation Incident	Good + State agencies provide support	No, rare occurrence and extent, impact & vulnerabilities are limited.
Power Loss	Average. Private utilities are primarily responsible	No given that events are limited in duration and vulnerabilities are short-lived. Interruptions to this service are the responsibility of the private companies which own and operate the utilities. Tree trimming and vegetation management coupled with maintaining adequate repair vehicles and personnel are the primary mitigation means used by electric companies.
Hazardous Materials Incident	Good + State agencies provide support	No, rare occurrence and extent, impact & vulnerabilities are limited.
Water Service Loss	Excellent.	No, rare occurrence and extent, impact & vulnerabilities are limited. Most of the wells in town are private community water supplies. These wells depend on electric power for operation. As a result, the same approaches for mitigating power loss apply to water service loss.
Gas Service Loss	Average. Private utility is primarily responsible.	No, rare occurrence and extent, impact & vulnerabilities are limited.
Telecommunications Failure	Private utilities are primarily responsible	No, rare occurrence and extent, impact & vulnerabilities are limited. This is the responsibility of the service providers which own and operate these utilities. As with power loss, tree trimming and vegetation management coupled with maintaining adequate repair vehicles and personnel are the primary mitigation means used by the telephone companies.
Other Fuel Service Loss	Private businesses are primarily responsible	No, rare occurrence and extent, impact & vulnerabilities are limited.
Sewer Service Loss	Excellent.	No, rare occurrence and extent, impact & vulnerabilities are limited.
Water Pollution	Good	**Yes, see actions below.**
Invasive Species	Average	No, rare occurrence and extent, impact & vulnerabilities are limited.

Multi-Structure Fire	Good	No. The Town of St. George considers the capability of the Hinesburg Volunteer Fire Department that provides firefighting and emergency response services to the Town as adequate to address this hazard.

Table 5-6 Town of St. George: Capabilities to address vulnerabilities from societal hazards

Hazard	**Adequacy of Municipal Capabilities to address vulnerabilities (Excellent, Average, Below Average)**	**Additional expansion or improvement in policies & programs needed to address hazard given long-term vulnerability**
Crime	Good +State agencies provide support.	No. Municipality participates in programs lead by regional and state entities.
Economic Recession	Good +State Agencies provide support	No Diversity of county economy mitigates vulnerabilities. The Town considers its municipal plan as also supportive of the goal of economic diversification.
Terrorism	Good +State & Federal agencies provide support	No, rare occurrence.
Civil Disturbance	Good + State agencies provide support.	No, rare occurrence
Epidemic	Average +State & Federal agencies provide support	No, rare occurrence. The Town's abilities to mitigate an epidemic are limited The Town relies on state and school efforts related to epidemic preparedness, prevention and mitigation, and medical facilities and services in neighboring communities for response.
Key Employer Loss	Good +State agencies provide support	No. Diversity of employers in municipality mitigates vulnerabilities.

Note that this Plan does not recommend a discrete mitigation action regarding "future development." Our justification for this is as follows:

- The municipality's regulations, programming and staffing have prevented and will prevent new buildings and infrastructure being constructed in areas vulnerable to hazards. As documented in detail in section 4.6.2, despite active residential and commercial development, no structures and infrastructure subject to municipal regulation, have been

constructed in either the Special Flood Hazard Areas or mapped River Corridor Protection Areas.

- For the next five years, there are no known or anticipated plans for the construction of municipal infrastructure in areas vulnerable to hazards.
- There is no evidence that unwise or poorly regulated development in the municipality has been a significant contributor to putting people or property in harm's way.

Therefore, the reader will note that the proposed Mitigation Actions for the next five years represent a much more focused and achievable list of actions focused on those hazards (e.g. Severe Rainstorm, Flooding, Fluvial Erosion, Water Pollution, etc.) that cause more frequent if less dramatic damages. It is these more mundane damages of erosion along road beds, damaged small culverts and the ongoing struggle to maintain and improve water quality (which cost the municipality and its taxpayers both time and money) that deserve the most attention rather than hazards that could hypothetically cause damage but which are rare and wherein the benefit-to-cost ratio for potential mitigation actions is weak (e.g. Major Transportation Incident, Hazardous Material Incident, Terrorism). No new discrete action is recommended with regard to Education & Awareness as the Town does not have adequate funds or staff to undertake such an effort nor is such an effort warranted given the identified vulnerabilities. **Lastly, it is also worthwhile to note that in comparison to the 2011 Plan the priorities for this 2017 Plan have not changed. The hazards and vulnerabilities remain the same as well. Indeed, the only real change is that there is a more heightened awareness due to the severity of recent disasters starting in 2011 to the present.**

5.4.2 Specific Mitigation Actions

The Town plans to conduct the following mitigation actions during the 5 year period this Plan is in effect.

CATEGORY A: Improve capabilities of existing road infrastructure

Hazards Addressed: Severe Rainstorm, Fluvial Erosion

Vulnerabilities Addressed: Damage to new/existing public infrastructure and buildings; temporary closures of roads and bridges including from debris; temporary isolation of vulnerable individuals such as the elderly or those in poverty; budgetary impacts

Status: Ongoing

Primary Responsible Entity: Town of St. George Road Commissioner and Selectboard

Timeframe: Month 2017 through March 5, 2022 (update after FEMA approval date)

Funding Requirements and Sources: FEMA or other hazard mitigation grants; FHWA grants; VTrans grants; Municipal Operating and Capital budgets only if sufficient. Contingent on available resources and funding.

Rationale/Cost-Benefit Review: These areas suffer low-level but consistent damage during heavy rains and snowmelt. Mitigating these problems would reduce short and long term maintenance costs and improve the flow of traffic for personal and commercial purposes during damage events.

Specific Identified Actions:

Action A-1: Improve infrastructure of Willow Brook Lane

Work in the next five years will involve stabilizing outfalls, and replacing/upsizing culverts on Willow Brook Lane.

CATEGORY B: Implement Roads Stormwater Management Plan

Hazards Addressed: Water Pollution, Fluvial Erosion, Severe Rainstorm

Vulnerabilities Addressed: damage to public infrastructure especially roads and culverts; impairment of local waterways and Lake Champlain, budgetary impacts

Status: Ongoing

Lead Responsible Entities: Town of St. George Road Commissioner and Selectboard

Timeframe: Month 2017 through March 5, 2022 (update after FEMA approval date)

Funding Requirements and Sources: Various Federal and State grants especially VAOT Better Roads Grants and VANR Ecosystem Restoration Grants; municipal operating and capital budget funds if necessary.

Rationale / Cost-Benefit Review: The Vermont Clean Water Act, signed into law in the summer of 2015, authorized the development of a new Municipal Roads General Permit (MRGP) to lessen erosion from roads that have "hydrologically-connected" segments. This action is required by the Act. Additionally, the plans and their implementation will assist municipalities in mitigating erosion of connected infrastructure.

Specific Identified Actions:

Action C-1 Develop Roads Stormwater Management Plan

The Town will first complete an Inventory of Priority Road Segments (PRS) [aka "hydrologically-connected" road segments] both currently meeting and not meeting MRGP standards. The CCRPC has already conducted an inventory of St. George's in the summer of 2016 and has hired a consultant to begin to develop cost estimates for various erosion-reduction projects. The Town will then apply for MRGP coverage starting in July 2018. After issuance of the permit by the State, the Town will then work to use this information to develop a formal Roads Stormwater Management Plan for submission to the VT-DEC in 2019. The Plan will include a remediation plan (capital budget) and implementation schedule for each site not currently meeting standards.

Action C-2 Begin Roads Stormwater Management Plan implementation

Obtain funding for and complete projects as identified in the Roads Stormwater Management Plan. Submit annual reports to DEC, documenting progress in remediation efforts towards meeting schedule to be in compliance with the MRGP. Reports will briefly describe which segments have been improved, practices installed, and whether segments now meet MRGP standards. The MRGP standards must be implemented on all priority road segments as soon as possible, but no later than 20 years from permit issuance.

CATEGORY C: Explore benefits of adopting Flood Hazard and/or River Corridor / River Corridor Protection Area Regulations in Town Zoning Bylaws

Hazards Addressed: Flooding, Fluvial Erosion

Vulnerabilities Addressed: damage to public infrastructure especially roads and culverts; temporary closures of roads and bridges including from debris; temporary isolation of vulnerable individuals such as the elderly or those in poverty; budgetary impacts

Status: Ongoing

Primary Responsible Entities: Town of St. George Planning Commission and Selectboard with assistance from CCRPC

Timeframe: Month 2017 through March 5, 2022 (update after FEMA approval date)

Funding Requirements and Sources: Town operating funds; CCRPC assistance is funded by a current HMGP grant.

Rationale/Cost-Benefit Review: Progress on either of these two actions will reduce vulnerabilities of structures to potential hazards. At a practical level, adoption of either or both of these regulatory mechanisms will lower the Town's cost-share requirements under the state's Emergency Relief Assistance Funds assistance in the event of a FEMA-declared disaster.

Specific Identified Tasks:

Action C-1 Consider adoption of Flood Hazard regulations and join NFIP.
The Town has been actively considering this action for the past several months. As the Town works to update its zoning bylaws, the Planning Commission and Selectboard will consider potential adoption.

Action C-2: Consider adoption of River Corridor or River Corridor Protection Area regulations.
If the Town wishes to pursue this, then the CCRPC and the Town will prepare draft river corridor and river corridor protection area maps consistent with the DEC Procedure for Flood Hazard Area and River Corridor Protection Procedure (FHARCPP). The draft River Corridor and River Corridor Protection Area maps will be submitted to the DEC River Program. All updates and revisions consistent with the FHARCPP will be publicly noticed and incorporated by the DEC into the Statewide Layer. The CCRPC and Town staff will present the draft maps to the Planning Commission and Selectboard for consideration and possible adoption as part of the local river corridor protection regulations and/or flood resiliency element.

5.4.3 Prioritization of Mitigation Strategies

The above mitigation actions were listed in order of priority. Descriptions of specific projects, where available, are listed in Section 5.4.2 and in Table 5-3 below. Because of the difficulties in quantifying benefits and costs, it was necessary to utilize a simple "Action Evaluation and Prioritization Matrix" in order to effect a simple prioritization of the mitigation actions identified by the jurisdiction. The following list identifies the questions (criteria) considered in the matrix so as to establish an order of priority. Each of the following criteria was rated according to a

numeric score of "1" (indicating poor), "2" (indicating below average or unknown), "3" (indicating good), "4" (indicating above average), or "5" (excellent).

- Does the action respond to a significant (i.e. likely or high risk) hazard?
- What is the likelihood of securing funding for the action?
- Does the action protect threatened infrastructure?
- Can the action be implemented quickly?
- Is the action socially and politically acceptable?
- Is the action technically feasible?
- Is the action administratively realistic given capabilities of responsible parties?
- Does the action offer reasonable benefit compared to its cost of implementation?
- Is the action environmentally sound and/or improve ecological functions?

The ranking of these criteria is largely based on best available information and best judgment, as many projects are not fully scoped out at this time. The highest possible score is 45.

It is anticipated that, as municipalities begin to implement the goals and actions of their Mitigation Strategies, they will undertake their own analysis in order to determine whether or not the benefits justify the cost of the project. Also, all proposed FEMA mitigation projects will undergo a benefit-cost analysis using a FEMA BCA template and approved methodology.

Based on feedback from FEMA, CCRPC Staff have concluded that several strategies previously identified in 2011 by the Town of Westford as mitigation strategies are more accurately classified as preparedness, response and recovery strategies. These strategies are not intended to mitigate against the hazards identified in Section 3, and should not be evaluated as such. As such, these strategies are not included in the prioritization below. However, they are discussed at the end of the plan to serve as a record of the strategies being undertaken by the Town in order to prepare for, respond to and recover from damage caused by those hazards.

Other than the reclassification of some strategies as non-mitigation strategies, there have not been significant changes in the prioritization of strategies between 2011 and now, with one notable exception. Strategies related to landslide assessment have been removed from the plan. CCRPC staff and municipal officials, in consultation with FEMA, have concluded that landslides are not a discrete threat in Chittenden County and are adequately captured in the plan's discussion of fluvial erosion. Additionally, further work on the development of a Vermont-specific landslide risk estimation protocol has not progressed making landslide-specific strategies inappropriate at this time for inclusion in the County plan and its annexes.

Table 5-7 St. George action evaluation and prioritization matrix

Mitigation Category & Actions	Responds to signficant (likely or high risk) hazard	Likelihood of funding	Protect threatened infra-structure	Implemented quickly	Socially / Politically acceptable	Technically Feasible	Administra-tively Realistic	Reasonable cost to benefit	Environmen-tally sound	TOTAL SCORE
CATEGORY A: Improve capabilities of existing road infrastructure										
Action A-1: Improve infrastructure of Willow Brook Lane	5	3	5	3	4	5	4	5	5	**39**
CATEGORY B: Implement Roads Stormwater Management Plan										
Action C-1: Develop Roads Stormwater Management Plan	4	4	4	3	5	4	4	5	5	**38**
Action C-2: Begin Roads Stormwater Management Plan implementation	3	4	4	3	5	5	4	4	5	**37**
CATEGORY C: Explore benefits of adopting Flood Hazard and/or River Corridor / River Corridor Protection Area Regulations in Town Zoning Bylaws										
Action C-1: Consider adoption of Flood Hazard regulations and join NFIP.	3	3	4	4	4	4	4	4	4	**34**
Action C-2: Consider adoption of River Corridor or River Corridor Protection Area regulations.	3	3	4	3	4	4	4	4	4	**33**
5 = Excellent; 4=Good; 3=Average; 2=Below Average or Uknown; 1=Poor										

5.5 Implementation and Monitoring of Mitigation Strategies

The following Table is intended to aid municipal officials in implementing their mitigation actions and to facilitate the annual monitoring & evaluation of the plan as outlined in Section 1.7.4 above.

Table 5-8 St. George All-Hazards Mitigation Plan Implementation Matrix

CATEGORY A: Improve capabilities of existing road infrastructure from Fluvial Erosion and Severe Rainstorm and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Temporary isolation of vulnerable individuals • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption** *See Section 5.4 for details on locations identified during Plan development.*
Action A-1: <u>Improve infrastructure of Willow Brook Lane</u> (Road Commissioner; Selectboard)	-note location and year of improvement: outfalls stabilized, new culverts, etc.
CATEGORY B: Implement Roads Stormwater Management Plan to mitigate Severe Rainstorm, Fluvial Erosion and Water Pollution and their associated vulnerabilities of: • Damage to new/existing public infrastructure • Impairment of local waterways and Lake Champlain • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption** *See Section 5.4 for details on locations identified during Plan development.*
<u>Action B-1 Develop Roads Stormwater Management Plan</u> (Road Commissioner & Selectboard with CCRPC assistance)	-MRGP obtained from State? -note projects developed and scoped with costs -Roads Stormwater Management Plan filed with State
<u>Action B-2 Begin Roads Stormwater Management Plan implementation</u> <u>(Road Commissioner & Selectboard)</u>	-note which RSMP projects underway/completed -note annual MRGP reports filed with State

CATEGORY C: Explore benefits of adopting Flood Hazard and/or River Corridor / River Corridor Protection Area Regulations in Town Zoning Bylaws to mitigate Flooding and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure • Temporary road and bridge closure • Temporary isolation of vulnerable individuals • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption** *See Section 5.4 for details on locations identified during Plan development.*
<u>Action C-1: Consider adoption of flood hazard bylaws and joining NFIP</u> (Planning Commission & Selectboard with CCRPC assistance)	-note any draft bylaws developed -note any presentations to municipal boards & commissions -note any bylaws adopted -note progress on joining NFIP
<u>Action C-2: Consider adoption of River Corridor or River Corridor Protection Area in Bylaws</u> (Planning Commission & Selectboard with CCRPC assistance)	-note any draft bylaws developed -note any presentations to municipal boards & commissions -note any bylaws adopted