Saint Albans City, Vermont
LOCAL HAZARD MITIGATION PLAN
2017

FEMA Approval Pending Adoption Date: February 10, 2017
Municipal Adoption Date: March 13, 2017
FEMA Formal Approval Date: April 21, 2017

Approved by the Saint Albans City Council

RESOLUTION

Whereas, natural and man-made disasters may occur at any time, we recognize that by lessening the impacts of these disasters we will save resources, property and lives in the City of Saint Albans, Vermont;

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

And whereas, the Saint Albans City is committed to the mitigation goals and measures as presented in this plan;

Therefore, the Saint Albans City Council hereby adopts the 2017 Saint Albans City Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

Date: 3/13/17

Elizabeth Gamache, Mayor

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ACKNOWLEDGEMENTS

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Saint Albans City Police Department
Saint Albans City Fire Department
Saint Albans City Planning & Development Department
Saint Albans City Planning Commission
Central Dispatch
Northwest Regional Planning Commission
Local Emergency Planning Committee #4 (Franklin County)
Vermont Agency of Transportation District 8
Vermont Department of Emergency Management and Homeland Security
Vermont Agency of Natural Resources
Northeast States Emergency Consortium
Federal Emergency Management Agency
National Weather Service
Vermont Geological Survey

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

1. INTRODUCTION

This is the Hazard Mitigation Plan for Saint Albans City, Vermont and is being submitted as a single jurisdiction plan.

The term "Saint Albans" is taken to mean the City of Saint Albans. Unless specifically stated, all strategies identified in this plan are mean to server the City of Saint Albans only and not the Town of St. Albans which is a separate municipality.

The impact of expected, but unpredictable natural and human-caused events can be reduced through community planning. The goal of this plan is to provide an all-hazards local mitigation strategy that makes Saint Albans City more resilient in the face of disasters..

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

Hazard Mitigations strategies and measures **alter** the hazard by eliminating or reducing the frequency of occurrence, **avert** the hazard by redirecting the impact by means of a structure or land treatment, **adapt** to the hazard by modifying structures or standards or **avoid** the hazard by stopping or limiting development and could include projects such as:

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

2. PURPOSE

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

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

3. METHODOLOGY

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

- City of Saint Albans, Municipal Plan 2012-2017

- City of Saint Albans, Land Development Regulations 2014

- State of Vermont Hazard Mitigation Plan 2013

- Vermont Agency of Natural Resources Corridor Planning Project and Phase 2 Stream Geomorphic Assessment Stephens and Rugg Brook Watershed, Saint Albans VT (2003)

- Saint Albans City Flood Insurance Rate Maps effective June 15, 1978.

- Northwest Regional Planning Commission Regional Plan 2007

Hazard Specific Research
The project coordinator collected data and compiled research on fifteen hazards including severe winter storm (ice storm) , flooding, fluvial erosion, thunderstorms/lightning, high winds, loss of electrical service, structure fire, hazardous materials, hail, drought, water service loss, telecommunications systems failure, tornado, earthquake, major fire – wildland, civil disturbance, terrorism/WMD/Civil Disturbance. Research materials came from local, state and federal agencies including FEMA, NOAA, and DOT. Research was also conducted by referencing historical local newspapers, texts, interviewing residents, and scientific documents. Internet references were widely utilized in historical research applications. Current mitigation activities, resources, programs, and potential action items from research materials and stakeholder interviews were also identified.

Saint Albans City Hazard Mitigation committee meetings held on August 8, 2014, September 25, 2014 and October 16, 2014 to discuss hazard mitigation projects, the communities risk to hazards, and the hazard mitigation plan. These meetings were open to the public and the public was given an opportunity for comment.

During the plan development process, municipal officials were interviewed including the Emergency Management Director, Manager, City Council members, Public Works Director, Fire Chief, Police Chief, Planning Director and local residents. The interviews identified commonalities related to natural, man-made and hazardous materials hazards and identified key long and short-term strategies/activities to reduce risk from these hazards. Outcomes included the types of hazards the City was subjected to and

what they believed the top hazards would be, identification of mitigation projects and strategies for implementation.

The Committee developed this Plan following the described planning steps:

1: *Establish and Orient a Hazard Mitigation Planning Committee*
The Saint Albans Planning Director made recommendations to the City Manager for the membership of the committee which included the Emergency Management Director, City Manager, Public Works Director, Fire Chief, Police Chief, Planning Director and elected officials, and those with knowledge of historical events. The City Manager agreed and the committee was formed.

2: *Identification of Hazards and Critical Facilities*
As listed in Section 4, the Committee members identified human-made and natural hazards that could or have affected Saint Albans City (see Attachment A).

The Committee reviewed the types of hazards the City is subject to. Additionally, locations were identified that have sustained or could be susceptible to each hazard. The results are shown in Section 4. The Committee then identified, catalogued and mapped all of the critical facilities within the City The result is found in Attachment B and shown on a location map in Attachment D.

3: *Assessing Probability, Severity and Risk, and Estimating Potential Losses*
The Committee members completed Risk Assessment Worksheets for all of the types hazards identified in Step 2 in order to assess probability, severity and risk. Potential and future losses for each hazard type were estimated. This data is found in Attachment A - Hazard Identification and Risk Assessment.

4: *Analyze Development Trends*
This step was conducted by City staff and the St. Albans City Planning Commission and Regional Planning Commission staff. The results of this research can be found in Section 3.

5: *Existing Mitigation Strategies and Proposed Improvements*
The Committee identified plans and policies that are in place to reduce the effects of human-made and natural hazards. The Committee also identified mitigation actions for each of the potential hazards identified in Section 4. The Committee also identified programs in place that are on-going community preparedness activities.

6: *Identification of Mitigation Projects.*
To assist with determining mitigation projects, the Committee considered the following objectives: Preventative (Programs & Policies), Property Protection, Structural, Public Education and Information, Engineering Projects, Equipment Purchase, and Training.

7*: Prioritized Mitigation Measures*
The Committee developed a prioritized list of mitigation projects identified in Step 6 considered feasible to implement. The priority matrix and associated criteria can be found in Attachment C.

8: *Develop an Implementation Strategy- Action Plan*
Using the prioritized list of mitigation actions identified in Step 6, the Committee developed a strategy that outlines who is responsible for implementing each project, potential funding sources/support, time-frame, initial implementation steps. Potential mitigation actions were developed with a particular

emphasis placed on projects and programs that reduce the effects of hazards on both new and existing buildings and infrastructure. The implementation schedule can be found in Section 6.

9. Public Involvement

The plan was presented to the City Planning Commission on November 17, 2014 and City Council meeting on March 9, 2015 for comments and input. The plan was also presented at the Local Emergency Planning Committee meeting on August 20, 2015, November 16, 2015 and March 21, 2016. These meetings were open to the public. The draft plan was shared with the fire department, the police department, and at local meetings with other local, regional or state officials. Public notices were posted for all meetings of the Hazard Mitigation Planning Committee in the fall of 2014.

- The draft hazard mitigation plan was made available to the public for comments at the City Clerk's office, on the City website, and at the Northwest Regional Planning Commission's website. The City Director of Planning & Development was responsible for collecting and considering comments.
- The notice of the draft plan was also made available on the NRPC website in order to solicit public comment. An announcement of the draft update was also issued in the NRPC newsletter, which reaches over 150 people in the Region's 23 municipalities including the surrounding municipalities of Saint Albans Town, Swanton Town, Swanton Village, Fairfield, and Georgia. The public was encouraged to submit comments to the plan via email to Taylor Newton, Regional Planner at the Northwest Regional Planning Commission (tnewton@nrpcvt.com) or in writing c/o Taylor Newton, Northwest Regional Planning Commission, 75 Fairfield Street, Saint Albans, Vermont.
- Copies of the draft plan were sent to the Saint Albans Town Clerk's Office, Georgia Town Administrator's Office, and the Town Clerk's Office in Swanton Town.
- A copy of the plan was also sent to the Vermont State Hazard Mitigation Officer for review.

The St. Albans Town Clerk, Georgia Town Administrator and Swanton Town Clerk acknowledged receipt of the plan b. Relevant comments that were received were primarily regarding the hazard inventory risk assessment portion of the plan. Comments were researched for accuracy by Taylor. None of the comments resulted in new material for the plan.

St. Albans City, Vermont Location Map

9: *Adopt and Implement the Plan*

The Committee members reviewed and approved each section of the plan as it was completed. After acceptance by the Committee, the Plan was submitted to Vermont Division of Emergency Management and Homeland Security (DEMHS) and FEMA for review. The City will receive FEMA's "Approval Pending Adoption" notice when the plan has been determined to have met the planning requirements pending its adoption. The plan will go before the City Council for adoption. Once the City adopts the plan and submits the Final Plan with the Adoption documentation to

FEMA and is determined to have met all the planning requirements, the City will then receive its formal FEMA letter of approval.

The City Director of Planning and Development is charged with requesting annual reports as to the progress of each project. It is important to the Saint Albans City that this plan be monitored and updated annually or after a presidentially declared disaster. Section 6 addresses this issue.

4. COMMUNITY PROFILE

Saint Albans City is an urban center covering 2.03 square miles or 1,299 acres surrounded by the separate municipality of Saint Albans Town. Residential uses are the most predominant in the City. Residential neighborhoods have developed concentrically outward from the urban core. A mix of uses is found in the City's historic downtown and along Lake Street. Uses in these areas include but are not limited to retailing, professional offices, banks and restaurants, general business and repair services, government services, and upper story apartments. Modern/commercial development has occurred outside of, but generally adjacent to, the downtown, and near the City's edge, on North and South Main Streets. Industrial development in the City is located mainly along railroad land west of Federal Street. Recent

industrial/business expansion has been accommodated through the development of the City's industrial park, accessed from Lower Welden Street. Open space in the City comes in a variety of forms and patterns of ownership. There is a substantial amount of remaining open space in Saint Albans: approximately 330 mapped acres, or 28% of the total area, not including front lawns, vacant lots, and setback areas. The most notable open areas are Taylor Park in the downtown core and Aldis Hill in the northeast corner. The City has zoning regulations in place, including Flood Hazard regulations.

Population and Housing

The current population of Saint Albans City is 6,918, according to the 2010 U.S.Census. The City's population curve is typical of traditional centers in Vermont, experiencing substantial growth after its

incorporation and then population decline since the mid-1900's, which began as a result of the deterioration of the railroad economy. Most recently, the City's 2010 Census shows a population decline of 9.6% since 2000; however, this number is being contested as local figures do not reflect such substantial decline.

The 2010 Census counted 3,231 housing units in Saint Albans City, a decrease of 145 housing units since 2000. This figure corresponds with the decrease in population shown by the 2010 population count. However, the City questions the accuracy of both these numbers, believing that local data does not support such a drastic decline, especially in light of the housing projects in the community over the course of the decade. Just under half of the housing stock in Saint Albans consists of single family homes, with the remainder consisting of two-family and multi-family homes. Most of the City's multi-family units are in homes with 3-4 units. The second highest number of units is in duplexes and other 2-unit homes.

Existing Land Use

Saint Albans City is fortunate to have maintained its traditional urban form, which inherently reflects the principles of smart growth that many communities have lost and are trying to rebuild today. The City, now a State designated Growth Center, consists of a concentrated mixed use downtown and central green walkable to adjacent residential neighborhoods.

Saint Albans has not been immune to gap-tooth developments that detract from the traditional urban form. Such developments allow community members to draw important comparisons and help in defining future land use and development goals. During creation of St. Albans' last municipal plan, the community members affirmed their desire to continue the City's traditional urban form which is a fundamental element of the City's sense of place.

Future Land Use

LDR-Low Density Residential

The intent of this District is to maintain within the City a pleasant and uncrowded residential area, and to encourage appropriate development and/or redevelopment that will complement the existing residential land use. This area shall be primarily for single-family dwellings, along with accessory uses. A variety of other residential uses, along with selected non-residential uses may be allowed as conditional uses, provided they meet all applicable standards and can be shown to be compatible with the district's objectives.

HDR- High Density Residential

The intent of this district is to provide an area within the City for moderately dense residential development and growth, while maintaining a safe and healthy atmosphere for the district's residents. Single-family dwellings shall be permitted uses within this district, along with accessory uses. A variety of other residential uses, along with selected non-residential uses may be allowed as conditional uses, provided they meet all applicable standards and can be shown to be compatible with the district's objectives.

Business Districts

It is the intent of the Business District to provide for a wide range of commercial and related activities to safeguard and enhance the City's role as the economic center of northwestern Vermont. It is also the intent of this district to protect the historic and cultural characteristics which distinguish the City of Saint Albans, and to enable a diverse range of uses, which contribute to the vitality and diversity of the

Business District and to expand the tax base. Toward these ends, the Business District is composed of two subdistricts: B1 - Central Business Subdistrict and B2 - Transitional Business Subdistrict.

B1- Central Business Subdistrict

It is the intent of the B1 - Central Business Subdistrict to provide for a diverse range of business and service uses within the traditional business center of the City. The subdistrict is intended to protect and enhance the function of the downtown area as the primary commercial, financial, retail and governmental center of the region. It is designed to accommodate a wide variety of commercial activities, particularly those which benefit from pedestrian activity and access. Design criteria for the subdistrict are intended to protect the National Landmark Historic District and the special urban features of Taylor Park.

B2 – Transitional Business Subdistrict:

It is the intent of the B2 - Transitional Business Subdistrict to provide for the location of a wide range of business activities. These activities support the function of Saint Albans as the primary business center in the region and provide a wide range of goods and services for local and regional needs outside the downtown area. These areas are convenient to customers, preserve the carrying capacity of streets and require the provision of off-street parking and loading. Design criteria for the subdistrict are intended to encourage the expanded use and preservation of existing buildings or new construction, alterations, and enlargements compatible with the architectural character of the subdistrict.

S-IND – Service Industrial District:

It is the intent of the S-IND Service Industrial District to provide for the location of a wide variety of service, industrial, manufacturing, distribution and research facilities providing employment opportunities and broadening of the tax base of the City. These locations provide good transportation and infrastructure access. All uses shall be in conformance with the performance standards found in Section 519 of these regulations. Due to the location of the district adjacent to residential areas, buffering shall be required to minimize conflicts between non-residential uses and residential districts.

FHO- Flood Hazard Overlay District

The intent of this district is to minimize future public and private losses caused by development in flood hazard areas. Designation of this district is also required for the City's continued eligibility in the National Flood Insurance Program. Included in this district are all areas of special flood hazard as shown on the latest National Flood Insurance Program maps. The Flood Hazard Overlay District overlaps other districts established in this Bylaw; where the provisions of the underlying district differ from those of the Flood Hazard Overlay District, the more restrictive shall govern.

MI – Medical Institutional District

The City is currently working on an amendment to its land development regulations to create a new zoning district: the Medical Industrial District. The intent of this district would be to create a land use district that more appropriately reflects the current uses and character and future needs of the Northwestern Medical Center Street and remove the need to include hospital/medical uses in residential districts. Provisions are also proposed to guide the effects of MI District uses on surrounding residential districts and the eastern gateway to the City.

Energy

Saint Albans City is served by power provided by the Green Mountain Power (GMP). The main source of this power used is from Hydro-Quebec in Canada. GMP has several programs that are aimed at energy

conservation for both homes and businesses. GMP "Smart Power" is a solution that helps empower the customer to understand their energy usage and in turn make informed energy choices. Electricity costs have been escalating for years, and with the uncertainty of energy resources in the future, the City should do what it can to reduce energy use to reduce energy costs.

Vermont Gas Systems Inc. (VGS), through an agreement with Western Gas Marketing out of Canada, provides northern Vermont with 15,000 MMBTU per day. According to the 2010 US Census, utility gas is the most popular home heating fuel and was used by 2,025 homes (66.6%). Fuel oil and kerosene are the second most popular home heating fuels with 637 homes (20.9%) and electricity is the third most popular home heating fuel with 214 units (7%) followed by bottled, tank or LP gas at 132 units (4.3%) and wood at 20 units (<1.0%).

Telecommunications

Access to telecommunication services, including high-speed Internet and cellular phone service are important for economic development and quality of life for residents of the City. Cable, DSL, and wireless internet service are available across all of Saint Albans City. Residents and businesses have a number of options in their choice of service providers and can determine what is optimal for their individual needs. Expanding access to fiber optic cable will attract more industry and business. There is a lack of free wireless internet in the City's Downtown, which is an economic and community development goal.

Emergency Services and Emergency Management

The City Police Department is located in the Municipal Complex on Lower Welden Street, which also houses the Fire Department and Central Dispatching. Central Dispatch is Franklin County's Public Safety Answering Point (P.S.A.P.) and communications dispatch center. Central Dispatch is the central point of the County's public safety communications network, responding to 9-1-1 calls from all of the communities within the county and dispatching the appropriate responding agency 24 hours per day.

The Saint Albans City Fire Department also provides 24 hour per day fire and rescue service to City residents. The Department's rescue services include responses to accidents and medical assistance calls. Fire calls are received by the central dispatch office through a combination of communication systems, fire phone, call boxes, and building alarms systems. There are approximately 100 fire alarm boxes located throughout the City. The water system and hydrants are checked routinely to insure adequate residual water pressure and proper functioning. There is ample water supply and pumping capacity in the event of a major fire. The current upgrade of the water system will improve water distribution and reserve capacity.

Ambulance services are provided to the City under contract by AmCare Ambulance Services, located at 256 South Main Street in the City. All emergency service providers in the area have cooperative backup agreements to ensure available coverage at any time.

Saint Albans City has a NIMS compliant Emergency Operations Plan (EOP) to help organize the City in case of an emergency. The EOP contains emergency preparedness information for responding to local emergencies. The City's police, fire and ambulance providers participate in the Franklin County Mutual Aid Agreement. This is a formal agreement among the municipalities and emergency first responders within Franklin County to lend resource assistance across jurisdictional boundaries when required such as when emergency resource needs are exceeded locally. The Agreement helps the City achieve compliance with the National Incident Management System (NIMS) strategy.

The City's emergency responders also participate in the Local Emergency Planning Committee for Franklin County, whose mission is to provide resources and guidance to the community through education, coordination and assistance in All Hazard mitigation, preparedness, response and recovery planning to assure public health and safety. City Emergency Management also holds monthly meetings with state, municipal and industry representatives to discuss specific issues related to the greater Saint Albans area and conducts tabletop exercises.

Public Works

The Public Works Department manages municipal utilities and infrastructure, in addition to the maintenance of municipally owned lands and buildings. These include among other things snow removal, street and sidewalk repair, water and sewer line installation and repair, landscape maintenance, and general repair of public investments. The Public Works Department primarily operates out of the Public Works Garage on Aldis Street with the Public Works Director maintaining an office at City Hall.

Water Supply

The City operates a municipal water supply system servicing the entire City and parts of the Town of Saint Albans. The City maintains close to 4,000 water accounts, the majority being residential accounts (approximately 10% are commercial and less than 1% industrial). About 1/3 of the water accounts are located in the Town of Saint Albans. New service connections are regulated by a water/sewer allocation ordinance.

The City water's system is drawn from two sources – a reservoir complex located in North Fairfax (conventional gravity fed) and Lake Champlain (via a pumping system). The City also owns a reservoir on Silver Lake as an emergency reserve supply. The reservoir complex in North Fairfax consists of the South Reservoir/Dam (constructed in 1873) and the North Dam (constructed in 1893). The Maquam Shore Water Treatment Facility was originally constructed in 1953 to supplement the City's water supply with treated water from Lake Champlain.

Distribution to the City is made possible by several large water mains, pump stations, a one million gallon storage tank, and miles of smaller distribution lines. The City's water supply system has sufficient capacity for anticipated growth within the existing service area. There are no plans to expand the service area.

In 2010, the City started an evaluation and mapping project of the water system funded by rate payer contributions. This evaluation is informing the City on where to focus future water system improvements and mapping will improve the City's ability to monitor the condition of infrastructure. As needed improvements are identified, they are planned and budgeted in the City's Capital Improvement Program.

Municipal Wastewater System

The City operates a municipal wastewater treatment system servicing the entire City and parts of Saint Albans Town both north and south of the City. The wastewater treatment plant (installed in 1930) is located on Rewes Drive north of the City in the Town of Saint Albans. Wastewater and stormwater are transported to the treatment plant via a network of sewer pipes. Approximately 60% of the treated water is combined wastewater/stormwater. Disinfected effluent is discharged into Stevens Brook.

The City maintains close to 4,000 sewer accounts, with the majority being residential accounts (approximately 10% are commercial and less than 1% are industrial). Less than 20% of sewer accounts are located in the Town of Saint Albans (as compared with over 30% of water accounts). As noted in the Water Supply Section, new service connections are regulated by a water/sewer allocation ordinance.

The City recently completed upgrades to the wastewater treatment facility that increased the systems organic capacity (completed in 2010 at a cost of approximately 5 million dollars). Financed through a combination of State Revolving Loan Funds and Federal ARRA dollars, debt service is paid via allocation fees and rate payer charges.

As a requirement of the discharge permit, the City is required to complete a 20-year engineering evaluation/inspection of the facility. The evaluation will be useful to the City in planning for future improvements. As needed improvements are identified, they will be planned and budgeted for in the City's capital budget and plan.

The Saint Albans City wastewater treatment plant has a design capacity of 4 million GPD. It provides advanced tertiary treatment to wastewater before discharging it into a marshy area of Stevens Brook, and from there into Saint Albans Bay.

Stormwater

In 2008, the City completed a comprehensive mapping project to create accurate, up-to-date maps of the City's stormwater and combined sewer systems. The study included GPS location and mapping of the storm sewer systems (drainage manholes, catch basins, outfalls, etc.) within the City's collection systems. In addition, the study also included a Stormwater refers to rainwater, snow melt, and other precipitation. In a natural setting, stormwater can be absorbed into the soil and or taken up by plants. In developed areas, however, pavement and other impervious surfaces such as rooftops prevent rainwater from infiltrating into the ground, instead "stormwater runoff" moves across these surfaces collecting sediment, nutrients, and other pollutants which quickly flow into waterbodies. The City is now completing additional mapping of drainage areas. The study will ultimately provide a baseline understanding of drainage patterns within the City of Saint Albans for stormwater management and infrastructure planning.

Transportation

There are 10 miles of arterial streets (Class 1 highways) and 17 miles of collectors and local streets (Class 2 and 3 highways). At the center of the City is the intersection of US 7 (Main Street) and VT 36 (Lake Street/Fairfield Street). VT 38 (Lower Newton Street) and the limited access Saint Albans State Highway South (SASH) also pass through the City.

The City of Saint Albans exhibits a well-connected street network easily accessed from Interstate 89 via the Saint Albans State Highway (SASH) to Main Street and Route 104/Fisher Pond Road to Fairfield Street. Connectivity provides for good traffic circulation, efficient travel between local destinations, and the economical provision of services and infrastructure maintenance. Despite the City's street network, circulation in the City is challenged by only one north-south arterial street (Main Street). The lack of alternate arterials creates traffic congestion on Main Street and is disruptive to neighborhoods as motorists use side streets as short cuts to avoid the congestion on Main Street.

Daily passenger rail service in the City of Saint Albans is provided by Amtrak. Private taxi service is available. Fixed route bus service, as well as elderly and disabled transportation is provided by the Northwest Public Transit Network.

The City of Saint Albans has sidewalks along most of its streets. The City has implemented a pedestrian crossing system on Main St. with posted signs stating that traffic must yield to pedestrians in crosswalks.

The City operates a fleet of pickup trucks, utility vehicles and equipment to carry out its street maintenance duties. Vehicles and equipment are replaced in cycles (based on accepted life spans) according to the City's capital plan and budget.

The City's culverts and bridges are managed in an inventory, which was last updated in 2008. The inventory prioritizes culverts and bridges in terms of age, character of improvement, and function. Culverts and bridges prioritized for upgrade are replaced as funding is secured.

Winter road maintenance issues include the storage of salt and sand and space for cleared snow. There is no shelter for the storage of salt and sand at the Public Works Garage. Snow is hauled for storage at Hard'ack after large snow events. All new roads are required to comply with the Vermont State Design Standards. The Saint Albans City Development Regulations include specific construction standards for street layout, curve radii, grade, and intersection. All public roads are required to be paved.

Nation Flood Insurance Program (NFIP)

Federal Emergency Management Agency conducted a flood hazard study for the City of Saint Albans in 1978 and flood hazard areas were identified along Stevens Brook and Grice Brook. Flood Insurance Rate Maps (FIRM) were prepared by FEMA on June 15, 1978. They are available for review at Saint Albans City Hall and the Northwest Regional Planning Commission in Saint Albans City and online at FEMA.GOV.

Creation of the Flood Hazard District Overlay in the City's zoning bylaws made Saint Albans City eligible for the Federal Emergency Management Program's (FEMA) National Flood Insurance Program, which permits City residents to purchase flood insurance.

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

While the NFIP floodplain management criteria are administered by States and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Saint Albans City is a member in good standing with the NFIP (CID 500058). Floodplain regulations are included in the City's Development Regulations which were readopted November 30, 2015.

According to FEMA's National Flood Insurance Program as of September 26, 2014, the City of Saint Albans has three (3) active NFIP policies in force with a total coverage value of $593,000. There have been three (3) NFIP claims filed in Saint Albans City since 1978 totaling $2,750.

The City works with elected officials, Northwest Regional Planning Commission, the State and FEMA to correct existing compliance issues and prevent any further NFIP compliance issues through on-going communications, training and education.

Repetitive Loss Properties

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten year period, and must be greater than 10 days apart. [1]

According to the State Hazard Mitigation Officer, Saint Albans City has zero (0) repetitive loss properties since 1978.

5. RISK ASSESSMENT - Identifying hazards, profiling hazards and assessing vulnerability

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

Hazard identification and risk estimation can be a highly complex, time consuming and very costly effort if sophisticated technical and engineering studies are undertaken. The City of Saint Albans does not have the resources to undertake hazard identification and risk assessment studies to this level of detail. The City of Saint Albans and the Northwest Regional Planning Commission used a module of Mitigation 20/20 software which included a hazard profile matrix (Attachment A) that was used to develop a risk rating for each identified hazard. The matrix was completed by relying on hazard identification and risk evaluation information as well as the knowledge and judgment of planning participants. Health and safety consequences, property damage, environmental damage and economic disruption are classified as consequences of occurrence of each hazard. The following is a description of the risk characteristics used to classify each hazard:

Frequency of Occurrence: Probability:

1. Rare: Unknown but rare occurrence.
2. Unlikely: <1 % probability in the next 100 years.
3. Possible: 1% to 10% probability in the next year, or at least one chance in the next 100 years.
4. Likely: 10% to 100% probability in the next year, or at least one chance in the next 10 years.
5. Highly Likely: Near 100% probability in the next year.
6.

Magnitude or % Community Affected:

[1] FEMA<http://www.fema.gov/sever-repetitive-loss-program>

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

Health & Safety Impacts:

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

Property Damage:

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

Lake Street Railroad Crossing Prior to Crossing Upgrades.

Environmental Damage:

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

Economic:

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

The risk estimation matrix (See Attachment A) for the City derives a "relative risk score" using a qualitative process. The total is considered in this plan to constitute a relative risk score. The hazards with the highest risk scores are flooding and severe winter storm (ice storm) followed by high winds and fluvial erosion. The community's overall risk rating is low (360 out of a possible high of 1,200).

Vulnerability assessments build on the identification of hazards in the community and the risk that the hazards pose to the community. The vulnerability assessment process examines more specifically how the facilities, systems of the City would be damaged or disrupted by the identified hazard.

In order to determine estimated losses due to natural and man made hazards in the City, each hazard area was analyzed; results are shown below. Human losses were not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The median value of owner occupied housing units from 2009-2013 in Saint Albans City is $180,900 according to the Vermont Housing Data and the Census. The results are included in each hazard profile and in Table 4.2. Human losses were not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The data was calculated using *FEMA's Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001). Damage estimates were made in 2014 and it should be noted that projected dollar losses change with inflation and time. As future development in the City is unpredictable at this time, it is uncertain as to how many future structures could be threatened by hazards.

While all the hazards listed in the State Mitigation Plan were considered, only the hazards identified in this plan are ones most probable to put Saint Albans City at risk. The hazards that were not considered include wildfires, landslides, and extreme temperatures (heat). Wildfires and landslides were not considered because these hazards have never occurred in the City and the geography of the City makes the likelihood of these occurrences negligible. Extreme temperatures are brief in duration and not considered an issue based on history according to life-long City residents who served on the committee.

Flooding

Stevens Brook, Rugg Brook and Grice Brook are perennial streams that flow through the Town of Saint Albans and the City of Saint Albans. Stevens and Rugg Brooks discharge into Saint Albans Bay on Lake Champlain. The drainage area of the brooks is approximately three (3) square miles. All three brooks are known to flood.

According to the City of Saint Albans Flood Insurance Study dated December 1977, significant flooding occurs on an average of every 5 years. This report states that areas prone to flooding include the residential section east of US7 and the business and residential center to Newton Road. A majority of flooding was characterized as frequent out-of-bank flooding throughout the urban areas, associated with spring snowmelt and summer rainfall events. Larger flows resulted in basement and first floor flooding of homes and businesses, inundation of local roads, and washing out of riverbanks and culverts.

Except for short sections of Stevens Brook between Quintin Court and Barlow Street, the average flood depth in Saint Albans City is less than 1.0 foot. Most areas are subject only to shallow flooding and are classified as Zone B.

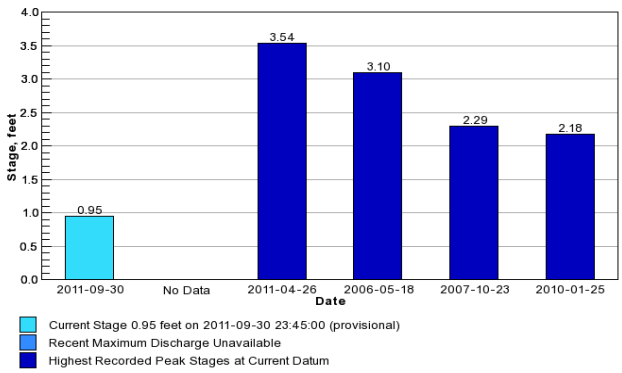
Flooding along Main Street near Lower Welden Street occur during 100 year flood discharges. Shallow flooding of less than 1.0 occurs in this area. Several residences along Lower Welden Street are affected. The City had installed a retaining wall in the '80s to protect several residences from flooding but the wall is in disrepair. Out of bank flooding also occurs along Quintin Court, Barlow Street, Lincoln Avenue and Main Street during heavy rain fall events.

There is no history of ice jam related flooding in the City.

The first stream gauge in the City was installed for Stevens Brook in 2005 on Lemnah Drive. Stream gauge data is very limited for the City. An additional stream gauge was installed just east of the City in Saint Albans Town where Stevens Brook drains along Kellogg Road in 2005.

In 1900, due to persistent flooding along Stevens Brook, the State of Vermont enacted legislation regarding the diversion of flood discharges from Stevens Brook into Rugg Brook. No action was taken for over 50 years.

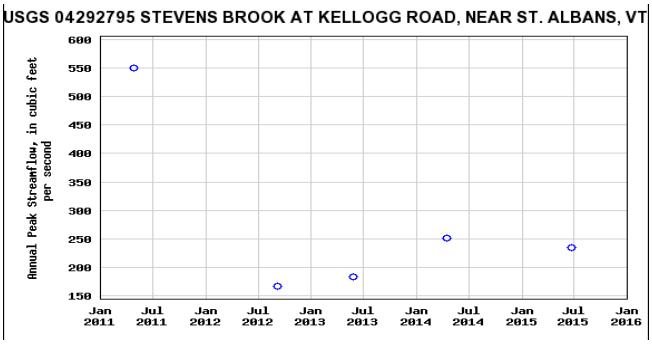
In the spring of 1955, Stevens Brook experienced significant flooding during a rain event. Following the storm, Saint Albans Town, Saint Albans City, and the Franklin County Soil Conservation District took action to divert floodwaters. In the late seventies, the Stevens Rugg Watershed Protection and Flood Prevention Project was implemented and a dam and channel was installed near Nason Street and downstream from the Central Vermont Railroad tracks to divert flood flows from Stevens Brook to Rugg Brook. According to the Insurance Study, prior to construction, the estimated average annual damages were $6,700 to commercial properties, $5,990 to residences, $860 to roads and bridges, and $320 to the former Coote Field Recreation area.



Lemnah Drive Peak Flow River Gauge Data.
Source: U.S.G.S

In January 1996, a warming trend created widespread flooding. Rain coupled with melting snow caused Stevens Brook to overtop its bank. One homeowner on Lower Welden Street provided a personal account noting "the water was now 4' in the basement and about 1" from coming through the door and into the house…it took about 2 hours (of pumping) to start noticing a decline in the water level…after about 6 hours of pumping, we were gaining on what was coming in."

In January 1998, a significant ice storm event caused flooding throughout the city. Vermont Routes 36 and US7 and many local streets experienced some flooding as did the basements of several homes and businesses. The storm caused extensive damage to trees and power lines, leaving many residences without power. On August 11, 1998, the City received 65 complaints of flood damages from a summer storm event.



Stevens Brook Stream Gauge Peak Flow Kellogg Road.
Source: USGS

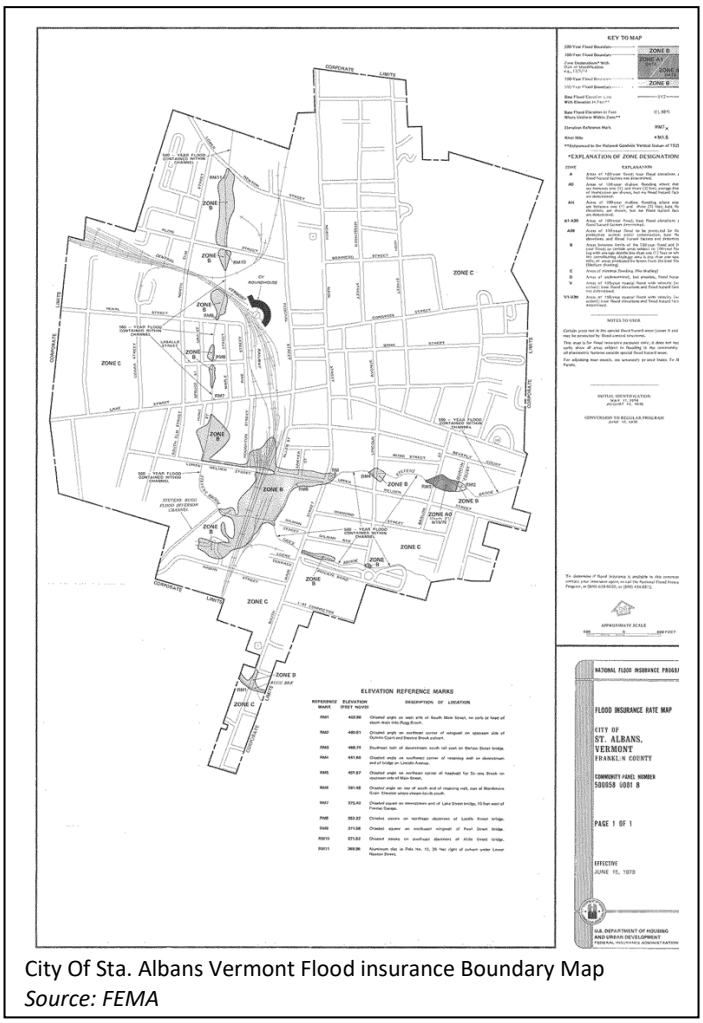
In June 2002, several storm events passed through the area generating significant rainfall amounts and associated flooding. On June 5th, 2.91 inches of rainfall was recorded. On June 11th and 12th, 2002 a storm event generated 4.3 inches of rainfall. This storm was estimated to be between the 30 year and 40 years rainfall recurrence frequency. Many homes suffered flood damages to basements and yards. The floods created damages to five existing homes on Lower Welden Street, when Stevens Brook over-topped its bank and the existing retaining walls located in the area. Residents Peter and Monica Wimble estimated they received $7,375 in damages from the event

and in a written account noted “we were keenly sensitive to any change if the weather, not knowing if we are going to experience another night of personal and emotional loss.”

The year 2011 was a record year for flooding in the state of Vermont. The first floods occurred over a two-week period in April and May of 2011 (DR 1995, 4043). These floods impacted the northern half of the state, including the counties of Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orleans, Washington, and Windham. The damage totaled over$1.8 million in FEMA assistance. In the spring, heavy rains in late March/early April on top of a deep late season snowpack resulted in riverine flooding and sent Lake Champlain well over the 500-year flood elevation breaking the 140-year-old peak stage elevation. Additional spring runoff events resulted in Lake Champlain being above base flood elevation for more than a month. High lake levels coupled with wind driven waves in excess of 3 feet resulted in major flood damages for shoreline communities.

Additionally, flooding and fluvial erosion caused by Tropical Storm Irene was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR-4022). The City of Saint Albans was fortunately spared from this event. Heavy rains fell throughout the day and some minor flooding occurred. The details and impacts of Tropical Storm Irene are provided in the Hurricanes/Tropical Storms section of this risk assessment. However, it is important to underscore that the majority of damages resulting from Tropical Storm Irene were due to flooding and fluvial erosion.

Flooding and fluvial erosion events are highly likely, as determined by the City Emergency Management Director and other members of the Committee. There are flood events nearly every year, especially during spring snow melt and late summer storm events.



City Of Sta. Albans Vermont Flood insurance Boundary Map
Source: FEMA

The City’s Flood Hazard Overlay District was identified on Flood Hazard Boundary Maps (FHBMs) and Flood Insurance Rate Maps (FIRMs) distributed by FEMA. The purpose of the district is to prevent increases in flooding caused by excessive development of lands within the district and to reduce losses as a result of damage from flooding.

Floods are a reminder to City residents of the power inherent in nature and are an urgent reminder of the need for proper management and appropriate use of critical floodplain areas. Development within floodplains poses significant risks and should be avoided. River channels and floodplains function as a single hydrologic unit, periodically transferring floodwaters and sediment from one to the other.

Appropriate uses of floodplains are those that can accommodate this cycle. Examples of uses that are appropriate to floodplains include agriculture, open space, and recreation.

A GIS based overlay analysis was conducted using FIRM data with the Vermont E-911 Esite data of structure location. The results found that there are forty-nine (49) structures within the 100 or 500 year flood plain in Saint Albans City. There are fourteen (14) all-season single family units, eleven (11) all-season multi-family units, fifteen (15) mobile homes, three (3) commercial sites, three (3) industrial sites, and three (3) public building sites. Central Dispatch, which houses the fire and police station on Lower Welden Street, is located in flood plain.

Flooding Source and Location	Drainage Area Sq. Miles	Peak Discharges (CFS)			
		10-Year	50-Year	100-Year	500-Year
Stevens Brook					
Quintin Court	1.60	365	680	860	1,350
Main Street	1.70	365	680	860	1,350
Confluence Grice Brook	2.26	460	860	1,085	1,650
Lower Welden Street	2.26	88	98	100	507
Lower Newton Street	3.2	225	235	237	640
Grice Brook					
Mouth	0.56	95	180	225	300
Rugg Brook					
Main Street	2.78	500	805	960	1,350

Summary of Discharges
Source: FEMA

Estimating flood damage of the 3% of structures with 20% damage is $3,118,508.24. Cost of repairing or replacing the utilities, roads, bridges, culverts, and contents of structures is not included. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

In July 2003, the Stevens and Rugg Brook Watershed Study Report was released. The study provides a detailed analysis of the area. The study defines watershed problems and identifies solutions that can be implemented by the community to correct the problems. According to the report, the frequency of out-of-bank flooding has increased significantly over time. Surcharging of the City-owned storm drain system has occurred approximately six times over the past 18 years, resulting in localized flooding. The report notes that the City averages $50,000 annually for flood related damages.

One of the problematic flooding areas identified is the 300 foot reach of Stevens Brook along Lower Welden Street. An existing concrete retaining wall has been in place for many years, which is designed to retain the flow of water within the banks of the brook and to prevent it from flooding onto adjacent lawns and onto nearby residential structures. The retaining structure is no longer adequate for major storms, and was overtopped twice: in June 2002 and during the spring of 2011. The existing retaining wall is leaning inward towards the brook. The intersection of Lower Welden Street and South Elm Street is impassable during severe flood events. The state has recommended a terracing project along this stretch of Stevens Brook which City officials support.

The City has identified the following priority projects to address flooding issues and reduce the long-term risk from flooding. The projects identified were selected due to the frequency of damages, maintenance and repairs following rain events:

Buyout Properties Prone to Flooding from Stevens Brook on Lower Welden Street: The 300 foot stretch of Stevens Brook is prone to flooding during high precipitation storm events. There are five residences along this stretch who have experienced damages to their home from flooding. The City is interested in purchasing properties along this stretch to reduce the long-term risk to flooding and associated damages. The City identifies this stretch of Stevens Brook as a threat to public safety. Buying out these properties and removing the structures would mitigate against potential structural damage from flooding.

Relocate City Public Safety Building: The City Public Safety Building which houses the fire station, police station and is the Public Safety Answering Point for Franklin County is located along the Stevens Brook on Lower Welden Street. The Public Safety Building is prone to flooding during high precipitation storm events. The bays of the fire station have to be pumped out and during major storm events, fire apparatus has to be relocated. The City recommends relocation of the Public Safety building out of the floodplain. Relocating the City Public Safety Building will mitigate against potential structural damage from flooding and will provide long term risk reduction to the for this critical facility

Stevens Brook Floodplain Terrace Project (300 feet) on Lower Welden: This is along the same stretch of Stevens Brook and City officials met with Vermont Agency of Natural Resources officials to address flooding issues along Stevens Brook. Flooding along this stretch of Brook impacts five residences, the City Public Safety Building and one commercial site, North Country Linens, on the edge of the City's Industrial Park. The State recommended terracing the 300 foot stretch of stream from US 7 to Lemnah Drive to provide long term risk reduction from flooding in this area. The terrace would be an earthen structure designed to transform the slopes along this section of Brook into a series of shorter slopes, reducing the rate of runoff and allowing soil particles to settle out. The resulting cleaner water would then be carried off the area in a non-erosive manner. This project will mitigate against potential structural damages downstream.

Severe Winter Storm (Ice Storm)

In northwestern Vermont where Saint Albans City is situated, a severe winter storm can last for several days and can be accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds, accumulations of ice and heavy snow can knock down trees, utility poles, communication towers and power lines. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. People have been trapped at home for up to two weeks, without utilities or other services.

Extreme cold often accompanies a severe winter storm or is left in its wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. Even small accumulations of ice may cause extreme hazards along roadways. Heavy snowfall and blizzards can trap motorists in their cars. Attempting to walk for help in a blizzard can be a deadly decision.

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

The largest snowstorm on record with the state of Vermont was the Christmas Storm in 1969 when nearly 30 inches of snow fell across northern Vermont.

The Halloween Storm occurred during the evening of October 1, 1993 leaving snow amounts of 6 to 10 inches across Franklin County.

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

In January of 1998 the infamous Ice Storm swept to the north and west of the city causing some flooding from freezing rain. Power outages were widespread in the region lasting for several weeks. The event was a FEMA declared disaster.

Between December 2000 and March 2001, four nor'easters swept through the area bringing heavy, wet snow and causing power and phone outages due to downed trees. The storm developed into a nor'easter during the afternoon and continued through the evening. Damage estimates for cleanup are unknown.

On March 26, 2002 a late season storm came in the form of snow mixed with sleet and freezing rain during the night creating hazardous travel conditions. In Saint Albans, 7 inches of snow was reported as were numerous accidents.

A rare autumn Nor'easter struck Franklin County on October 25, 2005. The Nor'easter was fed by the remnants of Hurricane Wilma. There were reported snowfall amounts in the County varied from 6 to 14 inches. Trees still laden with fall foliage were downed due to the weight of heavy, wet snow. There were many reports of snapped power lines from downed trees and branches.

On the night of March 3rd, 2006, warm, moist air merged with an arctic airmass across northern Vermont causing six inches of snow accumulations by the following morning.

On February 14, 2007 a winter storm blanketed most of New England. In Vermont, snow fell heavy at times from late morning through early evening before dissipating during the night. Snowfall rates of 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused near whiteout conditions at times, along with considerable blowing and drifting snow, making roads nearly impassable. Temperatures in the single numbers combined with brisk winds created wind chill values of 10 degrees below zero or colder. Snow accumulations in Saint Albans reached 21 inches.

Burlington, Vermont
Top 10 Spring Snowfall Totals
Mar-May

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

Source: National Oceanic and Atmospheric Administration

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

During December 20-26, 2013 (DR-4163) a wide-spread low pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm named Gemini that brought wide-spread power outages. Many towns throughout Franklin County, Vermont were affected by the ice storm known. Vermont Electric Cooperative responded to over 60,000 customer outages during the week and estimated costs of restoring power at $7,400,000. In Saint Albans City, the highway department was active keeping streets open and removing ice damaged trees and limbs. Local plumbing and heating companies and the City Public Works department were kept busy with round the clock repairs on frozen and damaged water lines. Hundreds of residents in the county were without power for several days.

The City Emergency Management Director and Committee classify severe winter storm (ice storms) to be highly likely each year. Every winter there is a winter event where City residents will have to address snow and ice build up on personal property and the City public works department will have to ensure streets remain clear of snow and ice.

Burlington, Vermont
Top 10 Fall Snowfall Totals
Sep-Nov

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

Source: National Oceanic and Atmospheric Administration

Winter storms affect the entire City and generally cause disruptions to public and private services. The primary impacts of a storm typically include the disruption to transportation networks, school closings and occasionally telecommunications and power outages. Vulnerable populations such as the elderly, those dependent on medical equipment and specialized health or physical care are at risk to winter storms. Also at risk are farms and associated structures and livestock. Barns can collapse due to heavy snow loads. Dairy cattle are susceptible to mastitis2 if they are unable to be milked.

The City Public Works Department has snow removal equipment in place to respond to winter storms. Fire, rescue, law enforcement vehicles and public works vehicles are equipped to travel in winter conditions. The community has designated shelters with emergency power generators.

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

The City has identified the following actions to mitigate the impacts on the community due to severe winter storms (ice storms):

[2] Mastitis is the inflammation of the mammary gland caused by microorganisms, usually bacteria, which invade the udder, multiply and produce toxins that are harmful to the mammary gland.

Procure and install a generator and automatic transfer switch at the Saint Albans City Elementary School.

Procure and install an emergency generator and automatic transfer switch at Bellow Free Academy High School.

The City is currently working with the American Red Cross Northern Vermont Chapter's Local Shelter Initiative Program. The Shelter Initiative Program seeks to designate a local facility as a Red Cross Shelter, identify and train volunteers within the community who could set up and run the shelter and store basic shelter preparedness items (cots, MRE's, water) at the facility prior to an activation.

Implement a community alert notification system. An announcement type system where residents have the option to sign-up for community wide notices that utilizes land line, cell phone, text, email, social media, etc. The notification system would be used to provide quick notice to residents during emergencies.

High Winds

The National Weather Service (NWS) issues a Wind Advisory when winds are sustained at 31 to 39 mph for at least one hour or any gusts 46 to 57 mph. The NWS will issue a High Wind Warning for wind speeds that are 58 mph or higher. Additionally, the NWS also has classifications for Tropical Storm Wind Warning and Hurricane.

High winds are a hazardous threat to the City and most commonly accompany other storm events. Violent windstorms are possible in the City. The City is far inland and is unlikely to receive a direct hit from a hurricane, however high winds and hail storms have occurred in City as weakened tropical storms tracked near the region.

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

12	74-95	Hurricane	Considerable and widespread damage to structure

Power lines and trees are most vulnerable to high winds. Power outages may occur resulting in significant loss of business as well as threatening public safety. The City has a limited ability in quickly restoring lost power caused by damaging high winds. Cleaning up debris following high wind events can be costly depending on the severity of the event.

High winds are common from the west as weather systems move across Lake Champlain. High winds occur frequently along the hilltops found to the east of the City.

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

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

In August 2005, tropical moisture from Hurricane Katrina reached Saint Albans City on August 30th. The rain was initially steady then became heavy on the 31st. Rainfall totals across Franklin County were generally between 2.5 and 4 inches. No damages were reported.

A powerful front brought damaging high winds during the afternoon of August 16, 2007. There were brief power disruptions, downed trees and associated damages to residential property throughout the City.

On August 31, 2011, Tropical Storm Irene brought high winds and rain to the area. There were brief power disruptions, downed trees and associated damages to residential property throughout the City.

Using the median value of structures from the City's Grand List, the estimated damage of 10% of structures with 20% damage is $10,395,028.08. The estimated cost does not include building contents, land values or damages to utilities. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Fluvial Erosion

Fluvial erosion is becoming more common within the region. Historic land uses along waterways, including flood plain encroachments and vegetative debris removal, have increased the risk of erosion hazards. Fluvial erosion causes the transport of sediments and silts into the brooks. Erosion may be caused by excessive runoff during storms events. Excessive runoff has resulted from long term development within the watershed, converting pervious land to impervious lands with drainage systems connected directly to the streams. Also, development into the areas of riparian buffers may contribute to the issue. According to the Stevens and Rugg Brook Watershed Study from 2003, increased erosion in all areas of the watershed is identified as a source of water quality problems for streams the feed into Lake Champlain.

During the summer and fall of 2005, Phase 1 and 2 geomorphic assessments were conducted on portions of the Stevens and Rugg Brook watersheds by the Lake Champlain Committee. All of the Phase 2 Assessments were conducted in accordance with the 2005 Vermont Rivers Management Stream Geomorphic Assessment Protocols. Results of the assessments indicate that a large portion of the watersheds in Saint Albans City and Town are urbanized leading to significant channel adjustments. The

current conditions in the watersheds cause flooding. The final report of the geomorphic assessments concludes:

- Changes to the watershed have resulted in incised channels reducing sediment storage capacity of the stream system
- Channel incision/erosion has resulted in increased generation of sediment in the stream system.
- Straightening of the stream channels has increased the volume of storm flow and its ability to transfer sediment
- Infrastructure limits the channel's ability to widen or move and to access flood plain (where it has not been encroached)

In January 1996 rain coupled with melting snow caused Stevens Brook to overtop its bank. The City Public Works Department noted that the banks of the brook showed evidence of minor erosion caused by flooding along Welden Street.

On August 11, 1998, the City received 65 complaints of flood damages from a summer storm event. Banks along the Stevens and Rugg Brooks were damaged from floods but there wasn't any concern for bank failure.

In June 2002, several storm events passed through the area generating significant rainfall amounts and associated flooding. On June 5th, 2.91 inches of rainfall was recorded. On June 11th and 12th, 2002 a storm event generated 4.3 inches of rainfall. This storm was estimated to be between the 30 year and 40 years rainfall recurrence frequency. Many homes suffered flood damages to basements and yards.

Northern Vermont experienced record rainfalls during the spring of 2011 (DR1995 and DR4043). High precipitation combined with snowmelt resulted in prolonged saturated conditions and significantly elevated and/or perched water tables. The saturated ground and high water table conditions contributed to slope instability and landslides at several locations throughout northern Vermont.

Additionally, flooding and fluvial erosion caused by Tropical Storm Irene was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR-4022). The City of Saint Albans was fortunately spared from this event. Heavy rains fell throughout the day and some minor flooding occurred. The details and impacts of Tropical Storm Irene are provided in the Hurricanes/Tropical Storms section of this risk assessment. However, it is important to underscore that the majority of damages resulting from Tropical Storm Irene were due to flooding and fluvial erosion in the state.

Poorly constructed driveways contribute to erosion hazards when heavy rains produce stormwater from uphill driveways into City ditches and onto City Streets. As ditches fill with sediment, they no longer retain their water carrying capacity and can result in washouts during even relatively minor storms. At the time of this writing, storm water upgrades are being installed along the relatively steep Route 36 (Fairfield Street) which is a main artery of the City.

The City has not mapped fluvial erosion hazards. Such data could be used in a GIS overlay analysis to estimate potential losses similar to flood losses. Fluvial erosion hazard maps would be a valuable tool for city planners to guide development away from areas that pose a high risk of erosion.

The City has a draft stream corridor buffer amendment for the City's zoning bylaws that would restrict land uses that could alter the dynamics of streams. The purpose of the amendment is to restrict certain

activities within the stream buffer that would negatively impact water quality, reduce stream bank erosion and mitigate flood risk. This would be long –term solution to mitigate fooding and fluvial erosion.

Hazardous Materials (Fixed Site and Transport)

There are 16 sites in the city that have sufficient types and/or quantities of hazardous materials to require reporting (see Attachment B). Agriculture based businesses such as farms typically store various hazardous materials including fuels, pesticides and fertilizers. Of more concern are the various trucks carrying hazardous materials traveling along Interstate 89, US7, and VT36. The Saint Albans City Fire Department has trained personnel and equipment to safely address a HAZMAT event.

St. Albans City Propane Fire courtesy Chief Gary Taylor.

There are no reporting hazmat facilities located within the 100 or 500 year flood plain in Saint Albans City. Based on the recommended Public Safety evacuation distance from the 2000 Emergency Response Guidebook, a 1000-foot circle was drawn around sites that store hazardous materials. Structures inside the circle are at-risk to a hazmat incident and may need to be evacuated or shelter-in-place if an incident occurred. There are 951 structures out of 2,511 (38%) structures that are classified as residential, seasonal homes, public, commercial or industrial facilities that might be impacted during a hazmat fixed site incident.

Using the same method for hazmat transport risk assessment, there are 641 structures along VT 36 (Lake Street), and 1,045 structures along Route 7 (N Main St and S. Main St) that could be impacted. The City Hall, Central Dispatch, City Fire Station, City Police Station, Bellows Free Academy High School, Saint Albans Town Educational Center and Saint Albans City Elementary School are critical facilities located within the zone.

Minor non-reportable releases of propane have occurred, primarily during product transfer between storage tanks and delivery trucks and gas pumps to personal vehicles.

On March 23, 2003, three propane tankers derailed at the rail yard near the Amtrak station on Federal Street. One tanker overturned without incident. The cause of the derailment was displacement of the tracks due to frost heaves. Businesses nearby were evacuated as a safety precaution.

On June 24, 2006 a leaking propane tank prompted the evacuation of the residents at Four Winds Nursing Home on South Elm Street as well as several neighborhoods. The Franklin County CERT was activated to assist in the evacuation. Electricity to the area was disconnected while the state HAZMAT team and first responders secured the scene. No one was injured.

On February 15, 2013 at around 6:30 am on a Saturday morning, a snowplow accidentally struck a 330 gallon propane tank at Liberty Propane near Lower Newton Street in Saint Albans City. Dozens of firefighters fought the propane fire, while police kept the public a safe distance away and about 40 people were evacuated from their homes. An emergency shelter was open for displaced families. The tank did not explode. No one was hurt.

Table 4.1 UNDERGROUND STORAGE TANKS

Facility Name	Address	Permit Holder	Gallons	Contents
Break Yard	97 Federal St.	S B Collins Inc	3 - 25,000 3,000 3,000	Gasoline Kerosene Fuel Oil #2 or #4
Champlain Farms Gulf 300-SA	190 South Main St.	Wesco Inc	6,000 2 – 8,000 2,000	Gasoline Gasoline Diesel
Expert Automotive	224 Lake St.	S B Collins Inc	2 – 4,000 275	Gasoline Fuel Oil #2 or #4
Fairpoint	25 Bank St.	Telephone Oprtg Co of VT LLC	3,000	Diesel
Home Fuel Storage	16 Stanley Ct	Marc and Rachel Yandow	1,250	Fuel Oil #2 or #4
J & L Snack Shop	171 South Main St.	Richard E St Pierre	4,000 10,000; 15,000 10,000	Used Oil Diesel Gasoline Gasoline
Jolley Pump House	96 Federal St.	S B Collins Inc	2 - 10,000 2 – 2,000 3 - 10,000	Diesel Kerosene Gasoline
Jolley Residence	138 Congress St.	Robert J Jolley	400	Fuel Oil #2 or #4
Mac's Quik Stop	233 South Main St.	Champlain Oil Company Inc	8,000 6,000 2 – 4,000	Gasoline
Moose Lodge	43 Lake St.		500	Fuel Oil #2 or #4
Northwestern Medical Center	Fairfield St.	Northwestern Medical Center Inc	10,000 550	Fuel Oil #2 or #4 Diesel

S B Collins Bulk Plant	54 Lower Welden St.	S B Collins Inc	2,000 4,000 5,000 10,000 2 – 15,000 25,000 10,000 25,000 1,000 2- 25,000 3,000 25,000; 25,000	Gasoline Gasoline Gasoline Gasoline Gasoline Gasoline Diesel Diesel Fuel Oil #2 or #4 Fuel Oil #2 or #4 Used Oil Kerosene Off Road Diesel
South Main Street Grocery	139 South Main St.	S B Collins Inc	2 – 4,000 8,000 1,000	Gasoline; Gasoline; Diesel
St Albans North Main Shell	277 North Main St.	S B Collins Inc	4,000 6,000 2 – 10,000	Gasoline; Gasoline; Gasoline;
Switchyard Mobil	138 Lake St.	R L Vallee Inc	2,000 8,000 10,000	Kerosene Gasoline Gasoline

The primary areas of concern for a hazmat incident in the city are:

- Railroad Crossing at Lower Welden Street
- Railroad Crossing at VT36

Within the past 3 years, all railroad intersection within the city limits have been upgraded for safety including new railroad crossing signs, warning lights and alarms and gates. There have been no rail crossing accidents within the city limits.

The City has also expressed concern about a hazmat incident involving tankers along the New England Central Railroad network. Central Dispatch, the County Public Safety Answering Point (PSAP) is located in close proximity to the Lower Welden Street railroad crossing within the City Public Safety Building. Relocation of this facility is of high priority and is identified as a project in Appendix C. Also nearby are the S.B. Collins fuel storage facility and a pharmaceutical manufacturing facility, Mylan Technologies, Inc.

The City also recognizes certain locations along City and state highways are high accident locations (HAL) as identified through local knowledge, police reports and VTrans reports. These HALs occur in the City of Saint Albans at five primary locations:

- VT-36, Intersection with Catherine Street
- US7/VT 36 Intersection
- US7 Intersection with Upper Welden Street and Lower Welden Street
- US7 Intersection with Interstate Access Road
- US 7 intersection with Nason Street

These locations are at higher risk for hazardous material spills due to their HAL status.

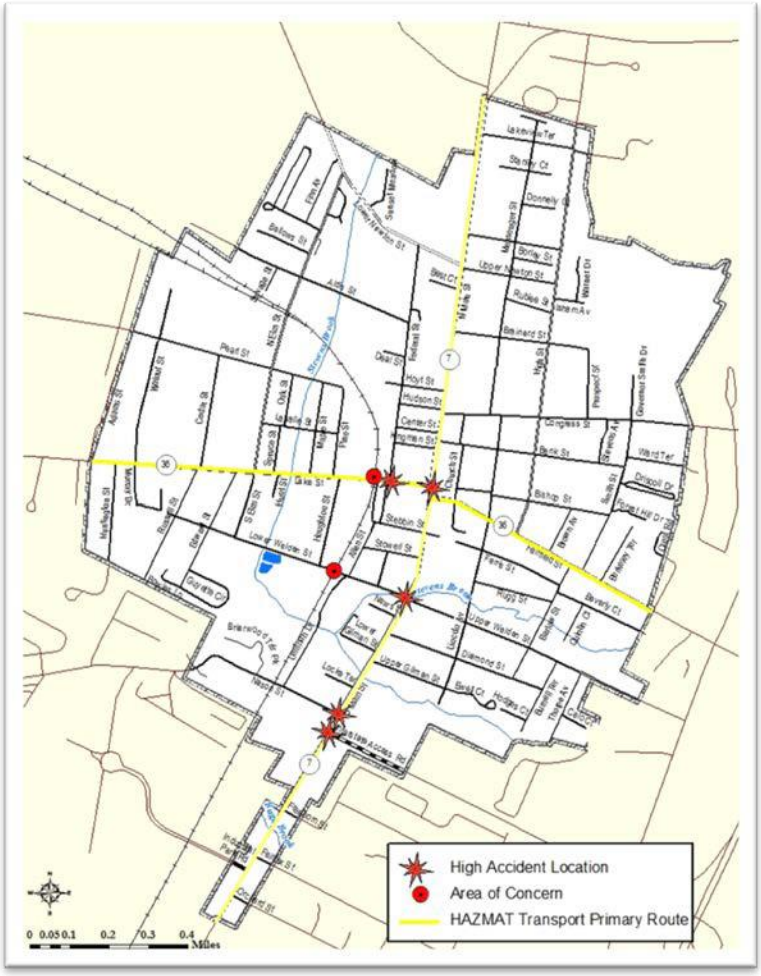
Petroleum products are primarily transported along Route 7 between New York ports and the Saint Albans area and Route 36 which runs to rural municipalities east of Saint Albans. As demand continues to grow for these products, increased truck traffic along these routes would indicate an increase in risk as well. The City is currently undertaking numerous improvements to the downtown area as part of a streetscape project. There are many improvements underway to the high accident location intersections listed above including better signage, crosswalks and upgraded lights which will reduce the number of accidents at these locations according to City and State officials.

Household Hazardous Waste is common household products that exhibit the characteristics of hazardous waste. As a result these products may be harmful to human health and/or the environment. Many of these products are very common and are usually purchased from local hardware, automotive, and grocery stores. These products can be used and found in our houses, in our garages, on our lawns, and in our gardens. Because these products are so common and easy to purchase, many people forget that these products can be extremely harmful to their health or the environment. For example, common household products like toilet bowl and oven cleaners can potentially cause burns, blindness, nausea, and shortness of breath.

Automotive products such as gasoline, oil, and antifreeze can be extremely harmful to the environment. According to the EPA, just one gallon of used oil can pollute one million gallons of drinking water. Used oil that ends up in Vermont's waterways can threaten aquatic life. Antifreeze can be extremely toxic to children and pets, potentially causing liver and brain damage, and cardiac failure.

Lawn and garden products such as pesticides, herbicides, and fertilizers can be washed off lawns and gardens by the rain, and ultimately end up in water supplies and surface waters. These products can kill fish, non-target insects, and can bio-accumulate in the environment causing harm to animals. One infamous example is the pesticide DDT causing major health problems in birds of prey.

The Northwest Solid Waste District operates a household hazardous waste disposal program year round. Residents may bring household hazardous waste to designated drop off sites where the



Map of High Accident locations and Hazmat Transport Routes

waste is disposed of properly minimizing environmental threats. The City is a member of the Northwest Solid Waste District.

Vermont Gas Systems, Inc. provides service to many City residents. Like all forms of energy, natural gas must be handled properly. Despite an excellent safety record, a gas leak caused by damage to a pipeline may pose a hazard and has the potential to ignite. Federal regulations require pipeline operators to develop integrity management programs for gas transmission pipelines located where a leak or rupture could do the most harm. Gas transmission pipeline operators are required to perform ongoing assessments of pipeline integrity, to improve data collection, integration, and analysis, to repair and remediate the pipeline as necessary, and to implement preventive and mitigation actions. Loss of gas service is rare in Saint Albans City. On June 9, 1981, two construction workers were in critical condition with severe burns from a gas explosion. Gas seeped into the manhole and was ignited by a spark from equipment.

Methamphetamine labs have become has hazardous materials concern for City Emergency Management in recent years. Methamphetamine, also known as “meth,” “speed,” “crank,” “crystal” and “ice,” is a very powerful man-made drug that affects the central nervous system. It is made in clandestine laboratories in houses, apartments, hotel rooms, vehicles, and outdoor locations. When a laboratory is shut down, equipment and chemicals are removed by first response agencies, but the property may remain contaminated with methamphetamine and hazardous chemical residues.

There have been several meth lab discoveries in recent years within the City in single family dwellings in residential areas and in apartments in mixed use districts. The City is concerned with clean up and demolition of properties that were once used as meth labs. If a property has been determined that the cost of decontamination exceeds the property value, the property owner may abandon the structure. The City may condemn such a property and order its destruction. Of concern is the costs to the City for clean up or demolition of such properties.

Damage and loss estimates from such events were not determined due to lack of data. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain consistent.

Structure Fire

The Saint Albans City Fire Department received approximately 282 calls in 2015 of which19 were for structure fires.[3] The fire department actively upgrades equipment through federal grant programs. Fire personnel are trained in NIMS/ICS. The City Fire Department has entered into the Franklin County International Fire Fighters Association’s Mutual Aid Agreement. The City has adopted building and safety codes.

In the central business district, buildings that are relatively close raise the risk for a multiple structure fire. The impact of this type of incident would primarily be on the commercial sector with a smaller impact on housing. Many of the upper floors in the downtown area are rental properties. Older historic buildings that lack fire alarms and sprinkler systems are greater at risk for damages.

In 1871, 1891 and on May 19, 1895, fires destroyed buildings in the business district between Kingman, Lake, Main and Foundry Streets. Loss estimates were $1,000,000.

[3] Report of the Fire Marshall, State of Vermont, 2015.

In the winter of 1948, a fire at the five-story Jesse Welden Inn killed 2 people.

The Opera House Fire on April 30, 1978 claimed the lives of 2 people.

March 8, 1983, a tragic fire engulfed a home claiming the lives of 3 children and their babysitter.
On July 17, 1997, a fire engulfed City Feed and Lumber building and warehouse in Saint Albans City. The fire also threatened the neighboring Century Arms building; a local weapons manufacturer and the Fonda Container Building. Loss estimates were $1,000,000.

On Thursday, December 21, 2006 a fire at an abandoned warehouse building (the Old Ice House) near Walnut Street generated large plumes of smoke. As a precaution, the Vermont Department of Health recommended the evacuation of 800 students (K-8) from nearby Saint Albans City Elementary. No injuries were reported.

Saint Albans City Fire Department Annual Responses

Year	2008	2009	2010	2011	2012	2013	2014	2015
# of Fire/EMS responses	861	1,423	1,360	1,232	621	123	206	282
# structure fires	20	29	14	9	8	9	14	19

Estimated loss due to fire damage on 15 structures annually using mean values is $2,758,725. This loss estimate does not include building contents. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to lessen due to new building construction codes and standards which address fire safety. The City of Saint Albans has issued an average of 2.8 building permits per year over the past 10 years for the construction of new housing units and 1 building permit per year on average for the construction of new duplexes. The overall number of homes is relatively stable. Those homes which are being built are generally built to more fire resistant standards than the older homes and over time, the risk to structure fire will be lessened. Fire alarms are now required by statute whenever properties are sold which should also result in fewer destructive fires and loss of life.

Loss of Water/Wastewater Service

Improvements to the City's Municipal Water System required under the Federal Safe Water Drinking Act have been made to address water quality problems. The old Maquam shore plant has been demolished and a new 3 MGD processing facility came on line during late calendar year 1994. The facility in Fairfax has undergone extensive improvements, including replacement and/or modification of the entire filtration systems.

The condition and age of the distribution system varies widely. It is estimated that the majority of lines are less than 50 years old however some are 100 years old or older. Water line shut off valve conditions vary greatly with many of the older in ground shut off valves no longer functional. City officials have recognized that need to replace the older lines and valves. Service lines are replaced as needed. The entire water system was mapped and should facilitate the repair of lines and help determine the impact of new users on the system.

On August 23rd, 2014 a water main break in downtown St. Albans caused disruptions to some local businesses during the afternoon. Water flowed into the first floor of some businesses and down Main and Lake Streets. Several downtown businesses received minor flooding damages. At the time of the break,

Twiggs restaurant was preparing for a local foods fare. Fortunately, the City Public Works Department was quick to repair the lines.

February 2015 was one of the coldest Februaries on record according to the National Weather Service in Burlington. On February 24, 2015, two breaks in the water distribution occurred due to deep ground frost. The City Public Works Director called the breaks the most significant during his 38 year tenure. The breaks occurred on Barlow Street near the Stevens Brook bridge, and at the intersection of Thorpe Avenue and Upper Welden Street. Approximately 175 residents of those streets as well as Quintin Court, Beverly Court, Smith Street and Driscoll Drive lost water service. All of the City's water service area experienced fluctuations in water pressure. The first break was repaired within 24 hours and the second break was repaired the following evening. Additional support from neighboring St. Albans Town helped to facilitate restoration of water service.

Additionally, the Northwest Medical Center was in the affected area. The hospital activated its emergency operations center and was able to continue most functions despite a loss of water pressure and a boil water order. Non-essential employees were sent home. Port-o-lets were brought in and portable chemical toilet kits were distributed to the remaining staff and patients. Pallets of bottled water were also delivered.

Water main breaks resulting in water service loss could happen at any time and are more likely to occur in areas where the older lines exist. Breaks typically occur in winter months when frost settles into the ground causing pressure on the older lines. When there are water main breaks, the City issues a boil water notice to residents and is required by law to conduct clean water tests to ensure the water is safe to drink. The City Public Works Department has crews and equipment that can lead to the quick restoration of water and waste water service as disruptions occur.

The existing waste water treatment system is highly effective and much improved. According to reported flow data from the Agency of Natural Resources (February, 2006), the plant is now operating at approximately 78% of its total capacity. The plant is designed to treat fully up to 4 million GPD continuously and up to 8 million GPD for short durations. Stormwater in excess of 8 million GPD receives, at a minimum, grit removal, primary clarification and chlorination.

Approximately 40% of the City's sewer system is separated from stormwater. This means that stormwater makes its ways to the wastewater treatment plant and is processed. Therefore, reducing the amount of infiltration /inflow to the collection system, hence to the treatment plant, could significantly increase the available hydraulic capacity of the plant.

The City has identified the following actions to address water and wastewater service loss:

Upgrade water main lines, valves and wastewater lines. Upgrading and replacing water main lines, valves and wastewater lines will mitigate against potential damages from structure fire, water and wastewater service loss and hazardous materials and the upgrades will be a long term risk reduction against such incidents Replacing older water mains and valves will mitigate damages to residential, municipal and commercial structures, lessen losses to businesses affected by water main breaks and reduce expenses related to emergency repairs. The City has mapped its water distribution system and has begun to prioritize sections of the system that need to be replaced. The City has begun getting cost estimates associated to replacing various sections of the system.

Educate water service customers on methods to prevent water lines from freezing. Guidance to prevent water lines from freezing can be made available in brochures, ads in local media or educational materials on the City's website. (i.e. Insulate all accessible pipes using pipe insulation. Keep all exterior entry, exit and garage doors to unheated spaces closed as much as possible during the winter months. Prior to the winter months, ensure that all cracks, holes, and other openings on the exterior walls are sealed tightly with caulk or insulation to prevent cold air from penetrating the wall cavity.) Such measures will mitigate against potential damages from loss of water and sewer service.

Hail

A damaging phenomenon from thunderstorms is hail. Hail is typically a localized event and can cause a large amount of damage over a short period. There is no area in the City more susceptible to hail damage than other areas. Power outages may occur resulting in significant loss of business as well as threatening public safety. Cleaning up debris following high wind events can be costly depending on the severity of the event. Farmers have sometimes called hail the "white plague," because entire fields of crops can be destroyed in minutes.

On June 30, 2006, hail up to 1 inch diameter was reported to the Fire Department by a thunderstorm by area residents. Minor vehicle damage was reported.

On June 28, 2007, hail was produced from a passing series of thunderstorms. Reports by area residents to the Fire Station included hail the size of 0.74 inches in diameter. No damage was reported.

There not have been any significant hail storms since 2007.

Tornado and Storm Research Organization (TORRO) Hailstorm Intensity Scale

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

				persons caught in the open

There is no area in Town more susceptible to hail damage than other areas. Power outages may occur resulting in significant loss of business as well as threatening public safety. Cleaning up debris following high wind events can be costly depending on the severity of the event.

Hail Events in Saint Albans City and Franklin County Since 1988

(Source: National Climatic Data Center)

Property Damage (Adjusted for inflation)	Crop Damage (Adjusted for Inflation)	Date	Hail Size	Area	Injuries	Fatalities
$0.00k	$0.00K	8/4/1988	0.75 in.	Franklin County	0	0
$0.00k	$0.00K	5/31/1998	0.75 in.	Saint Albans	0	0
$0.00k	$0.00K	6/30/2006	1.00	Saint Albans		
$0.00k	$21,224.49	7/16/2009	0.80 – 1.00 in.	Franklin County	0	0
$0.00k	$0.00K	6/26/2009	1.00 in.	Western Franklin County	0	0
$0.00k	$0.00K	6/18/2011	1.75 in.	Western Franklin County	0	0
$0.00K	$0.00K	5/29/2012	1.00 in.	Saint Albans	0	0

NWS guide for determining hail sizes:
less than 0.50" Pea
0.50" - Marble/Mothball
0.75" - Dime/Penny
0.88" - Nickel
1.00" - Quarter
1.25" - Half Dollar
1.50" - Walnut/Ping Pong
1.75" - Golf Ball
2.00" - Hen Egg
2.50" - Tennis Ball
2.75" - Baseball
3.00" - Tea Cup
4.00" - Grapefruit
4.50" - Softball

The impacts of hail storms are difficult to predict due to the randomness of the event. It is difficult to set a cost to repair or replace any of the structures or utilities affected. Every structure is susceptible to damage. There are no defined areas where this event will occur. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

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Thunderstorms/Lightning

The City has experienced a variety of thunderstorm events from weather systems that track through the Champlain Valley along ridgelines and from across the Lake Champlain. Typically, high winds accompany strong thunderstorms that often generate lightning and/or hail. Micro bursts with high wind speeds and high precipitation accumulations over brief periods often down trees and branches and power lines and can overwhelm local drainage networks for brief periods. High winds create hazardous conditions for watercraft on Lake Champlain. NOAA typically issues hazardous weather alerts and small craft advisories via the public alert systems and weather radios prior to impact. The Public Works Department is equipped with associated debris removal equipment. Death or serious injury could occur to individuals exposed to lightning.

On November 28, 1993 a strong pressure gradient moved across the northeast creating strong winds that knocked out power in Saint Albans and many other areas.

On July 23, 1998 in St Albans**,** thunderstorm winds blew down some trees with winds reported to be 60 mph or greater along with pea size hail.

On May 9, 2000, a warm front across northern portions of New York and Vermont helped focus the development of thunderstorms across northern Vermont. In St Albans, winds associated with a thunderstorm downed a large tree onto a car.

On June 23, 2002, a cold front moved southeast through Canada creating thunderstorms with high winds that knocked down trees throughout the City and Town.

In August 2005, a strong frontal system tracked from the west and across the Lake Champlain creating hazardous conditions for residents.

On June 19, 2006, a line of strong thunderstorms swept into the Champlain Valley and across the area knocking down trees along Route 36. NOAA reported that one gust of wind measured 62 mph in Saint Albans.

On August 7, 2006 scattered thunderstorms rolled through the County including a supercell structure that originated in Clinton County, NY. Trees were downed in several areas of the City.

On June 10, 2008 a very energetic mid-atmospheric disturbance moved across the Great Lakes during the afternoon and evening of June 10th. In Saint Albans, several trees were downed in the western part of the City.

Scattered thunderstorms developed in the Adirondacks of northern New York state and moved across the northern Champlain Valley of Vermont during the afternoon and evening of July 26, 2008. There were some isolated reports of wind damage in Grand Isle, Chittenden and Franklin counties in Vermont. There were intermittent power outages caused by tree limbs landing on power lines in the City.

Numerous thunderstorms developed ahead of the cold front in northern New York and intensified as they moved into Vermont during the late afternoon and evening hours of July 23, 2012. There were numerous reports of damaging winds and large hail. Large branches, small trees and utility lines went down in the City and power was disrupted. Damages estimates across the county was estimated at $25,000.

Lightning strikes in western Franklin County, Vermont averaged between 4-6 strikes per square mile each year based on data collected by NASA satellites between 1995 and 2002. Within the City of Saint Albans, these numbers would average between 9 -11 lightning strikes per year. There is very little data on lightning strikes in the City.

There are no loss estimates for lightning because it is extremely difficult to predict where the event will occur and the type of associated structural damage. Damages could come in the form of destroyed electrical appliances, structure fires, or wildland fires. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to lessen with the implementation of U.S Lightning Protection Codes and Standard which are used by State fire inspectors.

Terrorism / WMD & Civil Disturbance

The most famous and only act of terrorism in Saint Albans occurred during the Civil War and is known as the Saint Albans Raid. On October 19, 1864, twenty-two men who claimed to be Confederates, staged simultaneous armed robberies on the three banks in what was then the Village of St. Albans. They held townspeople prisoner in Taylor Park, stole horses and fled north with $208,000. One citizen was killed and one wounded. Their attempt to burn down buildings in the downtown failed.

Terrorism/WMD events remain a possibility in Saint Albans City but are considered rare. A terrorist event would likely occur at the Federal Immigration and Naturalization Service building, State of Vermont Office Building, City government building or at a school. Bellows Free Academy and Saint Albans City Elementary have school crisis plans and school safety committees which address school shooting type events. The three day Saint Albans Maple Festival brings thousands of visitors to the City each spring. City Public Safety officials actively plan for worst-case scenarios during such events.

Active shooter incidents are, unfortunately, becoming more frequent across the United States in facilities such as schools, government facilities and along the roadways (road rage incidents). Many government and school facilities conduct drills and exercises to prepare themselves to respond to such an event. Schools have emergency plans in place for a variety of incidents. The City has an updated security system in City Hall.

These phenomena are rare in Saint Albans City. Political demonstrations have occurred in Taylor Park and student walkouts occur periodically at Bellows Free Academy. Such demonstrations are generally uneventful. City public safety officials actively plan for worst –case scenarios during demonstrations.

Earthquake

Earthquakes have been felt in the City and remain a geologic possibility however extremely rare. There has never been an earthquake in close enough proximity to the City that has caused structural damages. The City is situated in a moderate earthquake zone.

Residential and some commercial structures are comprised of wood frame and or steel construction. Although earthquakes are not a frequent event, they have the potential to cause extensive damage to masonry (brick) buildings that are not reinforced, water and wastewater lines and rail lines. A HAZUS earthquake risk analysis and loss estimate was conducted at the regional level. There is moderate potential for serious damage to buildings and infrastructure in older portions of the City.

The estimated loss of 20% of City structures is $51,975,140.40. Costs of repairing or replacing roads, water and waste water lines, power lines, telephone lines, or the contents of the structures are not included due to lack of resources to dedicate to a comprehensive loss analysis. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Dam Failure

The St. Albans North Reservoir Dam, owned by the City of St. Albans, was originally constructed in the late 1890s to provide potable water storage for the City. There is also a dam at the south reservoir: the St. Albans South Reservoir Dam. The dams are located in the headwaters of the Mill River in the Town of Fairfax, Vermont, but have been included in this plan due to the City's ownership and legal responsibilities. The dams have been included in the Hazard Mitigation Plan for the Town of Fairfax and

will be included in the update to the Hazard Mitigation Plan for the Town of Georgia. Both municipalities are downstream of the dams and would be directly affected by a dam failure.

The dams are considered a “high hazard” structures according to VT DEC Dam Safety Section. High Hazard dam structures are defined where an impounding structure failure will cause probable loss of life or serious economic damage. "Probable loss of life" means that impacts will occur that are likely to cause a loss of human life, including but not limited to impacts to residences, businesses, other occupied structures, or major roadways. Economic damage may occur to, but not be limited to, building(s), commercial facilities, public utilities, state roadways, railroad, and personal property.

The dams consist of earthen embankments, a concrete principal spillway, and low level outlet (LLO)/water intake works. The embankment of the North Reservoir Dam is approximately 1,150 ft. long. The maximum height of the dam as measured from the downstream toe of slope to the top of the dam crest is approximately 32 ft. The upstream slope is armored with riprap. The principal spillway is located near the right side of the dam and consists of a fixed crest concrete weir and concrete training walls. The spillway discharges into a discharge channel with a concrete floor and walls. At the traditional “normal pool,” equivalent to the lowest fixed spillway crest, the surface area of the impoundment is approximately 39 acres with a normal storage volume of approximately 503 ac.-ft. A water treatment plant owned by the City is located in the downstream area of the dam.

The St. Albans North Reservoir Action Plan was created to “reduce the risk of human life loss and injury and minimize property damage during an unusual or emergency event.” The plan covers several scenarios including non-emergency, slow developing breach to imminent dam failure. Different scenarios are also included in the plan including a “sunny day failure” scenario and a “stormy day failure.”

There have been no occurrences of dam failure or dam flooding at either reservoir. Dam failure would cause inundation to the south and west of the current dam. Flood waters would drain to Lake Champlain. Depending on the extent of the failure, and the weather conditions during the failure, over 50 structures downstream of the dam could be inundated. Many other structures would be at risk. Transit corridors would be impacted such as Interstate 89, US Route 7, VT Route 104, New England Central Railroad and several municipal roads (In Georgia: Oakland Station Road, Loomis Road, Conger Road, Polly Hubbard Road, Middle Road, Reynolds Road, Falls Road, US Route 7, Georgia Shore Road, Cline Road and New England Central Railroad. In Fairfax: Interstate 89, Nichols Road, Route 104/Main Street). Most of the area directly downstream of the dam is pasture and cropland. Similar conditions would occur if there was a failure of the South Reservoir Dam.

Dam failure would impact traffic affecting commercial sectors, commuter traffic, and school bus routes. There would be disruptions to power (power poles and lines) and the fiber optic network. 0

Estimated damages on 50 structures $11,625,000. This estimate is based on median home value for Fairfax, Vermont. Damage estimates to state and road bridge infrastructure are not included in the estimate.

Loss of Electrical Service

Historically, utility service disruptions in Saint Albans City have been minor affecting small areas for a limited time. In winter, branches and trees laden with snow and ice often fall on transmission lines causing limited service disruptions. Storm fronts that move from the west gaining strength across the

Lake often generate high winds that can disrupt power service by knocking trees down. The community does not lose power for sustained periods often. Brief interruptions of power, lasting from a few minutes to a few hours occur annually. Historically, utility service disruptions have been minor affecting small areas for a limited time. In winter, branches and trees laden with snow and ice often fall on transmission lines causing limited service disruptions.

There were intermittent outages from Nor'easters that impacted the area on February 14, 2007 and October 20, 2006.

On March 8, 2008, ice and snow fell over much of the region downing trees, limbs and causing power outages. Reports on the extent of power outages ranged from one hour to seventy-two hours. Public Works crews and private utilities were busy clearing debris. There were no estimates on losses due to the event.

During the December 2013 Ice Storm (DR-4163) there were intermittent power outages from December 20-26th.

The City's primary emergency shelter, Saint Albans City Hall Gym, has an emergency backup generator. Saint Albans City Hall, Central Dispatch, Police and Fire Stations have emergency generators. The Saint Albans Town Educational Center (a community shelter) has an emergency generator that will be installed as funding becomes available. The City water and wastewater treatment facilities, pump station, Bellows Free Academy (shelter) and City Elementary (shelter) currently lack back up power. There is the likelihood that locally owned PTO driven generators would be available during power outages.

It is difficult to estimate losses due to loss of electrical service both in the public and private sectors. Damages vary dependent on the season. Power loss in the winter can cause water pipes to freeze damaging private and public structures. Power loss can also lead to loss of business transactions. No loss estimates were derived for this hazard due to lack of data and resources. Any structure dependent on electrical utility is susceptible. Impacts to future government buildings, critical facilities and infrastructure are anticipated to decrease as sustainable capital projects, such as construction of a new fire station, require the installation of emergency generators. Impacts to future privately owned buildings and residences are expected to remain the same.

Telecommunication Systems Failure

Nearly all areas in the City have cell phone coverage. Cell phone providers have been installing towers on ridge lines farm silos just outside of the city in order fill gaps in their coverage area. Fairpoint, Verizon and Comcast Communications offer high-speed internet service in the area. Fairpoint Communications and Comcast provide land-line telephone service throughout the City. Many residents utilize cable, satellite television and satellite based internet services.

Telecommunications systems failures occur periodically and are similar to power losses. Loss of service is typically related to weather events. Heavy snow, either directly or indirectly, can cause service lines to be disrupted. Interruptions are relatively brief lasting from a few seconds to several hours.

On August 31, 2002 a Verizon Trunk Line that serviced northwestern Vermont was severed due to a tree-falling accident in the Town of Georgia. All telecommunications services that utilized the fiber optic network were lost for 8 hours. The state E-911, cell phone and Lifeline systems were disrupted.

Residents were unable to place a phone call out the local exchange. Businesses were unable to make e-credit transactions. Businesses and homeowners lost their security systems. The Saint Albans Amateur Radio Club established emergency lines of communications for public safety officials. Verizon has added redundancy to their network to mitigate future disruptions of a trunk line failure.

Private and public structures within the village area have access to broadband internet and would be susceptible to loss of DSL service. Individuals with cell phones would be affected by loss of cell coverage. Land line phone customers lose service when phone lines are disrupted from the effects of ice, falling limbs, high winds, etc.

It is difficult to estimate losses due to telecommunications systems failure both in the public and private sectors. Telecommunications loss can also lead to loss of business transactions. No loss estimates were derived for this hazard due to lack of data and resources. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Tornado

Tornados may form when strong thunderstorms track through the area. These phenomena are rare in the County and none have been reported in the City. There is no defined area to predict where this event will happen. Environmental impacts would include felled trees, while business impacts would be in the form of destroyed buildings and telecommunications towers and power lines and poles. Building damages may include destroyed windows, torn roofs, and destroyed homes and storage units.

Fujita Tornado Damage Scale (*Source: NOAA)*

Scale	Wind Speed Estimate (MPH)	Typical Damage
F0	<73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

According to the National Climate Data Center, there have been 8 reported F2 tornado events of in Franklin County since 1957. There is no record of a tornado event in the City Tornado events occurred in Franklin County on June 18, 1957, June 13, 1961, August 3, 1970, and July 19, 1972.

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

Fujita Tornado Damage Scale (*Source: NOAA)*

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F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

For a tornado event, the estimated potential loss to 10% of structures with 20% damage is $10,395,028.08.[4]. The estimate does not include building contents, land values or damages to utilities. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Drought

Local knowledge indicates brief dry spells are periodic in nature and would be considered severe about every 10 years on the average. Generally, risks associated with these droughts in Franklin County on include drying up of shallow wells (Hydrological) and reduced productivity of agricultural crops (Agricultural). Direct costs of drought conditions tend to be borne by individual residents and therefore are difficult to track accurately. There is very limited data on drought for the City other than local knowledge.

According to the State Climatologist, the State of Vermont experienced extreme severe drought conditions over a three year period in 1963, 1964, 1965o. In 1999, the state experienced drought

[4] City of St. Albans Grand List Value 2013.

conditions for 9 months from January through September that caused concern as reservoirs began to dry and crops became damaged. In 2002, most of Vermont was categorized as being in a moderate drought for several months and many farm water shortages were being reported to the state. Conditions have improved since then.

Droughts are rare in occurrence and relatively brief in duration. Droughts have impacted residential and commercial water supplies, particularly to dairy farms and horse ranches. Drought can be a problem in late summer with local springs and wells reduced to minimal flows.

Droughts can pose a serious threat to all sectors of the community including but not limited to public safety, manufacturing and agricultural industries, local businesses, and residents.

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

Drought

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44+	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

*NDMC - National Drought Mitigation Center

It is difficult to determine the economic losses due to drought conditions because there are no records of historic damages nor are there readily available data sources for water use by various industries.

A full summary of hazards and impacts is provided in the following table.

Table 5.2 SUMMARY OF HAZARDS AND IMPACTS FOR CITY OF SAINT ALBANS

Hazard Type	Frequency of Occurrence	Severity	Risk	Estimated Dollar Losses	Vulnerability
Flooding	Frequent	Limited to Catastrophic	Moderate	$3,118,508.24	Roads, bridges, residences.

Severe Winter Storm/Ice Storm	Frequent	Limited to Catastrophic	Moderate	n/a	Loss of road access, power loss, telecommunications loss.
High Winds	Frequent	Limited	Moderate	n/a	Falling limbs and/or trees, power loss, telecommunications loss, structural damage.
Fluvial Erosion	Rare to Likely	Limited	Moderate	n/a	Structures, road access, loss of agricultural land.
Hazardous Materials (Fixed Site and Transport)	Rare	Limited to Catastrophic	Moderate	n/a	Residences, businesses.
Structure Fire	Frequent	Limited to Catastrophic	Moderate	$2,103,405.12.	Structures.
Loss of Water and Sewer Service	Rare	Limited to catastrophic	Moderate	n/a	Vulnerable populations, residences, businesses, fire suppression, emergency shelter(s).
Hail	Highly Likely	Limited	Moderate	n/a	Residential and seasonal homes and property, commercial buildings government facilities, structural damage.
Thunderstorm/ Lightning	Frequent	Limited	Moderate	n/a	Falling limbs and/or trees, power loss, telecommunications loss, structural damage.
Terrorism / WMD & Civil Disturbance	Rare	Limited to Catastrophic	Low	n/a	Schools, government facilities.
Earthquake	Unlikely to Rare	Limited to Catastrophic	Low	$51,975,140.40	Structures see HAZUS report.
Dam Failure	Rare	Limited to Catastrophic	Low		Roads, bridges, residences.
Loss of Electrical Service	Unlikely	Limited	Moderate	n/a	Residences, commercial businesses. Special needs populations.
Telecommunications Systems Failure	Unlikely	Limited	Low to Moderate	n/a	Residences and businesses.
Tornado	Rare	Limited	Low	$10,395,028.08	(See High Winds)

Drought	Rare	Limited to Catastrophic	Low	n/a	Livestock, private wells, vulnerable populations

6. CRITICAL FACILITIES

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

The critical facilities identified in this Local Hazard Mitigation Plan include the Saint Albans City Elementary School, City Hall, Public Works Garage, Public Safety Building, electric and communication utilities, Public Works Garage, government offices (including post office, INS, Court Houses), hazardous materials storage sites. Data from Saint Albans City, Northwest Regional Planning Commission, and the Local Emergency Planning Committee #4 were used to assist in the analysis of areas affected by various hazards. Limited data sets from GIS were available for this analysis; however, the Northwest Regional Planning Commission GIS Service Center is committed to providing this in the future as data, time and funding permit. The results of the analysis are listed in Attachment B.

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

7. MITIGATION STRATEGY

7.1 Local Hazard Mitigation Goals

City Plan (Adopted June 11, 2012) Goals that support Hazard Mitigation

- The City will have clean and healthy natural areas and open spaces, including streams, floodplains, wetlands, and parks, that contribute to the quality of Saint Albans City's environment and unique sense of place.
    - Runoff and erosion shall be controlled during all phases of construction.
    - Protect property damage and stream equilibrium through effective floodplain management.
- Saint Albans City government will plan for and provide an efficient system of public facilities and services to meet future needs.
- Saint Albans City provides excellent police, fire, and ambulance/emergency services to its residents.
- The physical state of City streets and associated infrastructure will be maintained in good condition.

- The quality of air, water, and land resources in Saint Albans City is protected through development regulations.

City Plan Policies that Support Hazard Mitigation

- To continue to identify, protect, and preserve important historical and architectural resources within the City.
- Support housing connected to schools, safe areas for physical activity and healthy food access via safe walking and biking routes and public transportation.
- Ensure that the public safety facilities and equipment enable the Police and Fire departments to operate at optimum levels of efficiency and effectiveness.
- Ensure responsible management of City stormwater infrastructure and seek to limit stormwater runoff as a non-point source of water pollution.
- Monitor the condition of City streets and associated infrastructure through regular inventorying and assessment.
- Ensure Development Regulations incorporate smart growth principles.

City Plan, Regulatory Municipal Programs - Action Steps

- Analyze the City's Land Development Regulations for missed opportunities in the protection of water, air and soils.
- Strengthen the stormwater management and erosion control section of the City's Land Development Regulations.
- Incentivize and promote low-impact development best management practices that mimic natural systems to limit stormwater runoff and improve groundwater recharge.
- Study whether regulating development in the Fluvial Erosion Hazard Area makes sense in Saint Albans as a way to increase stream stabilization, protect water quality and decrease flood inundation.

The Saint Albans City Master Plan will be updated in 2018. The City is interested in adding goals which relate to mitigation planning, such as:

- To take actions to reduce or risk the long-term risk to human life and property from natural hazards.

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

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

7.2 Existing Hazard Mitigation Programs, Projects and Activities

The City currently has one full time Planning and Permitting Administrator and one full time Director for Planning and Development. They are responsible for the floodplain management program and continued compliance. Land use development projects that require permits are reviewed for compliance with City's Land Use Regulations which include Flood Hazard District with support from the State Agency

of Natural Resources and include site visits and permitting as applicable. Any permits for conditional uses within the District such as substantial improvements to existing structures, new construction, recreation or open air markets, etc. are allowed only by approval of the City's Development Review Board.

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

Severe Winter Storms/Ice Storms

The City of Saint Albans seeks to eliminate power outages and keep city streets open during severe winter storms/ice storms through preparedness activities in the form of purchasing and maintaining appropriately sized snow removal equipment and training staff in safe operations. The periodic cutting of tree limbs and brush near powerlines helps prevent power outages caused by falling limbs and brush. In the event of an extended power outage during winter conditions, the City has identified City Hall and Bellows Free Academy High School as designated warming shelters. These sites are equipped with back-up generators for a power source.

It is a goal of the City to implement a public notification system, such as VT Alert, to inform the public on various hazards via texting, phone messaging and email alerts. Such a system would give residents timely information and situational awareness.

The City also seeks to educate residents about staying safe during severe winter conditions such as installing carbon monoxide detectors and properly venting dwellings to reduce the risk of carbon monoxide poisoning and keeping driveways accessible and sidewalks open.

- City Public Works Department has response equipment to deal with downed trees and branches.
- The Saint Albans Town Educational Center is in the process of installing an emergency generator to serve as a community shelter as situations warrant.
- Saint Albans City Fire Department, Police Department, Central Dispatch and City Hall have emergency backup power.
- The City of Saint Albans assists vulnerable populations from the impacts of severe winter storms by identifying specific at-risk populations that may be exceptionally vulnerable in the event of long-term power outages, and organizing outreach to vulnerable populations, including establishing accessible warming shelters within the City.

Flooding

The City has been a member in good standing of the NFIP for nearly 40 years. The City has a draft stream corridor buffer amendment for the City's zoning bylaws that would restrict land uses that could alter the dynamics of streams. It is a goal of the city to finalize and adopt the bylaw within 5 years.

- The City has Zoning Bylaws which designates a Flood Hazard District whose purpose is to minimize future public and private losses caused by development in flood hazard areas.
- The City participates in the National Flood Insurance Program (NFIP).
- Flood Hazard Areas in Saint Albans City are identified on Flood Hazard Boundary Maps (FHBMs) and Flood Insurance Rate Maps (FIRMs) produced by FEMA.

- Modifications to diversion channel at Confluence of Stevens and Rugg Brook near Nason Street to increase water detention to alleviate out of bank flooding downstream.

High Winds

Residents of the City generally do not recognize high wind as a hazard which can be mitigated with the exception of the effects previously discussed under power failure.

Newly constructed buildings may have tie downs between roof and side walls but no building codes exist within the community that require construction to any particular standard.

- City Public Works has debris removal equipment
- City Public Works monitors roadways for obstructions

- City Public Works has response equipment to deal with downed trees and branches.
- Maintenance Programs (culvert survey & replacement, ditching along roadways).

Fluvial Erosion

Statutes recently adopted by the Vermont Legislature require the creation of Fluvial Erosion Hazard maps for every watershed in the state. As the information becomes available, the CIty is hoping to adopt draft overlay district similar to that which regulates floodplains would be effective in reducing this hazard in the community.

- Phase 1 Geomorphic Assessment was completed on the following watersheds within Saint Albans City in 2002:
  - Jewett Brook by the Lake Champlain Committee
  - Stevens Brook by the Lake Champlain Committee
  - Rugg Brook by the Lake Champlain Committee
- Phase 2 Geomorphic Assessment was completed on the following watersheds within Saint Albans City in 2005:
  - Rugg Brook- 5 reaches on the main stem by the Lake Champlain Committee
  - Stevens Brook- 9 reaches on the main stem (M01-M09), 1 reach on unnamed tributary (T1.01) and 2 reaches on Grice Brook (T2.01 and T2.02) by the Lake Champlain Committee
  - Hungerford Brook- 5 reaches on main stem (M04-M08) (not all in Saint Albans), and 7 reaches on unnamed tribs (M3T1.01-M3T1.03 and M4T2.01-M4T2.04) by Carmi Consulting
- Saint Albans City Floodplain Terrace Project on Stevens Brook along Lower Welden Street and Lemnah Drive, 2007.
- Seeking funding for Grice Brook in stream restoration project.

Hazardous Materials (Fixed Site and Transport)

The City files Tier II reports to the Local Emergency Planning Committee as required by state and federal law. Filing Tier II reports also limit the risk to local responders during incidents involving hazardous materials.

The primary hazardous materials transport routes are along state highways thereby coming under the jurisdiction of the state. A commodity flow study for hazardous materials could help public safety officials identify the volume and types of hazardous materials that could put the community at risk during and accident and limit the risk to local first responders.

A representative from the City sits on the local Transportation Advisory Committee, a regional group whose purpose is to prioritize potential transportation related projects within the region. This group rates High Accident Locations (HAL) highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, added signage and reduced speeds.

- Saint Albans City Fire Department has trained personnel specializing in HAZMAT incidents.
- Saint Albans City Fire Department continues to upgrade fire fighter personal protection equipment.
- Saint Albans City Police and Fire Departments and AMCARE are active members of Local Emergency Planning Committee #4.
- Northwest Medical Center in Saint Albans is actively developing decon unit with Swanton Decon Team to address management of contaminated patients.

The City is considering relocation of the Public Safety Building away from railroad crossing.

Structure Fire

The City's Zoning regulations and building ordinances as well as state codes help to mitigate the effects of structure fire by requiring fire/smoke alarms and sprinkler systems. The City Plan also speaks to the need for improved and well maintained emergency access to residences.

Additionally, the bylaws address unreasonable risk of fire, explosion hazard to any adjacent property or vehicular traffic for all land use and development activities.

- Annual ISO inspection.
- Fire fighter personal protection equipment upgrades through Federal grant programs.
- Upgrades to fire fighting offensive and defensive equipment through Federal grant programs.
- Fire fighter training (FFI, FFII, Incident Command System, NIMS, HAZMAT).
- Continued specialized training of heavy rescue.
- Actively seeking funding to purchase new ladder truck.
- Fire Chief reviews and comments on project proposals to ensure that all new construction is designed to allow for emergency vehicle access.

Water and Sewer Service

The City is currently upgrading water and sewer service lines along Fairfield Street that serves Northwest Medical Center and along Lake Street. as well as upgrading the City Water Plant in Fairfax.

- Actively seeking emergency generator for use at Maquam Treatment facility and midway station.
- Upgrading and replacing water main lines, valves and wastewater lines is a long term risk reduction from structure fires and hazardous materials incidents which are identified hazard in the risk assessment section. The water waste water system also serves the area's only hospital.
- Currently conducting waste and waste water asset management inventory to upgrade and replace aging infrastructure to reduce long term risks to City and the area's hospital.
- Continually monitoring existing water and sewer systems to ensure that they do not exceed capacity.
- Compliant with EPA monitoring programs.

Hail

The City has no adopted building standards which would require this action but feels the risk to private residences should be borne by each resident on their own.

- The City has emergency backup power generators located at the Emergency Services Building, City Hall, Public Works and Water and Wastewater Treatment Plan should power be lost during a hail storm.
- The USDA and University of Vermont distribute educational materials about the effects of hail on agricultural practices.

Thunderstorms/Lightning

The City has mitigated potential damage to City-owned structures due to lightning strike by installing lightning rods to channel the electrical energy directly to ground rather than through the structure's electrical system.

The City notes the risk to private residences should be borne by each resident on their own.

- City Public Works Department has response equipment including a chipper, to deal with downed trees and branches
- City Public Works monitors roadways for obstructions and flooding
- City has installed lightning protection on equipment operated at municipal facilities

Terrorism/WMD/Civil Disturbance

The City has an active Saint Albans Area Emergency Management Team which meets monthly to discuss emergency management and response topics. The Team conducts table top exercises on various emergency scenarios including terrorist acts including active shooters. City EM team engages area schools, industries, state offices, federal offices, businesses and vulnerable population organizations regarding planning for terrorist type events.

- Bellows Free Academy and City Elementary Schools have State School Response Guide to handle variety of emergency situations.
- School Boards and Franklin Northwest Supervisory Union are proactive in addressing school safety issues.

Loss of Electrical Service

Many private residences have back-up power sources and essential City facilities like the City Hall Public Works and Water/Wastewater Treatment Plant have been retrofitted in recent years.

As population growth and housing expands along remote road corridors, increasing reliance on dependable power by the new homeowners requires changes in line maintenance. City of Saint Albans has on-going programs of line clearing and relocation to ensure outages are kept to a minimum. In addition, recent improvements to the transmission system in northwest Vermont have provided redundant transmission systems to bring electric power to the region.

- Emergency backup generator exists for City Hall, Central Dispatch, City Fire Department, City Police Department, Saint Albans Town School and Collins Perley Sports Complex (designated Red Cross shelter).
- On-going regularly scheduled road maintenance programs (culvert survey & replacement, ditching along roadways, cutting vegetation).

Telecommunications

- Central Dispatch has developed a backup emergency communications site for the County's Public Safety Answering Point (PSAP) outside of the City Limits.

- Central Dispatch conducted a drill in 2006 to test the emergency backup communications plan.
- Central Dispatch has a generator which operates during power outages.
- Saint Albans City Police and Fire Departments and AMCARE are actively complying with state's UCALL/VCALL initiative.
- Saint Albans City has an MOU with Lamoille County Sheriff's Department for use of their mobile communications unit during telecommunications outages.
- Saint Albans City Public Safety officials worked with Verizon and Vermont Department of Public Safety for added redundancy in the trunked telecommunications system serving the area following the Labor Day outage in 2002.

On-Going Community Preparedness Activities

- Regularly scheduled maintenance programs ongoing (culvert survey & replacement, ditching along roadways, cutting vegetation to allow visibility at intersections).
- Proceed with plan to construct Federal Street Bypass to alleviate traffic issues along US7.
- Install raised and textured crosswalks in major locations along sidewalk & bike path.
- Continue to develop a Traffic Calming Policy Procedures manual.
- Institute traffic calming on US Route 7 and the Interstate access land.
- Update sidewalks to meet ADA standards.
- City staff trained in NIMS/ICS as recommended by Vermont Homeland Security NIMS Compliance Strategy.
- FEMA and VEM approved Rapid Response Plan, April 9, 2007.
- Adopted City Emergency Operations Plan, revised annually.
- Survey and Designate Shelters.
- Conduct emergency management drills and exercises.
- Active membership in the Local Emergency Planning Committee #4.
- Active membership in the Franklin County Mutual Aid System.
- Active member of Saint Albans Public Safety Committee.
- Community participates in the Vermont Enhanced 911 System program
- Emergency Response and Management Staff attending professional training sessions.

7.3 Incorporation of Mitigation Into Other Municipal Planning Mechanisms

There have been and will continue to be many efforts to improve the resiliency of Saint Albans City since the City formalized hazard mitigation planning efforts. The flood identification and risk section of this plan will be used in the development of the 2016 Comprehensive Municipal Plan update to address the flood hazard resiliency requirement of Municipal Plan as required under statute. The entire hazard mitigation plan will be used in Economic Development activities to improve community wide disaster resilience with an emphasis on reducing flood risk to municipal, state and private infrastructure. The Plan's hazard identification and risk assessment section will also be referenced each year during the update to the City's Local Emergency Operations Plan for identifying critical infrastructure, risk areas and vulnerable sites.

7.4 How this Plan Will Improve Existing Capabilities

The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the City of Saint of Albans. The City Emergency Management Director will analyze these programs for their effectiveness and noted improvements needed. Saint Albans City uses all of the plans listed below to help plan for current and future activities. For example: the Local Emergency Operations Plan has a contact list that is used for response purposes in the case of a hazard event, and is

updated every year after Town Meeting Day. The City Comprehensive Plan directs visions and goals that include Natural Resources and Land-Use decisions. In the development of this plan, the latest 2012 City Plan was used. Municipal Road and Bridge Standards are followed by the town and they do an annual culvert and bridge inventory that is mapped by the NRPC. The City is compliant with the NFIP.

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

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

Table 7.1 City Policies and Plans that Mitigate Hazards

Existing Policies and Plans	Description and Hazard that is addressed	Gaps in Existing Policies
Comprehensive Municipal Plan	Policies and vision for future land use. Adopted June 11, 2012. Overall objectives are to foster economic prosperity and to maintain the quality of life in the City of Saint Albans as well as ensuring the health, safety and welfare of its' citizens. Addresses: All-hazards.	Does not address full complement of state river corridor protection measures as defined by State. The City has drafted stream corridor protection measures that will be reviewed and possibly incorporated into the next plan revision.
Land Use Regulations	Zoning and subdivision regulations. Adopted December 29, 2014. Includes Flood Hazard Overlay District which restricts development in potentially hazardous areas. Addresses: Flooding, fluvial erosion.	In Section 302, Zoning District Boundaries, bylaws account for zones A1 – A30, AE and AH. Zones included on the FIRM (6/15/78) are B and A0. Needs clarification. Will be reviewed during next update.
Local Emergency Operations Plan	Response, local resources and notification procedures. Updated annually. Utilizes NIMS, ICS.	Does not include continuity of operations annex. City EM Team is

	Addresses: All-hazards.	in process of developing COG annex.
Mutual Aid Agreement	NIMS compliant Franklin County Mutual Aid 2006. Assistance from area fire departments.	A County Mutual Aid equipment resource list that includes NIMS typing.
School Emergency Response Plan	Vermont School Crisis Guide for City Elementary and BFA High School. Addresses response to school incident. Civil disobedience, WMD, terrorism.	School emergency response plans need to be exercised annually.
Road and Bridge Standards	Improve safety; reduce lifecycle costs, addresses environmental concerns for transportation networks. Address flooding and fluvial erosion hazards.	Annual review of standards.
The Stevens and Rugg Brook Watershed Study Report	Study to define watershed problems and identify implementable solutions that can be used by the community. (2003) Identifies, assesses and documents watershed implementation measures which addresses and correct problems within watershed. Flooding, water, sewer, fluvial erosion.	Has not been updated due to lack of funding.
Emergency Public Safety Communications Needs Assessment and Recommendations	Provides public safety officials with recommended, conceptual system upgrade alternatives based upon user needs. (9/24/2001, revised 6/13/2003). Needs analysis of public safety entities in the region including law enforcement, fire protection, and emergency medical services; Inventory of existing communications capabilities; recommendations for system improvements. Addresses: All-hazards.	Plan has not been updated since 2003 due to lack of funding.
Emergency Shelters	Designated emergency sheltering facilities for communities. Local Emergency Operations Plan identifies three community shelters including one with American Red Cross designation. Addresses: All-hazards.	High School does not have back up power. City school does not have back up power.

7.5 Risk Reduction Goals

Through current plans, policies and mitigation actions, Saint Albans City is working to decrease damages from flooding, severe winter storms (ice storms), fluvial erosion, high winds and structure fires. Other less hazardous risks are also being addressed. Growth in the community is steady and the downtown is currently undergoing several revitalization projects which include upgrading older historic buildings to meet new building codes, replacing dilapidated buildings with new buildings that house state and private offices, a streetscape project to improve pedestrian access to downtown shops and the installation of a new hotel. The City is committed to decreasing risks from floods, dam failures, severe winter storms and structure fires in various town policies. Actions for new and/or future road structures indicated in the table below shall adhere to or exceed the latest Municipal and Road Standards as provided by the Vermont Agency of Transportation in cooperation with FEMA and adopted by the City of Saint Albans in 2013. Actions for new and /or future infrastructure projects such as Water Main Lines, Valves and Waste Water Service Lines shall adhere to or exceed state and federal standards and requirements for new development. New development within the community must adhere to the City's

Land Use regulation which includes Flood Plain Regulations at a minimum. New building construction including housing must adhere to state building and fire codes. Any removal of berms or other alterations in river corridors such as the flood terrace project that reduce the risk of flooding prior to or during an emergency must follow Agency of Natural Resources strict stream permitting process to ensure flooding and erosion hazards are reduced. The City is committed to ensuring actions identified in the plan are not designed to be in harm's way by following codes and standards currently in place.

7.6 Identified Hazard Mitigation Programs, Projects and Activities

Table 7.2 outlines mitigation programs, projects, activities and describes the overall direction the City is taking to work toward mitigating risks from natural, technological and societal hazards. These mitigation strategies have been chosen by the City, through interviews with community officials, as the most appropriate policies and programs to lessen the impacts of potential hazards. All proposed mitigation projects will adhere to FEMA's benefit-cost standards (e.g. BC ratio of 1.0 or greater).

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

1) Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?
2) Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?
3) Does the action contribute to community objectives?
4) Does the action meet existing regulations?
5) Does the action protect historic structures or structures critical to City operations?
6) Can the action be implemented quickly?
7) Is the action socially acceptable?
8) Is the action technically feasible?
9) Is the action administratively possible?
10) Is the action politically acceptable?
11) Is the action legal?
12) Does the action offer reasonable benefits compared to its cost of implementation?
13) Is the action environmentally sound?

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

Table of Actions – Costs

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

Table of Actions – Benefits

High	Public Safety

Medium	Infrastructure/Functionality
Low	Aesthetics/General Maintenance

Mitigation projects are listed in terms of mitigating threat or risk to public health and safety, reduction of hazard to community assets, reducing the effects of hazards on new buildings and infrastructure, adherence to the City Plan and local ordinances, cost, and feasibility. Projects are classified as either short - term or long - term activities. Short –term action items are activities which the municipality may be capable of implementing within one to two years. Long-term action items may require new or additional resources, funding or authorities. Ongoing action items occur at least once per year.

Table 7.2. IMPLEMENTATION SCHEDULE FOR PRIORTIZED MITIGATION PROJECTS

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

Implementation Schedule for Prioritized Mitigation Projects							
Score	**Hazard Mitigated**	**Mitigation Action**	**Responsibility/ Oversight**	**Funding/Support**	**Cost/Benefit**	**Time – Frame**	**Initial Implementation Steps**
32	Structure Fires, HazMat, Water/Waste Water Service Loss	Improve Water Main Lines, Valves and Waste Water Service Lines	Public Works Director, City Council	HMGP, State Agency of Natural Resources Water Infrastructure Financing Loan programs, local (capital budget)	High/High	Long – term (2016 – 2026)	On-going update of City's asset management inventory for water and wastewater infrastructure. Preliminary engineering planning studies (within 5 years), preliminary and final engineering plans and specifications for water system improvement projects needed (10 years) to comply with state and federal standards and to protect public

							health and reduce long term risk to structure fires and hazmat incidents.
31	Flooding, fluvial erosion.	Buyout Properties Prone to Flooding on Lower Welden Street	City Council, City Manager	HMGP, 406 Mitigation, local (capital budget)	High/High	Medium Term (2017-2020)	Consult with landowners (5 years) regarding buyout. Consult with state hazard mitigation officer (5 years) for feasibility of buyout.
31	Flooding	Stevens Brook Floodplain Terrace Project (300 feet) on Lower Welden	City Council, Public Works, City Manager	HMGP, Vermont Department of Environmental Conservation's Ecosystem Restoration Grant, local (capital budget)	High/High	Long-term (2017-2021)	Seek partnership with landowners. Work with VT Department of Environmental Conservation on developing hydraulic studies for corridor and RFP for project engineering design proposals. Seek funding.
29	All Hazards	Relocate City Public Safety Building	City Council, City Manager, Emergency Management Director	HMGP, 406 Mitigation, local (capital budget, bond vote)	High / High	Short-term (2017-2019)	Specifications determined. Grant writing.

28	All Hazards	Procure and install generator at Community Shelters. (BFA High School, Saint Albans City Elementary)	City Council, Emergency Management Director, City Manager	HMGP, local (capital budget)	Medium / High	Short – term (2017-2019)	Determine generator size, switch type, and installation needs. Seek Public Safety grants for facility protection.
28	All Hazards	Procure and install generator at water system (Maquam)	City Council, Public Works, City Manager	HMGP, local (capital budget).	Medium / High	Short – term (2017-2019)	Determine generator size, switch type, and installation needs. Seek DHS grants, and state grants for facility protection.
28	All Hazards	Procure and install generator at municipal water system (midway station)	City Council, Public Works, City Manager	HMGP, local (capital budget)	Medium / High	Short – term (2017-2019)	Determine generator size, switch type, and installation needs. Seek DHS grants, and state grants for facility protection.

8. PLAN IMPLEMENTATION, MONITORING & EVALUATION

8.1 Initial Approval

In addition to public involvement in the initial development of the plan, opportunities for public comment included interviews with the Public Works Director, City Emergency Management Director, Fire Chief, Police Chief, Planning Director and updates to the Local Emergency Planning Committee (LEPC) and to the Northwest Regional Commission Board of Directors. A copy of the draft was provided to the City Manager, Public Works Director, Emergency Management Director, Police Chief and Fire Chief. Future updates of the plan will include more opportunities for public comment.

Following consideration of the comments from those forums, the draft Mitigation Plan will be presented to the State Hazard Mitigation Committee and through the State Hazard Mitigation Officer (SHMO) for review and comment and a recommendation for forwarding to FEMA Region 1. When the document meets all the requirements, FEMA grants "Approval Pending Adoption" (APA) by notifying the City Council Chair, the City Council will then adopt the plan at a public meeting and then the Council will return the final plan containing copy of Adoption certificate to FEMA (via the SHMO). FEMA will conduct one final review to ascertain that no changes were made to the plan (other than removing watermarks and inserting dates) following the APA and then the plan is deemed "FINAL".

8.2 Routine Plan Maintenance

The Hazard Mitigation Plan is dynamic and should not be fixed. To ensure that the plan remains current and relevant, it is important that it be updated periodically. Updates and evaluation by the City Council will also occur within three months after every federal disaster declaration and as updates to the Municipal Plan and Zoning Bylaws are adopted.

Saint Albans City shall also consider incorporation of mitigation planning into their long-term land use and development plans. It is recommended that the City review and incorporate elements of the Local Hazard Mitigation Plan when updating the Municipal Plan and during development of flood hazard bylaws. The incorporation of the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and additional flood hazard bylaws will also be considered after federally declared or local disasters.

At a minimum, the plan should be updated every five years in accordance with the following procedure:

1. The Saint Albans City Council will appoint a team to convene a meeting of the Review/Update committee 6 months before the plan expires. The City's Emergency Management Director will chair the committee, and other members should include local officials such as the City Manager, Planning Director, Public Works Director, Police Chief, Zoning Administrator, City Council representative, and the public. The Northwest Regional Planning Commission and Local Emergency Planning Committee should be involved as well.

2. The committee will discuss the process to determine if the evaluation criteria is still appropriate or modifications or additions are needed due to changing conditions since the last update occurred. Data needs will be reviewed, data sources identified and responsibility for collecting information will be assigned to members.

3. A draft report will be prepared based on these evaluation criteria and in conformance with the FEMA *Local Hazard Mitigation Plan Review Guide* document.

    - Changes in community and government processes, which are hazard-related and have occurred since the last review.
    - Progress in implementation of plan initiatives and projects.
    - Effectiveness of previously implemented initiatives and projects.
    - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report.
    - Evaluation of hazard-related public policies, initiatives and projects.
    - Review and discussion of the effectiveness of public and private sector coordination and cooperation.

4. The City Council will have the opportunity to review the draft report. Consensus will be reached on changes to the draft.

5. The changes will be incorporated into the Plan.

6. The Plan will be reviewed by Vermont Division of Emergency Management and Homeland Security (DEMHS) and FEMA Region 1.

7. DEMHS and FEMA comments will be addressed in the Plan.

8. The City Council will notify and schedule a public meeting and the review/update committee will prepare a presentation. The public will be given the opportunity to participate and provide comments on the draft plan either verbally or in writing.

9. The City Council will incorporate community comments into the draft plan.

10. The draft plan will be submitted to FEMA through the State Hazard Mitigation Officer.

11. After "final approval pending adoption" is given by FEMA, the City Council will finalize and adopt the plan and distribute to interested parties.

8.3 Programs, Initiatives and Projects Review

Although the plan should be reviewed in its entirety every five years as described above, the City may review and update its programs, initiatives and projects more often directly with the State Hazard Mitigation Officer (SHMO) based on changing local needs and priorities. The City shall assess integrating this plan into the next City Comprehensive Plan and/or City Capital Budget Program in the future.

8.4 Continued Public Involvement

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

- Discuss the plan at least annually at a City Council meeting to determine if a review is necessary

- Distribute hazard mitigation information when polls are open for voting at City Hall.
- Post the plan on the City website.
- City Council will review past plan update/review committee members and consider whether new members should be added. Representatives of local businesses, nonprofits, academia, etc. Should especially be considered.
- Notify the public of committee meetings through community bulletin boards, newsletter, newspaper, website, Front Porch Forums, etc.

Attachment A

Hazard Identification and Risk Assessment

Saint Albans City

Hazard Identification and Risk Assessment

Hazard	Impacted Area	Probability of Future Events	Consequence of Occurrence				Total Rating
			Health and Safety	Property	Environment	Economic	
Severe Winter Storm (Ice Storm)	4	5	1	1	1	3	50
Flooding	2	5	1	1	1	3	40
High Winds	4	5	1	1	1	1	40
Fluvial Erosion	1	5	1	1	1	2	30
Hazardous Materials	1	5	1	1	1	2	30
Structure Fire	1	5	1	1	1	2	30
Loss of Water/Waste Water Service	4	2	1	1	1	3	20
Hail	4	5	0	1	0	1	30
Thunderstorms/Lightnining	1	5	1	1	1	1	25
Terrorism/WMD /Civil Disturbance	1	2	1	1	1	3	14
Earthquake	4	1	1	2	0	3	10
Dam Failure	1	1	1	2	2	3	9
Loss of Electrical Service	4	1	1	1	0	2	8
Telecommunications System Failure	4	1	1	0	0	3	8
Tornado	1	1	1	2	1	3	8
Drought	4	1	1	1	1	1	8
			Total Risk Rating for Saint Albans City:				**360**

Attachment B

Critical Facilities
Saint Albans City

Facility Name or Designation	Facility Owner	Function	Address
Agway	Agway, Inc.	Hazardous materials facility	79 Walnut St.
Vermont National Guard Armory	Vermont Army National Guard	Emergency operations center	Fairfield St.
B&A Auto	B&A Auto	Hazardous materials facility	2701 Ethan Allen Highway
Beth-El Court	R.H. Carr Associates 151 Federal Street St. Albans, VT 05478	Senior Subsidized Housing	153 Federal Street
Boston Tailoring and Cleaners		Hazardous materials facility	46 Federal St.
Butler House	Lake Champlain Housing Authority	Housing	11-13 Lake St.
Central Dispatch	Saint Albans City	St. Albans City Public Safety Building	Lower Weldon St.
City Hall	Saint Albans City	Government facility	Main St.
Colonial Mart	Champlain Oil, Co.	Hazardous materials facility	119 Swanton Road
CVPS St. Albans Diesel	CVPS	Hazardous Materials	64 Lower Welden St.
Fairpoint St. Albans CO (VT483207)	Fairpoint	Telecommunications	25 Bank St.
First Baptist Church of Saint Albans	Parsonage	Religious facility	29 Congress St
First Congregational Church	Revs. Mark & Judy Kennedy	Religious facility	27 Church St.
Four Winds	Cathedral Square Corporation 412 Farrell Street, Suite 100 So. Burlington, VT 05403	Senior Subsidized Housing	145 North Elm Street
Franklin Co. Home Health Agency, Inc.	Medical/Health Care Offices	Health Care Facility	3 Home Health Circle, Suite 1
Franklin County Probate/Superior Court	State of Vermont	Court House	Church St.

Franklin County District Court		Court House	36 Lake St.
Franklin County Humane Society	Animal Shelter	Animal Facility	30 Sunset Meadow Lane
Hawk's Nest	EP Management 7 Tozer Road Beverly, Massachusetts 01915	Senior Subsidized Housing Complex	106 Fairfax Road
Heritage Lane Apartments	RH Carr Associates	Senior Housing	80-84 S. Main St.
Holy Angels Catholic Church	Vermont Catholic Diocese	Religious facility	246 Lake St.
Immigration and Naturalization Service	United State Homeland Security	Federal Facility	Houghton St.
INERGY Services (dba Ultramar)	INERGY	Hazardous Materials	32 Lower Hoyt St.
J&L Snack Shop /Mobil	Richard St. Pierre	Hazardous Materials	171 South Main St.
Jolley Breakyard	S.B. Collins	Hazardous Materials	97 Federal St.
Jolley Pumphouse	S.B. Collins	Hazardous Materials	93 Federal Sr.
Kings Daughter Home		Senior Housing	10 Rugg St.
Lake St. Housing	Lake Champlain Housing Authority	Apartment Complex	9 Lake Street
Lake St. Texaco	S. B. Collins	Hazardous materials facility	224 Lake St
Holy Angels Housing	EP Management 7 Tozer Road Beverly, Massachusetts 01915	Elderly Housing	251 Lake St.
Leader Evaporator	Leader Evaporator Co.	Hazardous materials facility	25 Stowell St.
Liberty Propane	Heritage Operating	Hazardous materials facility	43 Lower Newton Rd.
Mac's Quick Stop	Champlain Oil, Inc.	Hazardous materials facility	233 South Main St.
Maurice's Service Center	Maurice LeBlanc	Hazardous materials facility	265 N. Main St.
Mylan Technologies, Inc., Plant C/F/H	Mylan Technologies, Inc.	Hazardous materials facility	110 Lake St.
Nazarene Church		Religious Facility	Upper Welden St

New England Central Railroad	Genesee & Wyoming Inc.	Transportation facility	2 Federal St.
Northwest Medical Center	NWMC/Mark Brooks	Hospital/Nursing Home	133 Fairfield St.
QST Inc.	QST Inc.	Hazardous materials facility	300 Industrial Park
Redstone Villa Center	Red Stone Villa	Assisted living facility/rehabilitation	7 Forest Hill Drive
S. B. Collins Bulk Plants 1 & 2	S.B. Collins	Hazardous materials facility	54 Lower Weldon St.
S.A.F.E. Inc.	Gary Bluto Sr.	Hazardous materials facility	53 Parah Drive
Sherwin Williams #5468	The Sherwin-Williams	Hazardous materials facility	133 North Main St, Suite 21
South Main Grocery	S.B. Collins	Hazardous materials facility	139 South Main St.
Sprint (Lake Saint And Railroad Crossing)	Sprint Communications	Telecommunications Site	Lake St.
Saint Albans City Elementary School	Principal:	School/Library	29 Bellows St.
Saint Albans City Garage/Public Works Facility	Saint Albans City	Public works facility	Aldis St.
St. Albans City Water Tank	St. Albans City	Water facility	Fairfield St.
Saint Albans Cooperative Creamery	Saint Albans Cooperative Creamery	Hazardous materials facility	140 Federal St.
Saint Albans Diesel Plant Service	Central Vermont Public	Hazardous materials facility	Lower Weldon St.
Saint Albans Exxon	Wesco, Inc.	Hazardous materials facility	190 South Main St.
Saint Albans Go Go Mart	Bradford Oil	Hazardous materials facility	277 N. Main St.
Saint Albans Town Education Center		Educational Facility	169 South Main St
St. Luke's Episcopal Church	Rev. Dennis E. Hayward	Religious facility	8 Bishop St.
St. Mary's Catholic Church	Rev. Leonidas Laroche	Religious facility	Fairfield St.
St. Paul's United Methodist Church	Rev. Oren Lane	Religious facility	Church St.
State Office Building	State of Vermont	State Facility	Federal St...
Superior Technical Ceramics Corp.	Superior Technical Ceramics Corp	Hazardous materials facility	600 Industrial Park Road

Switchyard Mobil	R.L. Vallee	Hazardous materials facility	138 Lake St.
The Fonda Group, Inc.	The Fonda Group	Hazardous materials facility	21 Lower Newton St.
U.S. Post Office	US Postal Service	Government	153 N. Main St.
VANR Maintenance Shop	VTANR	Hazardous materials facility	666 Lower Newton Road
VELCO Saint Albans Substation	VELCO	Hazardous materials facility	109 Nason St.
VTARNG Organization Maintenance Shop	VTARNG/LTC Robert Gingras, P.E.	Government	666 Lower Newton Road
Wastewater Treatment Plant (Northwest)	Saint Albans City	Waste water control facility	Lower Newton Rd
Wastewater Treatment Plant	Saint Albans City	Waste water control facility	Rewes Dr.
Water Plant (Fairfax)	Saint Albans City	Water system	VT Route 104
Water Plant (Maquam Shore)	Saint Albans City	Water system	6014 Lower Newton Rd
Welden Villa	RH Carr Associates 151 Federal St. St. Albans, VT 0478	Senior Subsidized Housing	59 Upper Welden St.

Attachment C

Saint Albans City Priority Matrix

1 = Poor, 2 = Average, 3 = Good

		Criteria										Total Score	
		1	2	3	4	5	6	7	8	9	10	11	
Mitigation Action	Upgrade Water/Waste Water Service Lines	3	3	3	3	2	3	3	3	3	3	3	**32**
	Buyout Properties Prone to Stevens Brook Flooding on Lower Welden Street	3	3	3	2	2	3	3	3	3	3	3	**31**
	Stevens Brook Floodplain Terrace Project (300 feet) on Lower Welden	3	3	3	3	1	3	3	3	3	3	3	**31**
	Relocate City Public Safety Building	3	3	3	3	1	3	2	2	3	3	3	**29**
	Procure and install generator at Community Shelters. (BFA High School, Saint Albans City Elementary)	1	2	2	3	3	3	3	3	3	3	2	**28**
	Procure and install generator at municipal water system (Maquam)	1	2	2	3	3	3	3	3	3	3	2	**28**
	Procure and install generator at municipal water system (midway station)	1	2	2	3	3	3	3	3	3	3	2	**28**

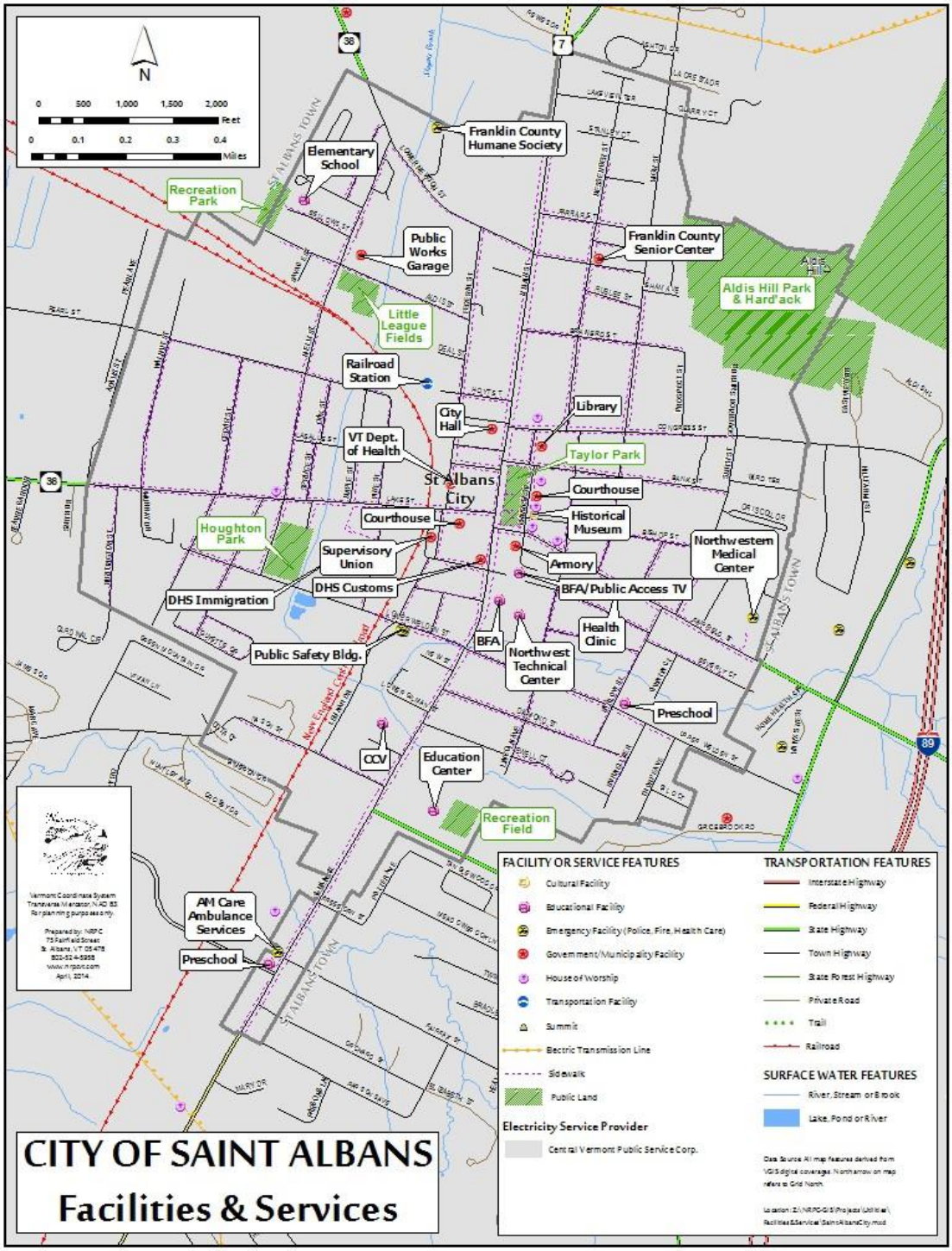
Criteria

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

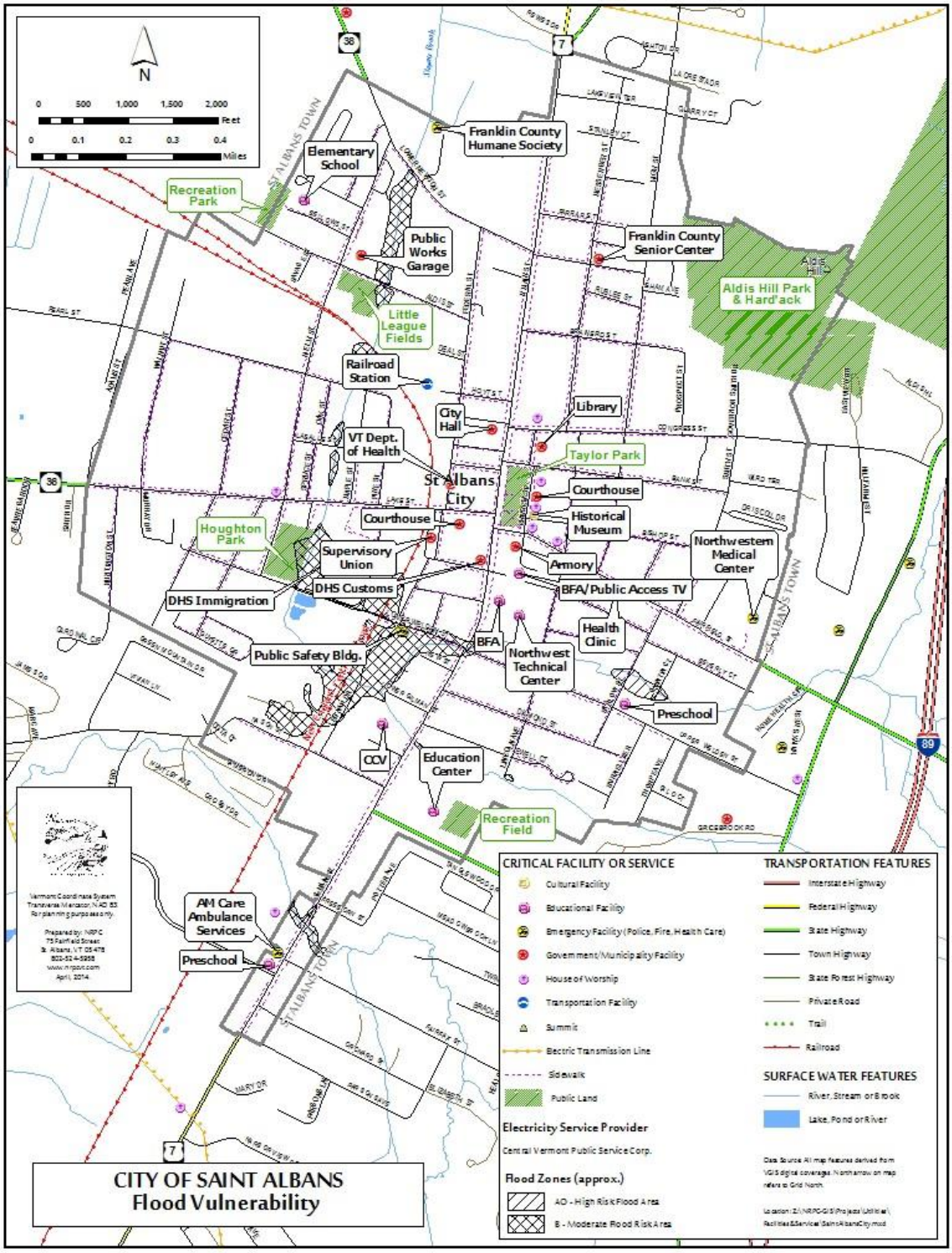
Attachment D

Critical Facilities Map

St. Albans City



Attachment E

Flood Vulnerability Map

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