

Town of Georgia, Vermont
HAZARD MITIGATION PLAN
Draft Update 2020



Adopted by the Town of Georgia, Selectboard

Original Adoption Date: August 9, 2010

Update Approved Pending Adoption: ____, 2020

Updated Adoption: _____, 2020

FEMA Final Approval:

TABLE OF CONTENTS

RESOLUTION ii

ACKNOWLEDGEMENTS iii

1. INTRODUCTION 1

2. PURPOSE 2

3. PLANNING PROCESS 2

4. COMMUNITY PROFILE 5

5. RISK ASSESSMENT 10

6. ASSESSING VULNERABILITY 29

7. MITIGATION STRATEGY 34

8. PLAN IMPLEMENTATION, MONITORING AND EVALUATION 40

RESOLUTION

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

And whereas, the Town of Georgia Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

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

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

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

Therefore, the Town of Georgia Select Board hereby adopts the updated Georgia Hazard Mitigation Plan 2020.

AUTHORIZING SIGNATURES

Date: _____

Selectboard Chair

Vice Chair

Selectboard

Selectboard

Selectboard

ACKNOWLEDGEMENTS

Project Steering Committee:

Amber Baker – Georgia Town Administrator

Matt Crawford – Selectboard Chair

Todd Cadieux – Georgia Highway Foreman

Larry Lewack = Georgia Planner

Keith Baker – Georgia Fire Chief

Project Coordinator:

Shaun Coleman – Northwest Regional Planning Commission

Project Participants:

Town of Georgia Select Board
Town of Georgia Highway Department
Northwest Regional Planning Commission
Local Emergency Planning Committee (Franklin County)
Town of Georgia Volunteer Fire Department
Town of Georgia Rescue
Vermont Agency of Transportation District 8
Vermont Emergency Management
Vermont Agency of Natural Resources
Vermont Fire Academy
Northeast States Emergency Consortium
Federal Emergency Management Agency
National Oceanic Atmospheric Administration
Vermont Geological Survey

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

1. INTRODUCTION

This is an update to the 2010 All Hazard Mitigation Plan for the Town of Georgia, Vermont.

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

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

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

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

2. PURPOSE

The purpose of this Hazard Mitigation Plan is to assist the Town of Georgia in identifying all hazards facing the county and their community and identify strategies to begin reducing risks from identified hazards. Once adopted, the local mitigation plan is not legally binding; instead, it outlines goals and actions to prevent future loss of life and property.

Adopting and maintaining the Local Hazard Mitigation Plan will provide the following benefits:

- Make certain funding sources are available to complete the identified mitigation initiatives that would not otherwise be available if the plan was not in place.
- Ease the receipt of post-disaster state and federal funding because the list of mitigation initiatives is already identified including Vermont Emergency Relief Assistance Funding.
- Support effective pre and post disaster decision making efforts.
- Lessen the Town's vulnerability to disasters by focusing limited financial resources to specifically identified initiatives whose importance has been ranked.
- Connect hazard mitigation planning to community planning where possible.

3. PLANNING PROCESS

Incorporation of Existing Plans, Studies, Reports and Technical Information

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

- Town of Georgia, Vermont Town Plan 2017
- Town of Georgia, Vermont Zoning Regulations 2013
- State of Vermont Hazard Mitigation Plan 2018
- Town of Georgia, Local Emergency Management Plan 2019
- Town of Georgia Flood Insurance Study, 1980
- Town of Georgia Flood Insurance Rate Maps 1980
- Northwest Regional Planning Commission Regional Plan 2014
- HAZUS Model for Franklin County, Vermont 2004

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

Plan Update Process

This is an update to the 2010 Town of Georgia, Vermont Hazard Mitigation Plan. The Plan was originally adopted by the Town on August 9, 2010 following notice from FEMA Region 1 that the plan was "Approved Pending Adoption". NRPC staff has worked with the Town to update the Plan.

The Town Administrator Amber Baker coordinated the Georgia Local Hazard Mitigation Plan update process. During the process, municipal officials were interviewed including the Emergency Management Coordinator, Amber Baker, Selectboard Chair Matt Crawford, Road Foreman Todd Cadieux, and Town Planner Larry, Fire Chief Keith Baker and Northwest Regional Planning Commission Planner Shaun Coleman. The interviews identified commonalities related to natural, man-made hazards and identified key long and short-term strategies/activities to reduce risks from these hazards. Preparation of the meeting included a review of the Georgia Municipal Plan, the Georgia Hazard Mitigation Plan, Georgia Zoning Regulations and the Town's Road Erosion Inventory. Information from these sources is incorporated into the various sections of this plan.

The first meeting was held on June 24, 2019 at the Northwest Regional Planning Commission Office. The former Town Administrator, Mike McCarthy and former Town Planner Ryan Belle, represented the Town. The committee reviewed the previous plan, including the risk assessment section, provided updates to the status of mitigations actions, discussed hazard mitigation planning and disaster resilience initiatives. Outcomes included updates to the types of hazards the town was subjected to and what they believed the top hazards were, update of progress on past mitigation actions from the 2010 plan, identification of mitigation projects and strategies for implementation.

A second hazard mitigation committee meeting was held on January 30, 2020 at the Georgia Town Office. Road Foreman Todd Cadieux, Town Planner Larry Lewack and Shaun Coleman from NRPC were present while Town Administrator and EMC was unavailable. Participants reviewed the draft LHMP, reviewed the town’s policies and current mitigation actions, and identified mitigation goals and new mitigation projects. After this final committee meeting, NRPC staff communicated with committee members on an individual basis to gather final pieces of information, and the draft plan was finalized. The final draft plan was distributed to the entire committee for their review.

- Copies of the draft plan were made available to the public at the Town Office from February 12 to February 26, 2020 for review and comment.
- The public was invited to comment on the draft plan update via a public notice that was circulated in the local newspaper County Courier, the Town’s website, the NRPC newsletter and NRPC website. This opportunity served to make the public aware where they can find hard copies to review or request either hard copies or digital format. Instructions were also included to direct comments to Shaun Coleman, Senior Planner at Northwest Regional Planning Commission either by email, phone or fax.
- The draft plan update was circulated via email from to the Planning Commission and Selectboard for review and comment.
- Copies of the draft plan update were sent to the neighboring Town Clerk’s in Fairfax, Saint Albans Town and Milton for review and comment. A copy of the plan was also sent to Vermont State Hazard Mitigation Officer for review.

The St. Albans Town, Fairfax, and Milton Town Clerks acknowledged receipt of the plan but that was all. No public comments were received. The Georgia Fire Department and Highway Department provided some updated information regarding department resources and capabilities. None of the comments contained or suggested new mitigation strategies or actions.

The draft was then finalized and submitted to Vermont Emergency Management (VEM) and FEMA for review. After receiving FEMA’s “Approval Pending Adoption”, the plan will go before the Selectboard for adoption.)

Table 3.1. Plan Updates Summary

Section of Plan	Changes Made
1. Introduction	None.
2. Purpose	Purpose explains benefits of plan. Note: Section 2 was Methodology. Methodology Section was renamed to Planning Process and moved to Section 4. Methodology from original 2015 LHMP was removed.
3. Planning Process	Formerly Section 4. Additional details on process including: names of individuals involved, meeting locations and dates, previous plan update process removed, progress since last plan added, list of

	sections updated, and table on status of the town’s current mitigation actions added.
4. Community Profile	Formerly Section 3. Census data and other information updated with information from Municipal Plan and US Census. Maps added.
5. Community Hazard Inventory and Risk Assessment	List of hazards was consolidated. Committee wanted to focus on top three highest risk rating to reduce plan size. Risk assessment table added, local hazard information updated, data tables added. Maps added.
6. Critical Facilities	Updated information. Moved to Mitigation Strategy Section.
7. Mitigation Strategy	Added maps and more information on SFHA, Repetitive Loss Properties, updated critical facilities, updated market value of structures, updated NFIP participation information and added development trends data and Grand List summary information. Updated mitigation goals, mitigation actions, town policies and plans table. Added Development Trends.
8. Plan Implementation, Monitoring & Evaluation	General updates including details on routine plan maintenance and methods to continue public involvement.
9. Appendices	Maps updated with new data, tables updated, sources updated.

Progress Since 2010

The plan updated to address changes in priorities, however, the focus remains on flooding / fluvial erosion, severe winter storms (ice storms) and severe thunderstorms (high winds, hail, and lightning). Many of the actions identified in the previous plan were either completed or were determined to be emergency response actions and not mitigation actions or removed because they are no longer an issue. Changes in staff and locally elected officials have brought a change in priorities. The Town’s overall mitigation goals have remained consistent and are listed in the Prioritized Mitigation Action Table in Section 7. The following table provides an overview of Georgia’s local hazard mitigation actions from the 2010 LHMP along with their current status. Note that mitigation actions which are completed have been deleted from the Mitigation Actions & Projects Table in Section 7 of this plan

Table 3.2. Status of Hazard Mitigation Actions

Mitigation Action	Status
Construct new facility for fire department	Completed. Constructed in 2011
Bank and bridge stabilization on Mill River near TH#6 (Mill River Road) and TH#3 (Georgia Shore Road)	Completed. Project completed in 2012.
Upgrade Bridge 28 on TH#6 (Mill River Road)	In Process: Hydraulic study completed. Design done. Town continues to seek funding for structure replacement.
Replace Fire Department’s 2000-gallon tanker/pumper.	Completed: Replacement purchased in 2014.

TH#52 (Jed Shepherd Road) intersection improvements	Removed: Town no longer owns road.
TH#27 (Bradley Hill Road) drainage improvements to mitigate shoulder washing and flooding issues	Completed. Project completed in 2018.
TH#43 (Stone Bridge Road) drainage improvements to mitigate flooding	Completed: Project completed through Grants-In-Aid funding in 2019.
TH#1 (Georgia Mountain Road) paving to improve water quality in Lamoille River.	On-Going: Gully erosion occurring near bottom of road. Some best management practices implemented on problematic sections uphill.
Upgrade Bridge on TH#13 (Conger Road) to improve bank stabilization	Removed: Bridge width meets stream hydraulics. Erosion is no longer occurring at site.
Georgia Municipal Beach shoreline stabilization	Removed: The shoreline along Georgia Municipal Beach has been monitored by highway department since the record-breaking Lake Champlain Flood of 2011. The shoreline remains unaltered.

Public Involvement

The Hazard Mitigation Committee recognizes the need for even greater public involvement for the rural community in future updates of the plan. Notices of specific Hazard Mitigation Steering Committee meetings will be warned in local newspapers, websites, etc. Additionally, efforts will be made to outreach to businesses, academia, nonprofits and other interested parties. Such groups will be encouraged to become involved in the planning process. The Local Emergency Planning Committee (LEPC) for Franklin County is comprised of representatives from these groups. Based on demographics of the county and the rural nature of the greater community, outreaching to the LEPC to gain more input from the public sector was a logical step. Future updates should coincide with Town Meeting Day to gain greater involvement from the public as well.

4. COMMUNITY PROFILE

Georgia (73°97"W 44°43'N) is located in the southwest of Franklin County, Vermont. The Town borders the Chittenden County towns of Milton and Westford to the south, the Franklin County towns of Fairfax to the east and St. Albans to the north. Lake Champlain borders the Town to the west. Georgia has over seven miles of shoreline along Lake Champlain. Part of its southern border bisects Arrowhead Lake in Milton.

The Town has a land area of 30,952 acres, or 47.8 square miles, making it a large town by Vermont standards. The Town is characterized by a narrow shoreline, a broad, relatively flat plain, the foothills of the Green Mountains, the Lamoille River and its tributaries, as well as various smaller streams, and wetlands. The Town is roughly half open land and half forested, with much of the open land devoted to agriculture. Georgia’s long boundary with Lake Champlain, it’s relatively flat plain, and foothills of the Green Mountains make it a diverse and beautiful town.

Population and Housing

The of Georgia was estimated to be 4,691 in 2017 (2013-2017 American Community Survey 5-Year Estimate). There are 1,816 total housing units, of which 1,565 are occupied, 66 are mobile homes, 156 are seasonal and 259 are either vacant, for sale or rent. Most homes are single-family structures (88.5%).

The 2017 Town-wide Grand List value of all structures is \$614,024,465. The median value of a home in the Town of Georgia is \$270,100 according to the 2013-2017 American Community Survey 5-Year Estimates.

Energy

Georgia is served by several utilities which provide needed energy, power and communication services. Vermont Electric Power Company owns and maintains a major 115 KV transmission line, which bisects the Town in a north/south direction, as well as numerous substations and fiber optics cables. These lines serve as a major transmission link for the power grid from Canada to the Northeast.

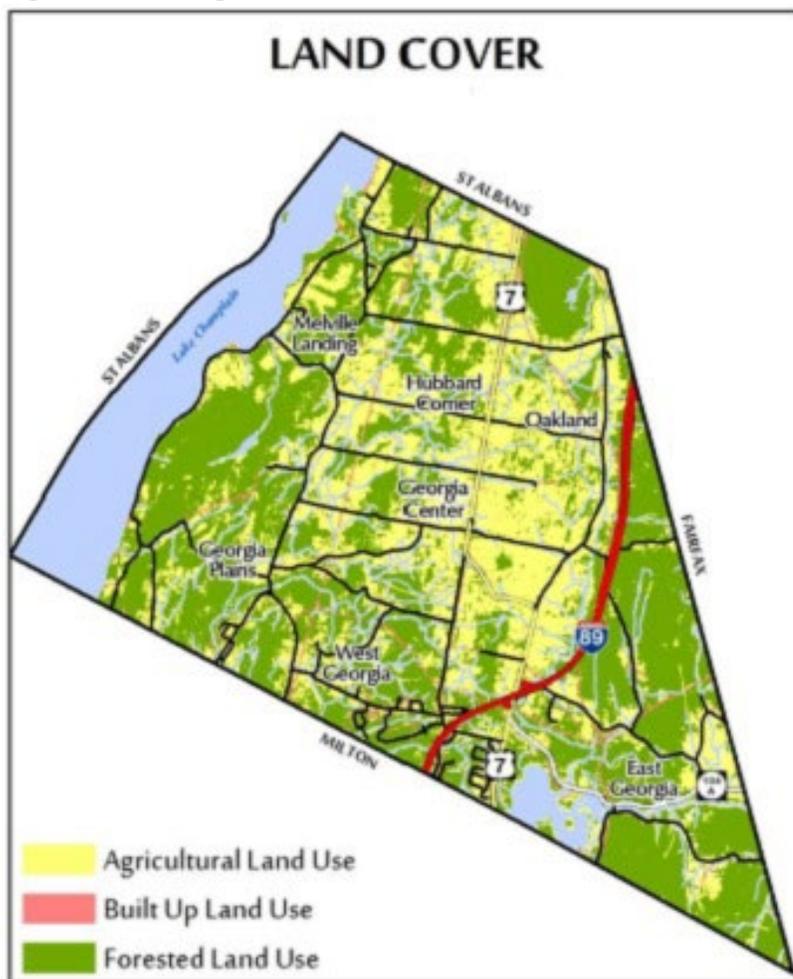
Green Mountain Power (GMP) serves much of the residential and commercial electrical needs of the town, with Vermont Electric CO-OP (VEC) serving the rest. VEC owns approximately 13.2 miles of overhead and underground lines, while GMP owns app. 77 miles. GMP serves approximately 1700 residential, commercial and industrial customers and Vt. Electric CO-OP serves approximately 100 customers.

Rd.; along Manor Rd.; and along Route 104A from Route 7 approximately 1/2 mile. Old Stage Rd, Morse Dr, Industrial Park Rd, and Skunk Hill Rd (East to the town line) have also gained access to three phase power recently. Three phase power enhances growth potential of the commercial/industrial base. Vermont Gas Systems has a major north south transmission line and provides gas service to approximately 4400 residential, business and industrial customers. The system presently consists of 6.9 miles of transmission lines and 5.9 miles of distribution lines.

According to the 2013-2017 American Community Survey 5-Year Estimate, fuel oil and kerosene were the most popular home heating fuels and were used by 688 homes (44%). Utility gas is the second most popular home heating fuel with 421 homes (26.9%).

Wood is the third most popular with 229 homes (14.6%) and bottled, tank or LP gas is used by 194 homes (12.4%). The least popular is "Other fuel" is used by 17 homes (1.1%) and electricity which is only used by 16 homes (1%).

Figure 4.1. Georgia Land Cover



Existing Land Use

The location of major transportation corridors through the Town brought change to the community. Industrial and service-oriented developments have recently become a part of the Town's development environment. The presence of transportation facilities has a major influence on Georgia's development. Also, the characteristics of the land itself have also played a key role in this process.

The Champlain lowlands have seen the most development in the past, and are the most logical place for future development. The soils are of mixed types and can accommodate varying levels of development in specific areas.

The Georgia Plains area represents a subregion, with its own soil types and topography. The soil types are generally composed of clay and silt, rather than sand and limestone. Drainage is poor. General soil conditions present limits to the future development of the Georgia Plains.

Lake Champlain and its shoreline are a valuable resource to the Town. The land uses along the lakeshore and adjoining lands are primarily seasonal-residential, residential, and agricultural. General soil conditions are not favorable to high density development. The lake is also used for passive and active recreation by Town residents and visitors. Vermont generates significant revenues from tourists, boaters, fishermen, and others due to Lake Champlain.

Arrowhead Mountain Lake and its surrounding wetlands in the Champlain lowlands are another valuable resource, and are hosts for several important wildlife habitats. Much development has already taken place near the lake. Future development should pay more attention to the value of Arrowhead Mountain Lake as a resource for the Town.

The foothills of the Green Mountains begin east of I-89 and Arrowhead Mountain Lake. Steep, wooded hillsides are a valuable scenic resource for the Town, and are highly visible both from the highway and from the lowlands to the west. The forests also have potential commercial value, and should be managed wisely. General soil and slope conditions are not favorable to extensive development. The area is also isolated from Town services because of lack of roads.

Future Land Use

Historically, the most significant elements of development in Georgia have been its residential and agricultural bases. Historic settlement patterns show much of the residential and commercial development has taken place in two village centers; Georgia Center and Georgia Plains, and more recently in South Georgia around the Interstate access. More than half of the Town's population lives in these villages, along the southern edge of Town, and in the clustered development near Arrowhead Lake. While St. Albans has long influenced development in Georgia, the construction of I-89 has more recently placed Georgia within the reach of Chittenden County commuters. Today, more than half of the Town's working population commutes to Chittenden County. This is most pronounced in the Town's southern tier, where most new development has taken place.

Maintaining the primary development area in the southern part of Town will build on existing development and infrastructure of roads and services. Focusing future development to this area will make for more effective, efficient, and affordable expansion of this infrastructure while capitalizing on its presence. Future subdivisions should be developed with an eye toward their connectivity with the rest of this section of Town, making for better interaction within the community and eliminating self-contained subdivisions. Focusing development here also relieves some of the pressure elsewhere in Town, leading to different planning goals and results for distinct sections and characteristics.

The lakeshore district was designated because of the unique features of the lake and its shoreline as a resource and the desire to use the lake for residential and recreational purposes. The flood hazard overlay district was created in compliance with the State and Federal requirements, and the Town participates in the Flood Insurance Program. The purpose of this Zone is to prevent damage and private property and to maintain eligibility in the insurance program.

Agricultural/Rural Residential District (AR-1): The primary purpose of the Agricultural/Rural Residential District is to provide a place in Georgia for agriculture and silviculture uses. The Town Plan encourages development in other areas of the Town and not in the AR-1 District. Residential and other uses permitted in the district should be very low density and should not interfere with the agricultural and rural nature of the District, and should not place an unreasonable burden on the Town's ability to provide and maintain Town services to all residents. It is a policy of the Town to strongly discourage strip development in this district. Land should be developed so that large contiguous expanses of agricultural, forestry, significant geological areas, wildlife habitat, scenic areas, and other important open space land will be protected. Development may be phased in order to meet the purposes of this district.

Figure 4.2. Georgia Proposed Land Use

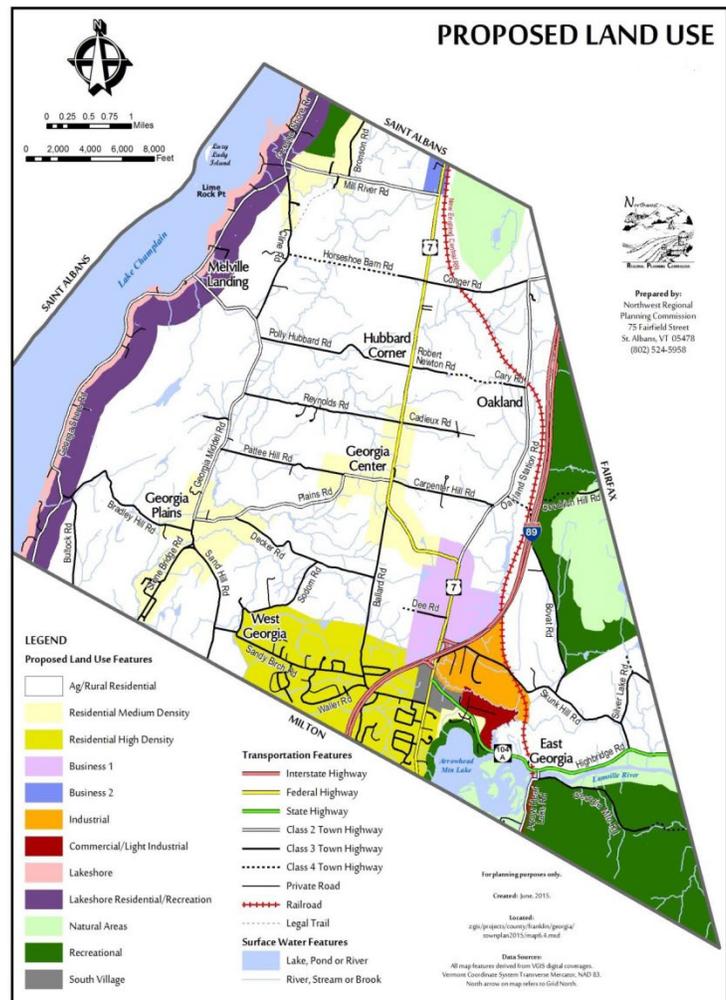
Medium Residential District (AR-2) The purpose of the AR-2 Residential District is to provide a location for residential development at a higher density than surrounding rural areas where historic centers of the town are located. In addition, small scale commercial uses will be allowed. Development in the district should reflect historic village patterns, protect important resources, enable the economic provision of services, plan for pedestrian and vehicular access, avoid strip development, and be planned so as not to burden the ability of the Town to provide adequate facilities and services.

High Density Residential District (AR-3) The purpose of the AR-3 District is to enable higher density residential development where existing development at a higher density has already occurred. Development in the district should enable the economic provision of services, reasonable pedestrian and vehicular access within the district and to nearby business and recreation districts, protect important resources, avoid strip development, and be planned so as not to burden the ability of the Town to provide adequate facilities and services.

South Village District (SV) The purpose of the South Village Core District is to provide a concentrated core settlement of small-scale commercial, governmental, and residential uses in a traditional Vermont village setting. The standards in this section intend to achieve a livable streetscape where people can walk, gather, and meet comfortably. A mix of uses is allowed at a higher density than elsewhere in the Town to create a community where people live, work, and shop. Developers are encouraged to work with the Planning Commission on developing their site according to the Design Criteria and Guidelines which are intended to implement the South Village Core Strategic Plan.

Business High Density District (B-1): The Business-High Density District is a high traffic area with good access to major highways. The purpose of the Business-High Density District is to enable high density commercial uses in an interconnected, unified pattern that does not result in strip development. Development in the district will have controlled access on highways, screening and landscaping, creative design and layout, good pedestrian circulation, and connections to adjoining residential and industrial districts. This district is not intended to serve as a regionally-designated growth center. Commercial uses shall be of a scale and size appropriate only for a locally-designated growth center.

Business Medium Density District (B-2): The Business-Medium Density District is a moderate traffic area with good access to major highways. The purpose of the Business-Medium Density District is to enable mixed commercial and residential uses in an interconnected, unified pattern that does not result in strip development. Development in the district will have controlled access on highways, screening and landscaping, creative design and layout, some pedestrian circulation, and connections to adjoining residential and commercial districts. This



district is not intended to serve as a regionally-designated growth center. Commercial uses shall be of a scale and size appropriate only for a locally-designated growth center.

Industrial District (I-1): The purpose of the Industrial District is to enable industrial development in an area with good highway and rail access and set apart from agricultural and residential districts. The I-1 District enables heavy and light industrial development in an efficient pattern.

Commercial-Light Industrial District (I-2): The purpose of the Commercial-Light Industrial District is to enable commercial and light industrial development in an area with good highway access and set apart from agricultural and residential districts. The I-2 District enables light industrial development to develop in an efficient and integrated pattern. This district is not intended to serve as a regionally-designated growth center. Commercial uses shall be of a scale and size appropriate only for a locally-designated growth center.

Recreational District (R-1): The Recreation District has severe limitations for development, including steep slopes, poor soil suitability for development, and high elevations. Therefore, much of the district is best suited to remain in a natural state or to be used for outdoor recreation purposes. Residential uses are limited to large lots to minimize the impact on the land and prevent substantial alteration to the landscape.

Natural Area District (N-1): The Natural Areas District has significant natural features or areas which are unique or irreplaceable. The purpose of this district is to protect these features and areas in their natural state to the extent possible for present and future generations. Structures are limited to large lots to minimize the impact on the land and prevent substantial alteration to the landscape.

Lakeshore District (L-1): The Lakeshore District contains land bordering Lake Champlain - one of the most significant natural features of the Town of Georgia. The purpose of the district is to protect the water quality of the lake and the recreational potential and natural beauty of the shoreline.

Lakeshore Residential-Recreation District (L-2): The Lakeshore Residential-Recreation District contains land close to Lake Champlain - one of the most significant natural features of the Town of Georgia. The purpose of the district is to protect the water quality of the lake and the natural beauty of the shoreland area. Development within the district should preserve the contiguous open lands, and protect the view looking eastward from the lake. There are some severe limitations on development in this district due to soil conditions and slopes and thus densities in the district should be low.

Flood Hazard Zone District: The Flood Hazard District is defined and delineated by the National Flood Insurance Maps (FIRM) created by the Federal Emergency Management Agency (FEMA). The Flood Hazard Zone District incorporates the Special Flood Hazard District which is also known as the 100-year floodplain. This district overlays other land use districts. Wherever there is overlap, the provisions of both districts shall apply. If there is a conflict between the two district requirements, or if there is a specific provision for development located within the Flood Hazard Zone District, the more restrictive provision shall apply.

Emergency Services

Georgia's police protection system currently is handled by both the Vermont State Police, who respond from St. Albans, and by contract services with the Franklin County Sheriff's Office. Georgia residents or businesses typically call 911 directly in the event of a need for law enforcement.

The Georgia Volunteer Fire Department is a volunteer force and is a member of the Franklin County Mutual Aid Agreement. The Georgia Fire Department covers an area of 47.8 square miles as primary response from one station that is centrally located for our Firefighters and First Responders. Georgia First Response is part of the Fire Department. Georgia contracts with Am-Care from St. Albans for ambulance services. 911" emergency dialing is

available in all of Georgia, and dispatch services are handled by Central Dispatch in St. Albans. Emergency response is a significant issue in Georgia because of the presence of several major industries and Interstate 89

Georgia maintains a Local Emergency Management Plan which is updated annually following Town Meeting. The plan is used to initiate response to serious crises. The plan identifies key contacts in the community, county mutual aid, vulnerable populations, hazardous sites, and emergency shelters.

Water and Wastewater

The Town does not own or operate water or sewage treatment facilities. There are three Wellhead Protection Areas that have been delineated to protect public drinking water sources: Rhodeside Acres, Sherwood Forest, and the South Georgia Fire District which serves 175 users. Most Georgia residents obtain their drinking water from ground water resources. The vast majority of all water systems and sewage disposal systems are private and on site. This fact further supports the need for adequate design and construction of systems, in accordance with State standards.

Transportation

The Highway System currently includes 91.04 miles of roads (including Class IV roads and legal trails). This is broken down into State owned and maintained roads and Town roads. The State has 17.62 miles of roads, including the 6.53 miles of Interstate 89 and its on/off ramps. The balance of State road miles includes Rte. 7 (7.6 mi.), Rte. 104 (0.130 mi.) and Rte. 104A (3.362 mi.). These roads are owned and maintained by the State. The balance of the road network is made up of Town and private roads.

The Town of Georgia has no Class I roads, 19.53 miles of Class II roads, 43.64 miles of Class III roads and 7.72 miles of Class IV roads and 2.59 miles of legal trails, for a total of 73.48 miles. In addition to the highways themselves, the town maintains bridges, culverts and drainage systems. Maintaining bridges and culverts can be enormously expensive. Fortunately, the State of Vermont's Town Structures Grant program is designed to assist towns with these responsibilities. The town has taken advantage of this program very successfully. Past projects involving these programs were the replacement of Stonebridge Brook Bridge and the replacement of two large culverts on Polly Hubbard Road.

Georgia has a major rail line, owned by New England Central Railway, running north and south through Town, though there is no direct service provided to the Town. There is a railway siding where the Vermont Whey Plant used to be located, off of T.H. #31 near the Industrial Park. This could serve as a terminus for additional industrial development in the immediate vicinity. New England Central Railway owns additional lands near the Georgia High Bridge, which at one time served as a cattle and freight yard.

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 Town of Georgia does not have the resources to undertake hazard identification and risk assessment studies to this level of detail. The Project Steering Committee used a hazard profile matrix (Attachment A) to develop a risk rating for each identified hazard. The matrix was completed by relying on available information as well as the knowledge and judgment of the planning participants. Health and safety consequences, property damage, environmental damage and economic disruption are classified as the consequences of occurrence of each hazard. The following is a description of the risk characteristics used to classify each hazard:

Frequency of Occurrence:

1. Rare: Unknown but rare occurrence
2. Unlikely: Unknown but anticipate an occurrence
3. Possible: 100 years or less occurrence
4. Likely: 25 years or less occurrence
5. Highly Likely: Once a year or more occurrence

Magnitude or % Community Impacted:

0. Negligible: < 10% of developed area impacted.
1. Limited: 10% to < 25% of developed area impacted.
2. Critical: 25% to 50% of developed area impacted.
3. Catastrophic: > 50% of developed area impacted.

Health & Safety Impacts:

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

Property Damage:

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

Environmental Damage:

0. Little or no environmental damage
1. Resources damaged with short term recovery practical
2. Resources damaged with long term recovery feasible
3. Resources 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 matrix (See Attachment A) for the Town derives a “relative risk score” using a qualitative process in which to compile estimates of the likely **frequency** of occurrence, the **extent** of the community that would be impacted, and the likely **consequences** in terms of public safety, property damage, economic impacts and harm to environmental resources. The total is considered in this plan to constitute the “relative risk score”. The hazards with the highest risk score are flooding and severe winter storm (ice storm) followed by severe wind / downburst and

fluvial erosion/landslide. It should be noted that the communities overall risk rating is low (225 out of a possible high of 1,026).

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

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

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

While all the hazards listed in the State Mitigation Plan were considered, only the hazards identified in this plan are the ones most probable to put the Town of Georgia at risk. Additionally, several identified hazards were removed during this update and are indicated by an *. The hazards not addressed in this plan update along with the justification for not including them are outlined in the following table.

Table 5.1. Hazards Not Profiled and Justification

Hazard Not Profiled	Justification
Extreme Heat Extreme Cold	The Committee agreed that extreme temperatures a non-issue because they are brief in duration if they occur at all. Hot spells in summer and cold snaps in winter are just part of life in Georgia and not a concern.
Hurricane	The Town is too far north from the Atlantic coast. Vermont does not have any coastline. Tropical storms are profiled under High Winds section.
Infectious Disease Outbreak	Has not occurred in Town. Considered rare.
Invasive Species	Considered rare. Town would rely on state to assist individuals and commercial ag producers in mitigation and response to invasive outbreak.
Rock Cuts	None in town.
Nuclear Power Plant Failure	VT Yankee Nuclear Power Plant located in Southern Vermont and owned by Entergy Nuclear Vermont Yankee; LLC has been decommissioned.
Rockslide/Landslide	Do not occur in Town. No areas where rockslides are an issue. Mentioned in landslide (fluvial erosion).
Loss of Water Service/Sewer Service*	There is no municipal water or sewer service.
Telecommunications Service Loss*	All telecommunications services (internet, land line, phone line, etc.) are not provided by the municipality. This type of loss is typically the result of some other hazard such as severe winter storm or severe thunderstorm.

Loss of Electrical Service*	The type of loss is typically the result of some other hazard such as severe thunderstorm or severe winter storm.
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The community has identified and chosen to focus mitigation action items on the following hazards: Flooding / Fluvial Erosion, Severe Winter Storm / Ice Storm, and Severe Thunderstorms (High Wind, Lightning, and Hail). These are the hazards that are most likely to occur in Georgia and are the hazards the town has developed mitigation actions around.

Each hazard was analyzed to estimate losses within the Town of Georgia. 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). A full summary of hazards and impacts is included in Table 4.6

Table 5. 2. Summary of Hazards and Impacts for The Town of Georgia

Hazard Type	Frequency Of Occurrence	Impact / Magnitude	Community Vulnerability	Estimated Potential Losses (Dollars)	Vulnerability (facilities and populations)
Severe Winter Storm / Ice Storm	Highly Likely	Limited to Catastrophic	Moderate	n/a	Roads, bridges, commercial and residential structures, seasonal homes, public buildings (Town Office, Highway Department, State Garage, Fire Department, Schools), churches, and utilities.
Flooding / Fluvial Erosion	Highly Likely	Limited to Catastrophic	Moderate to High	\$1,943,330	Loss of road access, power loss, telecommunications loss. Roads, bridges, commercial and residential structures, seasonal homes and utilities.
Severe Thunderstorm (High Winds, Lightning, Hail)	Highly Likely	Limited	Moderate	\$2,800,000 mainly utility	Falling limbs and/or trees, power loss, telecommunications loss, church, structural damage, crop damage. Commercial structures, residential and seasonal homes, public buildings, utilities.
Structure Fire	Possible	Limited	Low	\$642,000 (estimate 1/year)	All structure types especially those lacking early detection systems.
Hazardous Materials	Possible	Limited	Low	n/a	Residential and seasonal homes, commercial structures, public buildings (Town Office, Town Garage, State Garage, Fire Department, Schools, Library), churches, utilities, and the environment.
Drought	Possible	Limited to Catastrophic	Low	n/a	Commercial structures, farms, livestock, private wells, Industrial Park, Health Complex, public buildings (Town Office, Town Garage, State Garage, Fire Departments, Schools, Library), residential and seasonal homes and vulnerable populations.

Tornado	Possible	Limited	Low	\$9,716,652	Falling limbs and/or trees, power loss, telecommunications loss. Structural damage to residential and seasonal homes, public buildings (Town Office, Town Garage, State Garage, Fire Department, Schools, Library), Industrial Park, Health Complex, local businesses and utilities.
Earthquake	Possible	Limited to Catastrophic	Low	\$9,716,652	Infrastructure (roads, bridges), structural damage to residences, seasonal homes, commercial building, public buildings (Town office, Town Garage, Schools, Fire Department, State Garage, Library) utilities.
Major Fire - Wildland	Possible	Limited	Low	n/a	Residential and seasonal homes, commercial structures, utility poles and lines, road closures, fires in rural areas lacking fire breaks.
Terrorism/WMD and Civil Disturbance	Rare	Limited	Low	n/a	School, public building (Town Office, Town Garage, State Garage, Fire Department, Schools, Library).
Extreme Heat*	Possible	Limited	Low	n/a	Fauna, public health.
Extreme Cold*	Possible	Limited	Low	n/a	Fauna, public health.
Hurricane*	Unlikely	Limited	Low	n/a	Local and state transportation networks. Residences, businesses, Town Office, State Garage, Public Works Building/Garage, Community Center, Water Pumping Station and Elementary School.
Infectious Disease Outbreak*	Possible	Limited	Low	n/a	Fauna, public health.
Invasive Species*	Possible	Limited	Low	n/a	Agricultural crops, forests.
Rock Cuts*	Rare	Limited	Low	n/a	None.
Nuclear Power Plant Failure*	Rare	Limited to Catastrophic	Low	n/a	All flora and fauna. Public health, Agriculture.
Rockslide/Landslide*	Rare	Limited	Low	n/a	None.
*Has never occurred.					

Flooding / Fluvial Erosion

Description: Historically in Vermont, flooding has been the number one natural disaster in loss of life and property. Most flash flooding is caused by heavy rain from thunderstorms. Smaller creeks and streams are particularly vulnerable to flash flooding. Fluvial erosion is the destruction of riverbanks caused by the movement of rivers and streams. This occurs when the stream is unstable and has more energy than is needed to transport its sediment load, due to channel alterations or runoff events that increase water speed in the channel. Historic land uses along rivers and streams, including floodplain encroachments and removal of vegetation have increased the risk of fluvial erosion.

Table 5.3. Historic Crests (>100 ft.) on Lake Champlain

Source USGS gage on Lake Champlain, Rouses Point, NY

Lake Level	Date
103.20 ft	5/6/2011
102.10 ft	5/04/1869
101.88 ft	04/25/1993
101.86 ft	04/28/1993
101.80 ft	03/30/1903
101.71 ft	04/05/1998
101.64 ft	01/05/1976
101.62 ft	04/29/1994
101.61 ft	05/07/1983
101.61 ft	03/27/1936
101.32 ft	05/12/1971

Impact and Geographic Area of the Hazard: The Lamoille River and many of its tributaries flood in the spring of each year, as snow melt and spring rains cause them to overflow their banks. Ice jams also contribute to flooding on the Lamoille, although they have not caused any major damage in Georgia. Jams have contributed to field and bank erosion. There are several sections of low lying wet or wetland areas, that are subject to periodic flooding and exposure, depending upon the season and weather.

Wetlands are abundant throughout Georgia. and play a critical role in the storage and retention of flood waters which mitigates flooding impacts. The Mill River delta flows into the lake in the northern section of Town, creating an important wetland environment and habitat.

There are approximately 7 miles of Lake Champlain shoreline to the west of Town. Much of the lakeshore is densely developed with a mix of year-round and seasonable residences. There are notable open sections at Lime Rock Point, the Mill River Delta, Rhodes Shore, and White Shore. Fluctuations in the water level of Lake Champlain produce flooding along the western shoreline. Flooding can occur in any season; however, the most frequent flooding occurs in early spring as a result of snowmelt and heavy rains.

River Corridors Mapping

To identify areas prone to fluvial erosion hazards, the Vermont Agency of Natural Resource has identified River Corridors in all Vermont municipalities. River Corridors are based on the individual conditions of streams and rivers including topography and the existence of public infrastructure. The following map depict River Corridors that VT ANR has designated. The pink shaded area is the ANR River Corridor, created August 27, 2019. River

corridors are only mapped for streams with watershed of two or more square miles, but they do also apply to the area within fifty feet of top of bank. The Agency advises using a 50-foot buffer on each side of a stream with the intention of protecting stream stability and natural flow. Areas within mapped river corridors are included in the restrictions set out in Georgia’s floodplain bylaw.

River Corridors regulations currently apply only to Act 250-related land development and land development not regulated by municipalities (like agriculture). Municipalities may adopt River Corridor maps and regulation as a part of their development regulations. Adoption may provide financial benefits to the Town in the event of federally declared natural disaster due to changes in how the Emergency Relief and Assistance Fund (ERAF) is administered.

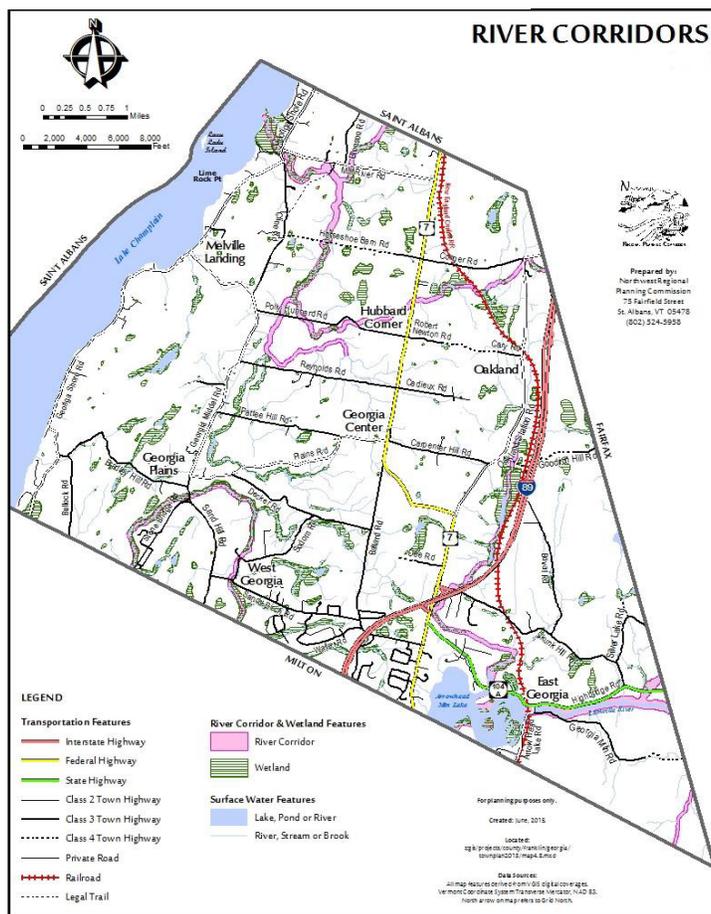
Table 5.4. Lamoille River at East Georgia Flood

Moderate Flood Stage	14
Flood Stage	13
Action Stage	10

Georgia has adopted zoning regulations to address fluvial

erosion hazards on named rivers and streams in the community. Specifically, Georgia has adopted riparian buffer zone regulations. These regulations

Figure 5.1. Georgia River Corridors



include a 200-foot setback from Deer Brook and a 50-foot setback from all other named rivers and streams. Setbacks are measured from the top of bank or top of slope depending on topographic conditions. Within these setback areas development is highly restricted. These setbacks are based on the work that was done with Northwest Regional Planning Commission and the Agency of Natural Resources in the early 2000s that identified areas susceptible to fluvial erosion. These regulations are comparable to River Corridor regulations and therefore may make a possible transition to River Corridor regulations relatively simple and straightforward.

Extent / Probability

Floods and fluvial erosion occur annually in Georgia, whether from spring snowmelt, ice jams along the Lamoille or severe thunderstorms. According to the National Climatic Data Center, there have been 14 recorded flash flood events and 26 flood events causing approximately \$511,184,000 in damages and 1 death in Franklin County between 1987 and 2017.

The extent of damages from flooding ranges from water over the road to washed out culvert and destroyed sections of roads. Parts of Georgia, such as those along the Lamoille River, Arrowhead Mountain Lake, Deer Brook and Lake Champlain will continue to be the parts of Georgia most at risk for flooding. VT104A and TH1 are at risk for flooding from the Lamoille River during high water events. TH12 and TH14 along Mill River are also at risk for flooding. Stone Bridge Brook also floods along TH33, TH39 and TH6. Properties along TH7 in “the Pines” in the northwest part of town were impacted by lake shore flooding. The lower section of TH36 is at risk of gullyng from fluvial erosion from the Lamoille River. TH1 road shoulder along Arrowhead Mountain Lake has been comprised

Table 5.5. Historic Crests of the Lamoille River

Source USGS gauge in East Georgia

River Level	Date
21.64 ft	03/06/1979
20.00 ft	11/04/1927
19.40 ft	02/21/1981
18.81 ft	04/03/1959
18.14 ft	02/28/2000
17.44 ft	02/25/1985
17.43 ft	03/31/1993
17.41	03/14/1977
16.97	12/22/1973
16.65	11/29/1959

Figure 5.2. Georgia Water Supply Source Protection Areas, Wetland & Flood Zones

from ice and fluvial erosion. Stormwater from US7 has become problematic within the Deer Brook watershed where evidence of fluvial erosion is present near several commercial, industrial and private properties.

USGS and FEMA maps indicate that Georgia has low incidence of reported landslides along the Lamoille River and associated tributaries. One landslide event occurred at Arrowhead Mountain Lake in the mid to late 90s. There is little information on the extent of the damages. There was no threat to public safety.

Ice jam related flooding is typically limited affecting a small section of TH1 along Arrowhead Mountain Lake. Ice jams occur only in the Lamoille River and the threat to 104A is minimal given the elevation of the road and distance from river bank.

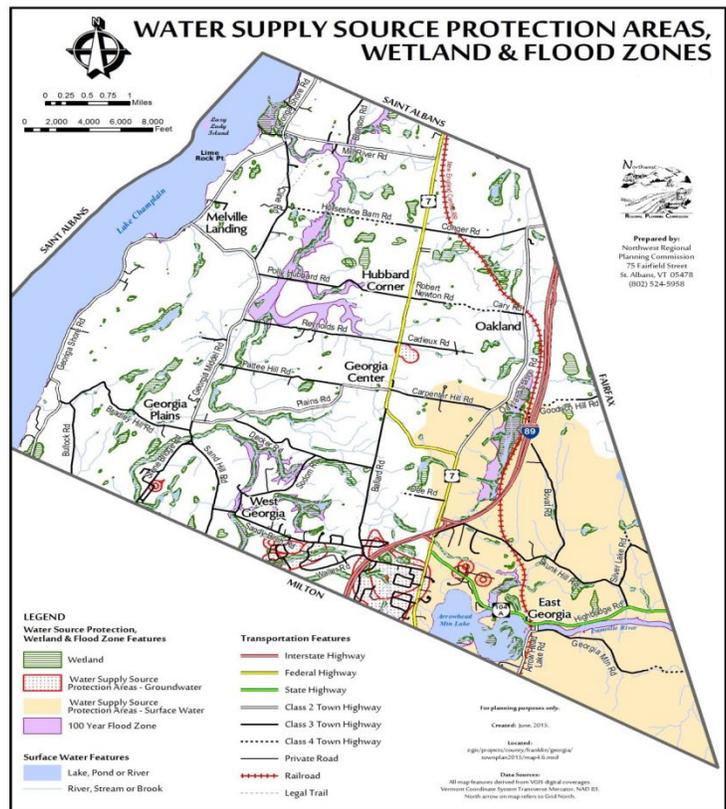
Agriculture is an important and part of the economy. Flooding disasters pose a major threat to the industry. Severe flooding in October of 2017 (FEMA-4356-DR) had a significant impact across Franklin County, with severe damages in the Lamoille and Missisquoi River Basin. The impacts from flooding substantially threaten the future agricultural viability of this part of the region. The failure of even a small number of farms would have a significant negative economic impact.

Flash floods typically occur during summer when a large thunderstorm or a series of rain storms result in high volumes of rain over a short period of time. Higher-elevation drainage areas and streams are particularly susceptible to flash floods. Flash floods are likely in Georgia and have the potential to do damage to major transportation corridors. Areas of concern for flash flooding include Deer Brook, Stone Bridge Brook and Mill River.

The highest recorded measurement was 21.64 feet, which was measured on March 6, 1979. Flood height is 13 feet, a height which has been exceeded 7 times since 2000. NOAA notes that at 11.5 feet, flooding is possible in yards of private residences downstream of Arrowhead lake. There will be widespread field and lowland flooding from Fairfax downstream through (East Georgia) Milton.

Geomorphic conditions were found to be mostly fair to good, although some poor conditions were noted, mostly in the Mill River watershed. Where conditions were poor, stream type departures were observed as a result of major stressors acting on the stream system. These stressors included lack of riparian buffer and/or extensive straightening in agricultural or development areas, increases in surface runoff in urban areas, and increased sediment supply from unstable banks and valley walls. Overall, these stressors have caused the stream channels to deepen, causing the floodplain to become inaccessible. Consequently, during flooding events, the high flows are limited within the channel, which has caused significant bank erosion, channel widening and other channel instabilities.

Loss estimates for fluvial erosion are unavailable due to insufficient data. Future plan updates will reflect any changes in data for estimating losses. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to decrease as the Town if proactive in addressing the impacts of this hazard.



A GIS based overlay analysis was conducted using rough approximations of flood zone locations with the Vermont E-911 data of structure locations. The results are approximations only due to the limited accuracy and age of the source FIRM data. The results found that there are approximately thirty-one (31) structures within the 100- or 500-year flood plain in Georgia. Ten (10) are all-season single-family units, and twenty – one (21) are classified as camp/bungalow units. This represents 2% of all structures in the community. There are no critical facilities located within the flood plain areas.

Estimating flood damage of the 2% of structures with 20% damage is \$1,943,330. 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 decrease due enforcement of flood hazard regulations. Additionally, greater local education and increased collaboration with ANRs River Management Program will decrease impacts as upgrades transportation infrastructure such as roads and bridges are engineered with greater consideration of floodplain hydraulics.

Past Occurrences

The most severe flood on record occurred in November 1927. A storm brought 3.2 inches of rain in 24 hours, and a total of 6.32 inches over its entire duration. Other major floods occurred in 1936, 1938, 1940 1959, 1973,1976, and 1977. The information is based on historical crests at from the gauge records of the U.S. Geological Survey (USGS) gauge located on the Lamoille River at East Georgia, Vermont.

Table 5. 6. Flooding History Including Disaster Declarations

Date	Location	Severity Remarks / Description of Area Impacted
October 31 to November 1, 2019	Franklin, Chittenden, Washington, Addison, Lamoille Counties.	On the night of October 31, a heavy rain fell throughout much of north western Vermont and the Champlain Valley. Georgia experienced 4 inches of rain overnight. The Lamoille and Mill River and tributaries flooded. The floodwaters created major damages to Routes 7 and Interstate 89. Major damages occurred on several roads. Many residents reported flooded basements and damaged driveways. At the time of this writing, damage estimates are still being developed.
June 9 -10, 2015	\$150,000 County wide	Flash flooding from heaving rainfall occurred along the western slopes of the Green Mountain in northwest Vermont. A cold front was stalled across the Adirondacks and central Vermont, and several waves moving along the front produced repeated periods of heavy rain. Early morning rainfall of one to two inches saturate the ground and brought streams and ditches to bankful, and an additional inch or more later in the day on the 9th added to the on-going high flows. Several roads were damaged in Georgia due to overwhelmed drainage networks.
April 15, 2014	Counties of Franklin, Caledonia, Washington, Essex, Orleans, Lamoille	DR4178. Flooding from heavy rain and snowmelt caused damage to roadways across much of Franklin County. Road and culvert damage occurred in Bakersfield, Montgomery, Georgia, and Sheldon. Flooding along the Lamoille River forced the closure of river road.
August 29, 2011	State-wide	EM-3338. Heavy rainfall from Tropical Storm Irene caused flooding across Franklin County VT. Along the Missisquoi River and its tributaries, floodwaters inundated and forced the closures of routes 105, 118, and 108. The Missisquoi River at East Berkshire crested at 14.13 feet at 1:00 am EST August 29. Flood stage is 13.0 feet. Georgia was mainly spared from the event.
April 27, 2011	NW Vermont including Essex and Orleans Counties	DR-1995 and 4043. Runoff from heavy rain and snowmelt caused flooding of Lake Champlain and the Missisquoi and Lamoille Rivers and their tributaries. Montcalm Road and several other local roads had washed out culverts. Lake Champlain broke the record for highest lake level at 103.57 feet.
August 8, 2008	NW Vermont including Essex and Orleans Counties	DR-1790. Repeated heavy rains in August caused local flooding throughout northwest Vermont. Bank along Mill River and Mill River Road near Georgia Shore Road failed during this event in August 2008.
August 12 – September 12, 2004	Counties of Windham, Addison, Chittenden, Lamoille, Caledonia, Orleans, and Franklin	DR 1559. Flooding caused by a series of storm events with moderate to heavy rains. There were \$1,833,470 in damages throughout the affected counties. Georgia experience some minor damages to roads and several residences had reported water in their basements.
February 8, 2000	Northern Vermont	Lamoille River in East Georgia was above the flood stage at 18.14 feet resulting in damage to the road network. Flooding was caused by simultaneous heavy snowfall totals, heavy rains and warm weather.
June 5 – 13, 2002	Counties of Caledonia, Franklin, Lamoille, Orleans, and Essex	DR 1428. Severe storms and flooding along the Lamoille and its tributaries. Public Assistance funding was \$1,500,390.

June 17 – July 13, 1998	Counties of Addison, Caledonia, Chittenden, Essex, Franklin, Lamoille, Orange, Orleans, Rutland, Washington, and Windsor	DR 1228. A series of severe storm systems created widespread flooding through most of the state. There were \$11,849,541 in damages with approximately \$4,403,698 in public assistance funding.
July 15 - 18, 1997	Counties of Caledonia, Franklin, Lamoille, Orleans, and Washington	DR 1184. An extended rain event, created widespread flooding throughout northern Vermont. There were \$7,256,842 in public assistance funding.
January 19, 1996	Counties of Addison, Bennington, Chittenden, Franklin, Lamoille, Orange, Orleans, Rutland, Washington, Windham, and Windsor	DR 1104. The event caused flooding of low-lying areas along rivers and tributaries caused by snowmelt and intense rain. There were \$3,364,711 in public assistance funding.
April 24, 1993	Counties of Addison, Chittenden, Franklin, and Grand Isle	DR 990. The Town experienced received minimal damages from the rain event. There were \$1,348,800 in public assistance funding made available to affected communities.
July 4 -5, 1990	Counties of Caledonia, Chittenden, Franklin, Lamoille, and Washington	DR 875. The Town experience minimal damages from the rain event. There were \$3,927,063 in public assistance funding made available to communities.

Severe Winter Storm (Ice Storm)

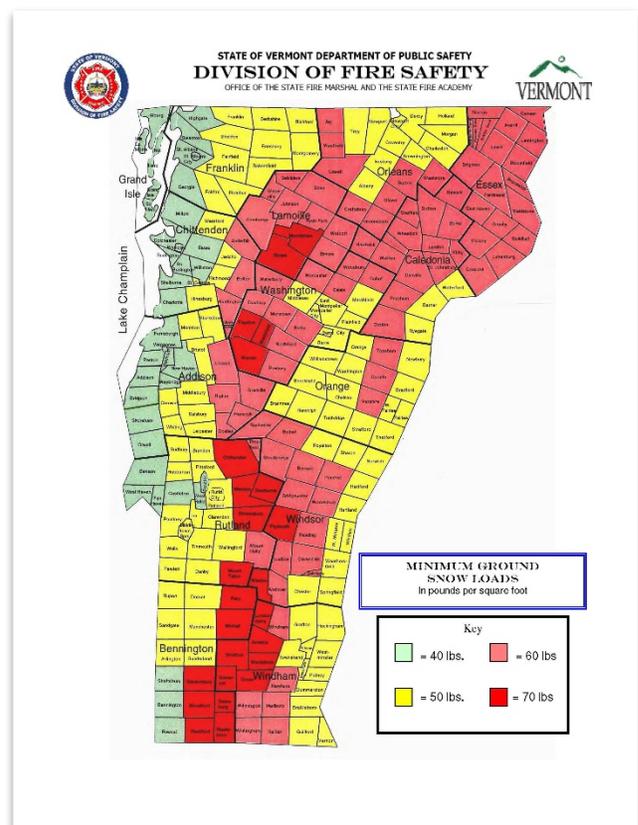
Description:

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

Impact and Geographic Area:

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

Figure 5.3. Construction Snow Loads in Vermont. Georgia = 40 lbs./sq. ft.



Winter storms (ice storms) can affect the entire Town and generally cause disruptions to public and private services. The primary impacts of an ice storm typically include disruption to transportation networks due to fallen limbs and trees, school closings, and telecommunications and power outages. Communications and power can be

Table 5.7. Burlington, Vermont Top 10 Fall Snowfall Totals

disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards along roadways.

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

Vulnerable populations such as the elderly, those dependent on medical equipment and specialized health or physical care, are at risk to all types of winter storms. At risk are farms and livestock. Barns can collapse due to heavy snow and ice loads. Dairy cattle are susceptible to mastitis¹ if they are unable to be milked. Many larger dairy farms have stationary or portable PTO driven generators as backup power for automated milking equipment. people who are dependent on power to heat their homes are also at risk

Extent and Probability

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 Franklin County have left snow depths of 38” (March 2017), wind speeds up to 40 mph (January 1998), and ice accumulations of 2-4” (January 1998 and December 2013).

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

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
Dec-Feb					
1	103.4"	2007-08	1	18.4"	1912-13
2	97.9"	2010-11	2	20.4"	1979-80
3	96.9"	1970-71	3	21.9"	1928-29
4	90.1"	2009-10	4	23.6"	1936-37
5	81.7"	1965-66	5	24.0"	1898-99
6	80.7"	2003-04	6	25.0"	1904-05
7	80.0"	1957-58	7	25.6"	1940-41
8	79.4"	2008-09	8	26.3"	2011-12
9	78.6"	1946-47	9	27.0"	1900-01
10	75.7"	1969-70	10	27.4"	1960-61
Mar - May					
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

¹ Mastitis is the inflammation of the mammary gland caused by microorganisms, usually bacteria, that invade the udder, multiply and produce toxins that are harmful to the mammary gland.

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

Georgia’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 Town’s Mitigation Committee classified severe winter storms (ice storms) to be highly likely each year. Every winter there is a winter event where Town residents will have to address snow and ice build-up on personal property and the Town’s public works department will have to ensure the roads remain clear of snow and ice.

Table 5. 8. Winter Storm (Ice Storm) Summary

Date	Location	Severity Remarks / Description of Area Impacted
WINTER STORM (ICE STORM) DISASTER DECLARATIONS		
December 9 -14, 2014	Addison, Chittenden, Franklin, Grand Isle, Orange, and Windsor	(DR-4207) Rain and wet snow moved into Vermont midday December 9 and changed to a heavy, wet snow during the evening. A band of moderate snowfall impacted much of central and northern Vermont during the afternoon and evening hours of the 10th, then scattered snow showers ending on the 12th. Total snowfall totals across Vermont ranged from 3-6” in Essex County to 12-20” across the Green Mountains into the Champlain Valley. The heavy, wet nature of the snowfall accounted for snow-loaded trees that resulted in more than 175,000 power outages in the region. This was the 2nd most power outages due to weather in Vermont. Over \$4 million in property damages estimated.
December 16-20, 2013	Addison, Chittenden, Franklin, Grand Isle, Orange, and Windsor	DR-4163. A wide-spread low-pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm that brought wide-spread power outages. Many Towns throughout Franklin County, Vermont were affected by the ice storm. Utility companies responded to over 60,000 customer outages during the week and estimated costs of restoring power at \$7,400,000. In Georgia the highway department was active keeping roads open and removing ice damaged trees and limbs from local roads. Several residents were without power for several days.
December 1-5, 2010	Franklin, Lamoille and Chittenden Counties	DR-1951. Wind and snow spread across much of Vermont. Snowfall amounts in northern Vermont exceeded 2 feet across in some locations. Some of the highest amounts included 27 inches nearby at Jay Peak Ski Resort. Numerous vehicle accidents resulted from the snow-covered roadways and over 35,000 people lost power. Much of the damage was in the form of downed limbs, branches, trees, and some isolated structural damage in the form of blown off roof shingles. The prolonged persistence of strong and gusty winds accounted for the scope of damage across the region.
January 19, 1996	Addison, Bennington, Chittenden, Franklin, Lamoille,	DR 1101. A warming trend produced heavy rains causing rapid snow melt that led to flooding. It is not known what

	Orange, Orleans, Rutland, Washington, Windham, and Windsor	the financial impacts of the storm were to the Town. There were \$3,364,711 in federal public assistance funding made available to the state.
January 6, 1998	Addison, Chittenden, Franklin, Grand Isle, Orange, and Windsor	DR 1201. This storm is referred to as the Ice Storm of 1998, but to the residents of Georgia, the weather was more akin to a traditional winter storm than an ice storm. Snow turned to freezing rain and produced power outages into the area. It is not known what the financial losses were to the Town as a result of the storm. Public Assistance funding was \$5,899,183.
WINTER STORM (ICE STORM)		
February 25, 2010	Central and Northern Vermont	Heavy wet snow fell across the State that resulted in snowfall accumulations of 6 to 30 inches. The weight of the heavy snow accounted for widespread power outages across the region that resulted in upwards of 50,000 customers state-wide without power.
January 2-3, 2010	Central and Northern Vermont	Near record snow fell across the county from a powerful Atlantic storm system. Northwest winds of 15 to 25 mph with higher gusts caused considerable blowing and drifting snow with 4 to 5-foot snow drifts reported. A record 33.1 inches of snow fell at Burlington International Airport in South Burlington.
February 19 – 21, 2009	Northern Vermont	A prolonged flow of cool, moist and unstable air created persistent snow showers across the northern Counties during the afternoon of February 20th and continued until the early morning hours of February 21st. There were significant snowfall amounts (more than 12 inches) observed at various ski resorts. From 3 to 8 inches of snowfall accumulated across the Champlain Valley.
January 29, 2009	Franklin County	Snow overspread the State early in the morning and continued into the evening hours. Snowfall accumulations with this storm were generally 8 to 14 inches in the County. There were no reported damages.
February 14, 2007	New England	Known regionally as the “Valentine’s Day Storm”. A winter storm blanketed most of New England. In Vermont, snow fell heavy at times from late morning through early evening before dissipating during the night. Snowfall rates of 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused near whiteout conditions at times, along with considerable blowing and drifting snow, making roads nearly impassable. Temperatures in the single numbers combined with brisk winds created wind chill values of 10 degrees below zero or colder. In Georgia, there was 26” of snowfall from the event.
October 20, 2006	Town of Georgia	A low-pressure system brought cold air to the northern portion of the state. Heavy, wet snow accumulation of 3-6 inches occurred in Georgia damaging many trees and causing power disruptions.
February 13, 2000	Northern Vermont	A storm system over the Ohio Valley tracked across central New England during Monday, February 14th. Heavy snow fell across the area with accumulations generally between 7 and 14 inches.
April 10, 1996	Statewide	A classic Nor’easter, this system spread snow across the region for nearly two days. The snow tapered off to flurries by late evening on the second day. The heaviest snow fell

		over and east of the Green Mountains with 7 to 14 inches. In the Champlain Valley 2 to 5 inches fell. The wet snow resulted in some power outages and minor automobile accidents across the state.
February 28, 1995	Northern Vermont County	A low-pressure system which developed in the Ohio Valley resulted in a mixture of snow, sleet, and freezing rain across Vermont. Snow accumulations ranged from four to eight inches across much of the County.
March 13-14, 1993	State-wide	One of the worst storms of the century. Known as the "Blizzard of 93", it was one of the most powerful storms (Nor'easters) on record. The system moved up the Eastern Seaboard on the 13th and 14th coming close to breaking pressure and snowfall records in many locations. Snowfall amounts ranged from 10 to 28 inches across the state. Due to the weight of the snow that accumulated over March, there were numerous damage reports of barns and building roofs being damaged or at risk of collapsing.
January 3, 1993	Northern Vermont	A combination of a cold surface and warm moist air aloft created freezing rain and freezing drizzle across the state. Road surfaces throughout Georgia were covered in "black ice".

Severe Thunderstorm (high wind, lightning, hail)

Description

Thunderstorms are caused by an updraft, which occurs when warm, moist air rises vertically into the atmosphere. The updraft creates a cumulus cloud, which will eventually be the thunderstorm cloud. Severe thunderstorm winds are brief in duration and bring gust in excess of 50 mph. Severe thunderstorms are capable of producing high winds, large hail, lightning, flooding, rains, and tornadoes.

The National Oceanic and Atmospheric Administration's National Severe Storms Laboratory defines a microburst as a small, concentrated downburst in a thunderstorm that produces an outward flow of strong winds at or near the surface. Microbursts can cause extensive damage at the surface and in some instances can be life-threatening.

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

Impact and Geographic Area of the Hazard

According to NOAA's National Severe Storms Laboratory, damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles. High winds are a hazardous threat to the Town and most commonly accompany other storm events. Violent windstorms are possible in Georgia. High winds associated with severe thunderstorms affect forested areas, utility lines and exposed property. People living in mobile homes are especially at risk for injury and death. Even anchored mobile homes can be seriously damaged when winds gust over 80 mph.

The Town has experienced a variety of severe thunderstorm winds from storm systems that develop west over the Adirondack Mountains in upstate New York and travel east over Lake Champlain. Fronts typically gain strength as they move across the Lake. Micro bursts with high wind speeds and high precipitation accumulations over brief

periods have become more frequent during summer months in recent years. Micro bursts often down trees and branches and power lines and can overwhelm local drainage networks for brief periods.

Severe winds are a hazardous threat to the Town and most commonly accompany other storm events. Violent windstorms are possible in Georgia. The Town is far inland and is unlikely to receive a direct hit from a hurricane, however severe winds and hail storms have occurred in Town as weakened tropical storms track near the region. Severe winds are common along the Lamoille River corridor in the southern part of Town, as well as along the Lakeshore and Georgia Mountain.

Severe thunderstorms often generate lightning and/or hail. Lightning can strike anywhere but exposed areas and non-grounded structures at higher elevation are more susceptible to lightning strikes. There are rare instances where lightning has caused structure fires (barns) and grass fires during dry periods. Hail is a typical accompanying hazard that can affect all areas of Town and can damage vehicles and roofs.

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

Table 5.9. Beaufort Wind Scale

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

Extent/Probability

There have been 31 thunderstorm events in the region since January 1, 1998 according to the National Climatic Data Center. Of those, all are classified as severe thunderstorms with wind speeds of 50 knots or greater. Severe thunderstorms can cause power outages, property damage, transportation interruptions, affect businesses and can cause loss of life. Micro bursts with high wind speeds and high precipitation accumulations over brief periods often down trees and branches and power lines and can overwhelm local drainage networks for brief periods. Micro bursts have occurred almost annually over the past 10 years.

According to National Weather Service, microbursts are typically small, less than two and half miles, and last only about 5 to 10 minutes, with maximum wind speeds that can exceed 100 mph. Microburst with accompanying high winds affect forested areas, utility lines and exposed property. Toppled trees can make roads impassable and disrupt power and telecommunication services anywhere in town. People living in mobile homes are especially at risk for injury and death. Even anchored mobile homes can be seriously damaged when winds gust over 80 mph.

Lightning strikes in Franklin County average between 4-6 strikes per square mile each year based on data collected by NASA satellites between 1995 and 2002. There is very little data on lightning strikes in Town. Lightning can cause wildfires, structure fires, damage infrastructure and destroy vegetation. Private properties in Georgia have experienced damages from severe thunderstorms however, no records of damage in Town is kept. Wildfire and structure fires caused by lightning would be considered extremely rare in Georgia. There are no recorded deaths from severe thunderstorms or high winds or lightning in Town. 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 State fire inspectors.

Hailstorms usually occur in Vermont during the summer months and generally accompany passing thunderstorms. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. There have been 49 recorded hail events in Franklin County between 1998 and 2018. Hail is considered a relatively infrequent occurrence. Those hail events that do occur tend to be highly localized and limited to a relatively small area and typically occur with thunderstorms

It is extremely difficult to predict where the event will occur and the type of associated structural damage. The estimated damage from a severe wind /downburst event occurring to 10% of all structures in Town with 20% damage is \$9,716,652. 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.

Table 5.10. Severe Thunderstorm (high winds, hail, lightning) Events

Date	Location	Severity Remarks / Description of Area Impacted
October 29, 2017	Counties of Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orange, Orleans, Washington and Windham	From October 29-30, a strong thunderstorm fueled by an ex-tropical storm brought damaging winds to Vermont, causing power outages and knocking trees down throughout the state. Winds reached over 70 mph at times and rain caused flooding. Estimated damages were \$4,687,401.61 across all of the involved counties.
July 18, 2008	Northern and Central Vermont	Several meteorological ingredients came together to produce a significant severe weather outbreak. This particular severe weather outbreak produced over two dozen severe weather reports, with the primary damage being caused by strong and damaging straight line wind gusts. The widespread severe thunderstorms resulted in over 20,000 customers losing power across northern New York and Vermont during the event.
June 10, 2008	Statewide	The National Weather Service issued a Tornado Watch for the state of Vermont. Little damage was reported for the Town of Georgia.
June 2, 2008	Town of Georgia and Northwestern Vermont	The National Weather Service issued a Tornado Watch for Franklin County. A powerful cold front with strong winds tracked across Lake Champlain and into Vermont during the afternoon and early evening. Power outages were scattered throughout Town as many trees and branches toppled power lines. Power was restored within 12 hours.
August 16, 2007	Town of Georgia/Franklin County	A powerful front brought damaging severe winds during the afternoon. There were brief power disruptions, downed trees and associated damages to residential property throughout Town.
February 17, 2006	Counties of Chittenden, , Franklin, and Grand Isle	On an arctic front entered the Champlain Valley of Vermont. Sustained winds of 30 to 40 mph with damaging wind gusts in excess of 60 mph moved across the region between late morning and midafternoon. There were widespread reports of trees and power lines down across. There was an estimated \$150,000 in property damages within the affected area.

October 16, 2005	Counties of Addison, Chittenden, Franklin, Grand Isle and Rutland	Strong winds from Canada swept across Vermont. There were brief power disruptions, downed trees and associated damages to residential property throughout Town. Property damage estimate were approximately \$35,000 for the 5 County area.
August 30, 2005	State of Vermont	Tropical moisture from Katrina reached Georgia. The rain was initially steady then became heavy on the following day. Rainfall totals across Franklin County were generally between 2.5 and 4 inches. No damages were reported.
July 8, 2005	State of Vermont	Tropical Storm Cindy produced heavy rain across much of the state including Georgia. Rain amounts were estimated between 1 and 3 inches with no reported damages.
September 14 – 15, 2002	Town of Georgia/Franklin County	Tropical Storms Hannah and Isidore produced winds and heavy rain in Georgia. No damages nor flooding were reported.
July 10, 2001	Town of Georgia	A strong thunderstorm with gusty winds produced large hail that fell throughout Georgia during the afternoon and early evening.
September 17, 1999	New England	Remnants of Tropical Storm Floyd moved across eastern New England. Strong winds combined with saturated soils from heavy rain resulted in trees and power lines blown down. A few boats were damaged along the shores of Lake Champlain. The strongest winds reported were 43 knots (50 mph) in Georgia and on adjacent Lake Champlain. Rainfall across the county associated with the remnants of Floyd was 3 1/2 to 4 inches.
June 29, 1998	Georgia	An estimated 3/4 inch sized hail fell in Georgia as a cold front moved through the area during the afternoon and early evening.
February 15, 1995	Franklin and Grand Isle Counties	A strong pressure gradient across the state resulted in wind gusts over 50 knots across parts of the Champlain Valley. Property damage estimates for were \$50,000.
December 26, 1993	Statewide	A strong pressure gradient developed across the state in the wake of an arctic front resulting in high winds and damage in parts of every county. Trees and tree limbs were downed resulting in significant damage in some areas. Numerous power outages were reported across the state. Property damage estimates state-wide were \$500,000.

Structure Fire

The Town Fire Department received 87 dispatch calls in 2018 of which 5 were in response to structure fires. The Fire Department also provided assistance to other Towns through Franklin County Mutual Aid. The Fire Department actively upgrades equipment through federal grant programs. The Town has mutual aid agreements in preparation for a coordinated response to structure fires in the area. Fire codes are in place and enforced by the State.

During the past few years, the numbers of fire calls responded to by the department have increased significantly. While Town-wide growth has been a factor in the increased workload, it appears to be primarily older structures which have resulted in more fire calls. The department currently has a volunteer roster of 35 persons, which has remained stable within +/- 10% for the past several years and includes both long term and new residents of Georgia. This is a positive development, as many Towns in the state are having trouble maintaining their volunteer forces. However, it is important to note that training and equipment costs have increased considerably in recent years, and that the larger force and workload has resulted in higher Town expenditures.

There are 14 hydrants in Georgia, which are for immediate response to fires and not for extended use due to capacity limitations. The Fire Department has a map of other water sources available in the case of a fire.

The greatest impact of a structure fire would primarily be on the residential sector. Older wooden historic buildings and barns that lack fire alarms and sprinkler systems are greater at risk for damages.

Estimated loss due to fire damage on 5 structures annually using median home values is \$624,000. 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.

Hazardous Material (Fixed Site and Transport)

There are eight (8) sites in Town that have sufficient types and/or quantities of hazardous materials that require reporting through 20 VSA, Chapter 1, and Public Law 99-499, 42 USC 9601 "Superfund Amendments and Reauthorization Act of 1986, Title III Emergency Planning and Community Right to Know" (see Attachment B). The largest quantities of hazardous materials used are flammable or combustible liquids: heating fuels and automotive fuels. Other types of HazMat incidents that should be anticipated at vehicle and heating fuel dispensing depots include spills, leaks, fires and explosions. Propane, in high volumes, is stored and moved frequently and can be expected to be involved in a high percentage of hazardous materials incidents. There are no Tier II Sites within the 100- or 500-year flood plain in Georgia.

Major incidents occurring on Interstate 89, US Route 7, or State Route 104A could disrupt traffic and essential services until corrective action has been completed. These corridors are identified as the most probable location of a major incident. Using the same method for a HazMat fixed-site incident (q.v.), 76 residences, commercial facilities and religious sites on VT104A; 374 residences, commercial facilities, religious sites, public gathering places, government sites, and utilities along US Route 7; and 108 residences, commercial facilities public gathering places, government sites and utilities along the Interstate 89 corridor are potentially at-risk for a HazMat transport incident. At-risk sites on US 7 include the Georgia Town Office, Town Garage / Fire Station Building, Georgia Elementary and Middle Schools, Methodist Church, Historical Society and Public Library.

Based on the recommended Public Safety evacuation distance from the 2008 Emergency Response Guidebook, a 1,000-foot circle has been drawn around HazMat storage sites. Structures inside the circle are at-risk from a fixed-site HazMat incident and may need to be evacuated or shelter-in-place if an incident occurred. There are 107 (residences, public facilities, utilities, commercial or industrial facilities) that may be impacted by fixed-site incidents.

Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Drought

While rare in occurrence, droughts have impacted residential and commercial water supplies. Reduced water flows due to drought have been short in duration. Drought can be a problem in late summer with local springs and wells reduced to minimal flows. A drought event would impact the entire community.

There are no records available regarding an extended drought in the Town of Georgia.

Droughts can pose a serious threat to the Town, especially to agriculture-based businesses, such as commercial farms and horse boarding stables, that are more directly affected by droughts. Droughts also impact local wildlife populations.

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

Loss estimates are difficult to ascertain due to lack of data. 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 extremely rare in Georgia. There is no defined area to predict where this event will happen. The Lamoille River corridor and hilltops would be susceptible. Environmental impacts would include felled trees, while business impacts would be in the form of destroyed crops. Building damages may include destroyed windows, torn roofs, and destroyed barns.

Tornado events occurred in Franklin County on June 18, 1957, June 13, 1961, August 3, 1970, and July 19, 1972. The National Weather Service issued Tornado watches for the region on June 2 and June 10, 2008. There are no recorded tornado events in Georgia.

For a tornado event, the estimated potential loss to 10% of all structures with 20% damage is \$9,716,652. The estimate does not include building contents and land values. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Earthquake

Earthquake events are rare. The two strongest recorded quakes measured in Vermont were of a magnitude 4.1 on the Richter scale. One was centered in Swanton and occurred on July 6, 1943, and the second occurred in 1962 at Middlebury. The 1962 Earthquake was felt throughout New England and resulted in broken windows and cracked plaster, while the Swanton quake caused little damage.

A HAZUS earthquake risk analysis and loss estimate was conducted at the regional level by the Vermont Geological Survey in 2004. There were five once-in-500-year quake scenarios analyzed with the closest epicenter being the Swanton scenario. The Swanton scenario was estimated to result in \$300 million dollars in damages to the state. An earthquake may affect all types of structures in the community especially older buildings and bridges. There is moderate potential for serious damage to buildings and infrastructure in older portions of Town.

There is no defined area in Town where this event will occur. There are no records of historical damages in Georgia due to earthquakes. Earthquake risk is relatively minor. Earthquakes have not caused any significant damages or loss of life. There was been no investment of public dollars to mitigate against this threat.

Structures are mostly of wood frame construction. The estimated loss of 20% of structures is \$97,166,521. Costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures are not included. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Major Fire - Wildland

Wildfire typically comes in the form of grass fires. Forest fires are rare however the fuel potential for large fires exist. The mountainous areas of Town are forested and residential structures (year-round and seasonal) could be impacted by a wildland fire. Grass fires occur in spring and early summer as fields are cleared of fall and winter debris. Lightning strikes can also cause wildfires. Wildfire suppression comes from the local Fire Department and mutual aid organizations. The Town has a Fire Warden.

Potential loss estimates are difficult to ascertain due to a lack of data on losses. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same. In Georgia, there are large tracks of forested lands along the eastern area of Town that could be at risk during sustained dry periods. To the west, there are many low-lying agricultural fields that pose a risk for significant grass fires. The entire Town has minimal wildfire protection due to the on-call basis of the Fire Department. The potential for wildfire increases with the increase of fuel loads. Structures in forested areas without adequate fire breaks or are difficult to access due to their remote nature, are more susceptible than others. A wild fire complex similar to what occurs in Florida, Texas, and western states during dry periods, has not occurred in the Town.

Terrorism/WMD and Civil Disturbance

Such events are possible in Georgia but are considered rare. Public Safety officials have participated in Vermont Homeland Security, Vermont Emergency Management, Fire Academy and Police Academy sponsor trainings related to Terrorism/WMD type events. The Vermont State Police would provide law enforcement for either a Terrorism/WMD or civil disturbance event.

The loss estimate due to this event is impossible to predict. A terrorist event would likely occur at the School or Town Office located in Georgia Center. The School has a School Response Guide which address a variety of responses to a terrorist type event such as a school shooting. The School utilizes an automated parental / guardian notification system in the event of a school closing.

6. ASSESSING VULNERABILITY

Structures in the SFHA

There are approximately 28 structures within FEMA-designated Special Flood Hazard Areas (SFHAs). Digital FIRMs are not available for Georgia. At the time of this writing, FEMA is in the process of creating D-FIRMS for the Missisquoi and Lamoille River basins. The committee estimates that approximately ten (10) of the structures are all-season single-family units, and twenty – one (18) are classified as camp/bungalow units found along the lake shore. This represents 2% of all structures in the community. There are no critical facilities located within the flood plain areas.

Repetitive Loss Properties

According to the State Hazard Mitigation Officer, the Town of Georgia has no 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.

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

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

FEMA published a flood hazard study for the Town of Georgia in 1981. Flood Insurance Rate Maps (FIRMs) were prepared by FEMA in 1981. Flood hazard areas were identified along the brooks and streams that run through the town. The FIRMs and Study are available for review on-line at FEMA.gov and at the Town Office.

Creation of the Flood Hazard District in the Town's Development Regulations enabled Georgia to be eligible for FEMA's National Flood Insurance Program (NFIP), which permits residents within the Flood Hazard District to purchase flood insurance. The purpose of the district is to prevent increases in flooding caused by development in flood hazard area, to minimize future public and private losses due to floods, and to promote the public health,

safety and general welfare. The Town is committed to enforcing floodplain regulations and ordinances to be eligible to participate in the NFIP program and protect the people and property Georgia by restricting development in flood prone areas. Georgia is a member in good standing with the NFIP (CID 500217). As of June 26, 2018, there were 11 active policies with \$2,676,400 total coverage with 9 claims made since 1978 totaling \$98,410. The Town will continue to ensure future compliance with the NFIP by making sure that local regulations meet NFIP minimums and conducting enforcement as necessary.

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

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 critical facilities identified in the Town of Georgia Hazard Mitigation Plan, listed fully in Attachment B, include shelters; government offices; hazardous materials storage sites; and the school.

Table 6.1. Market Values of Structures in Georgia

Residential Homes	1,547	\$417,032,200
Seasonal Homes	134	\$24,967,200
Mobile Homes – Unlanded	16	\$506,200
Mobile Homes – Landed	71	\$10,075,600
Commercial	50	\$28,912,400
Commercial Apts.	1	\$248,000
Industrial	21	\$24,700,500
Farm	37	\$19,009,400
Other (Utility, Electric, Utility Other, Miscellaneous)	278	\$88,572,965
Source: 2017 Town of Georgia Grand List		

According to the American Community Survey, 2013-2017 estimates, the median home value in Georgia is \$270,100.

Existing Planning and Regulatory Capabilities The Town Administrator position handles numerous administrative functions ranging from dealing with concerns and inquiries, applying for and administering grants and loans, investigating and implementing cost control measures, reviewing and responding to Selectboard correspondence, responding to state and federal requirements, reviewing expenditures and billings, and acting as liaison between town boards and citizens. The Administrator attends all Selectboard meetings and

performs whatever duties required by the Board and other duties as assigned.

The Planning Coordinator serves the Planning Commission. This involves reviewing all development proposals, attending all meetings, preparing Planning Commission correspondence, working on plans and by-laws and any other tasks required by the Commission.

The Zoning Administrator handles all zoning related issues. This involves attending all meetings of the Zoning Board, reviewing permits, issuing permits, investigating complaints, and enforcement against violations. The Town Clerk's Office has also experienced a major increase in workload over the past ten years. Deed and document recording and research, issuing various licenses, birth and death certificate recording, tax billing, concerns and general inquiries have all increased dramatically as the number of new houses, businesses and properties has increased. As mentioned before, the change from a small rural town to a more suburban town has resulted in a population more used to a higher level of services.

The Highway Department's workload has increased from past years due in large part to the increased service expectations of residents. Residents now expect their roads to be plowed sooner, and expect road surfaces to be maintained at a higher level, than they did in past years.

Emergency response is a significant issue in Georgia because of the presence of several major industries and Interstate 89. During the past few years, the numbers of fire calls responded to by the department have increased significantly due to an increase in motor vehicle accidents. The department currently has a volunteer roster of 35 persons, which has remained stable within +/- 10% for the past several years and includes both long-term and new residents of Georgia. This is a positive development, as many towns in the state are having trouble maintaining their volunteer forces. However, it is important to note that training and equipment costs have increased considerably in recent years, and that the larger workload have resulted in higher town expenditures.

How the Previous Plan was Integrated into Other Planning Mechanisms

There have been and will continue to be many efforts to improve the resiliency of the Town of Georgia since the Town formalized hazard mitigation planning efforts. The flood identification and risk section of this plan was used in the development of the 2017 Comprehensive Municipal Plan update to address the flood hazard resiliency requirement of Municipal Planning as required under state statute. It was also used to develop the stream buffer regulation within the Town's Zoning bylaws. The hazard mitigation plan was used for capital budgeting for the highway department for road infrastructure projects to reduce impacts from flooding and fluvial erosion. The plan was used in the planning process for Deer Brook watershed stormwater mitigation activities and to improve community wide disaster resilience with an emphasis on reducing flood risk to municipal, state and private infrastructure. The Plan's hazard identification and risk assessment section will also be referenced each year during the update to the Town's Local Emergency Management Plan for identifying critical infrastructure, risk areas and vulnerable sites.

Since the last mitigation plan, impacts from development on the Town's vulnerability have decreased. There have been no new or proposed developments in the flood plain or in hazardous areas. There have been no large commercial or industrial developments projects in town. The new Fire Station was built well outside of any areas of risk. Residential development has typically been single family homes. The Town has worked with the power company to ensure that trees and branches are removed along utility lines. Policies and programs are needed which manage growth rates to lessen land impacts, and to ensure that municipal infrastructure can accommodate growth.

In a growing town, community facilities and services are often in transition. Existing facilities and services become inadequate. In Georgia, it is apparent that both population growth and the increasing expectations of Georgia residents regarding community services will continue to result in facility and service expansions and improvements. While town budgets have not increased substantially, the prospect of future service and facility improvements, as well as need for new services, will undoubtedly have fiscal effects. This plan update was revised to target mitigation actions in areas of town where growth is expected.

How this Plan will Improve Existing Capabilities

The Town Emergency Management Coordinator analyzed these programs for their effectiveness and noted improvements needed. Georgia uses all of the plans listed below to help plan for current and future activities with the town. For example: The Local Emergency Management Plan has a contact list that is used for response purposes in the case of a hazard event, and is updated every year after Town Meeting. The Town Plan directs visions and goals that include Natural Resources and Land-Use decisions. In the development of this plan, the latest 2017 Town Plan was used. Town Road and Bridge Standards are followed by the town and they do an annual culvert and bridge inventory that is mapped by the NRPC. The town is compliant with the NFIP. The last time the zoning bylaws were updated, the town included Flood Hazard Area Overlay to mitigate damages from flooding and fluvial erosion hazards. The LEMP is updated yearly and was updated last in 2019.

As Georgia goes through the update process for the planning and regulatory mechanisms outlined in the table below, the Town will look to the Hazard Mitigation Plan’s Table of Actions and Risk and Vulnerability Assessments to help guide land use district decisions, and guide goals and policies for those districts. After Town Meeting every March, policies and action items in the Town Plan may be reviewed and integrated into hazard mitigation as needed. The Local Emergency Management Plan contact and resource lists should be updated after Town Meeting each year, including updates to at risk locations, as well as locations of vulnerable populations.

Updates to each of the planning mechanisms outlined Table 6.2 below are handled by the responsible party identified in the table. There is no timeframe for updating the referenced plans, agreements and regulations to better incorporate hazard mitigation, however, as each document is updated the hazard mitigation plan will be reviewed for incorporation. The goals of this hazard mitigation plan will be incorporated in the upcoming town plan update to ensure that emergency preparedness and mitigation planning efforts are included in the Town Plan, with particular attention to the projects in the Mitigation Actions Table. This ensure the Mitigation Plan is utilized and project follow-through occurs.

The following authorities, policies, programs, and resources related to hazard mitigation are currently in place and/or being implemented in the Town of Georgia. In addition to the NFIP. These programs reduce the effects of hazards to existing, new, and future buildings, infrastructure, and critical facilities by preventing their location in identified hazard areas and ensuring that infrastructure and buildings are designed to minimize damage from hazard events. The Committee analyzed these programs for their effectiveness and noted any improvements that may be needed. Other mitigation/emergency planning related documents and their status are outlined in the below table:

Table 6.2. Town of Georgia Policies and Plans

Existing Protection	Description	Effectiveness / Enforcement / Hazard that is addressed	Gaps in Existing Protection
Town Plan	Policies and vision for future land use. Adopted on Jan. 9, 2017.	Policies that provide protection and limited development in wellhead protection areas, wetlands, steep slopes, and shallow soils. Selectboard Planning Commission Zoning Administrator. Addresses: Flooding / fluvial erosion and overview of public safety.	Could expand upon disaster resiliency beyond flooding /f fluvial erosion.
Zoning and Subdivision Regulations	Land Use Regulation. Local provisions related to the division of a lot tract or parcel of land. Effective Oct. 14, 2013.	Restrictions on development in potentially hazardous areas such as steep slopes, floodplains, and waters source areas. Fire hydrants, water, sewage, public and private utilities, stormwater management, public health and safety. Restrictions on the subdivision of land and the subsequent development of the subdivided plot to ensure that it can be used safely for building purposes with danger to health or peril from fire, flood or other menace. Zoning Administrator, Development Review Board, Selectboard. Addresses: All hazards.	None found. Stream buffers included.
Local Emergency Management Plan	Summary of response and notification procedures. Identifies hazard areas. Updated annually.	Evaluates hazards. Outlines a response plan Selectboard Chair EM Coordinator. Fire Chief. Addresses: All-hazards.	Lacks disaster recovery annex.

	Last updated Apr. 2019.		
Municipal Road and Bridge Standards	Conveyed to and maintained by the Town of Georgia as TH and to Upgrade class 4 Town Roads July 8, 2019	Set of standards for what you have to do to construct roads, and upgrade i.e. Class 4 including maintenance requirements. Road Commissioner Road Foreman Addresses flooding / fluvial erosion, severe winter storms / ice storm, severe thunderstorms.	None found.
Franklin County Mutual Aid Agreement	Franklin County Mutual Aid. 2007. Updated 2017.	Resource assistance from municipal and first response agencies through the county during an emergency event. Selectboard Chair Fire Chief Addresses: All-hazards.	Lacks mutual aid resource inventory but could be added from information contained with LEMPs in County.
School Emergency Response Plan	School Crisis Guide 2018	Responses by various type of emergency incident. Supervisory Union School Board Law Enforcement Fire Chief Principal Addresses: Terrorism/WMD, Civil Disturbance.	Needs updating.

Through current plans, policies and mitigation actions, Georgia is working to decrease damages from severe winter storms (ice storms), floods (fluvial erosion) and severe thunderstorms (high winds, lightning, hail).

Flooding and Development Regulations

The Town of Georgia has adopted floodplain regulations in order to protect the health, safety, and welfare of its residents and to allow the community to participate in the National Flood Insurance Program (NFIP). In 1987 the Town established an ordinance for special flood hazard areas. The purpose of this bylaw is:

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

The Town Zoning Administrator is responsible for monitoring compliance with the NFIP.

River Corridor Regulations

The Town of Georgia does not have River Corridor regulations. However, it does have adopted riparian buffer zone regulations. These regulations include a 200-foot setback from Deer Brook and a 50-foot setback from all other named rivers and streams

7. MITIGATION STRATEGY

The following hazard mitigation goals are adopted by Georgia:

Hazard Mitigation Goals

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

Town Plan (Adopted January 9, 2017) Goals That Support Hazard Mitigation

- To encourage the provision of housing that is safe, sanitary, energy efficient, and located appropriately.
- To maintain a sound fiscal balance for the Town, to encourage reasonable, functional, orderly development of facilities, utilities and services, and to promote the continued health of agriculture while providing a stable economic base for the other sectors of the economy.
- To provide a safe, efficient, cost effective transportation network to meet the varied needs of the residents of the Town.
- To protect, preserve and maintain Historic sites and structures in the Town of Georgia.
- To encourage the reduction or mitigation of negative impacts of development on noteworthy scenic features.
- To consider geologic factors in future planning.
- To protect private and public investment and maintain the natural environment through the consideration of topography and geology when determining land use.
- To consider climactic factors and to protect the quality of the air when planning for future development.
- To maintain, improve, and protect the quality of Georgia’s water resources, including groundwater and surface water.
- To encourage the protection of fragile, unique and sensitive areas from the adverse effects and encroachments of development.
- Development and growth in Georgia should occur at a rate which can be accommodated by reasonable expansion and/or improvement of facilities and services.
- To promote the use of renewable energy sources, where appropriate

Existing Hazard Mitigation Programs, Projects and Activities

The ongoing or recently completed Mitigation Strategies are listed by hazard.

Flooding (Fluvial Erosion)

- The Town has Zoning Bylaws which designate a Flood Hazard District with the objective of minimizing future public and private losses caused by development in flood hazard areas. The Town participates in the National Flood Insurance Program (NFIP).
- Flood Hazard Areas in Georgia are identified on Flood Hazard Boundary Maps (FHBMs) and Flood Insurance Rate Maps (FIRMs) produced by FEMA. The purpose of these districts, which are located along the flood plains of rivers and streams throughout the Town, is to prevent increases in flooding caused by excessive development of lands within flood hazard areas.
- Phase I and II Stream Geomorphic Assessments were conducted for Deer Brook, Mill River, Rugg Brook and Stonebridge Brook watersheds in 2006 following Vermont Agency of Natural Resources standards.
- Flood Erosion Hazards maps were developed from Phase II Geomorphic Assessments, 2007.
- Road Erosion Inventory conducted in 2018.

- Town participates in the Municipal Roads General Permit Program whose goal is to implement Best Management Practices on segments of road that are at risk of erosion and are within 1,000' of surface waters.
- Replaced and upgraded culvert pipe to box culvert (4' x 6') to reduce flooding and bank erosion on TH13 (Conger Road) with funding the Vermont Bridge and Culvert Program.
- Replaced and upgraded box culvert on TH#4 (Oakland Station Road) with funding through Vermont Bridge and Culvert Program, 2003.
- Replaced and upgraded culverts along TH#36 (Georgia Mountain Road) with funding through FEMA, 1993.
- Replaced and upgraded culverts along TH#1 (Arrowhead Lake Road), 1998.
- Upgraded drainage system (culverts, seeding and road shoulder stabilization) along TH#25 (Silver Lake Road), 2004.
- Upgraded drainage (culverts, seeding and ditch stabilization) on intersection of TH#6(Mill River Road) and TH#3 (Georgia Shore Road) in 2008.
- TH#1 (Georgia Mtn Road) turnouts and drainage improvements 2011-2017.
- Mill River riverbank stabilization at intersection of TH#6 (Mill River Road) and TH#3 (Georgia Shore Road) in 2012.
- TH#27 (Bradly Hill Road) drainage and ditching and slope stabilization to reduce flooding and erosion impacts 2017.
- TH#43 (Stone Bridge Road) drainage and ditching to reduce flooding and erosion impacts 2019.
- Ditch and culvert maintenance (debris removal, upgrades, etc.) are conducted on an annual basis.

Severe Winter Storms (Ice Storm)

- Town Highway Department has snow removal equipment.
- Shelter agreement between Georgia Elementary and Middle School and the American Red Cross.
- Road crews have response equipment to deal with downed trees and branches.
- Fire Department encourages citizens to sign-up for VT-Alert for emergency notification of hazardous weather events.

Severe Thunderstorms (High Winds, Hail, Lightning)

- Town Highway Department and Fire Department have debris removal equipment.
- Georgia Middle and Elementary Schools have NOAA weather radios.

Structure/ Wildland Fire/ Hazmat

- New fire station constructed in 2011.
- Semiannual ISO inspection.
- Fire fighter personal protection equipment upgrades through Federal grant programs.
- Upgrades to firefighting offensive and defensive equipment through Federal grant programs.
- Fire fighter training through Vermont Fire Academy and Emergency Management Institute.
- Member of Franklin County Mutual Aid.
- Members attend NIMS/ICS Training meet state NIMS strategy as appropriate.
- Department communications equipment programmed for interoperability following Vermont's Communication Plan strategy.
- Fire department members trained in responding to HazMat incidents including HazMat awareness level training.
- Town maintains active membership in Local Emergency Planning Committee District 4.
- Town is a member of the Northwest Solid Waste District.

On-going

- Town applies for state grants (Local Roads Grants in Aid, VAOT Structures Programs) to address road upgrade projects to mitigate damages from flooding and fluvial erosion.
- On-going regularly scheduled road maintenance programs (cutting trees and limbs away from power lines)
- Annual updates of Emergency Management Plan.
- Town continually works towards achieving compliance with State NIMS strategy including having municipal staff and elected officials, as appropriate, attend ICS training.
- Continue to equip, as appropriate, emergency operations shelters.
- Regular maintenance of Town fleet and emergency equipment.
- Community participates in the Vermont Enhanced 911 System Program.
- On-going, regularly scheduled Town Highway maintenance programs (culvert survey & replacement, ditching along roadways, cutting vegetation to allow visibility at intersections).
- School has updated State School Response Guide to handle variety of emergency situations.
- School Board proactive in addressing school safety issues.

Through current plans, policies and mitigation actions, Georgia is working to decrease damages from flooding, severe winter storms (ice storms), severe wind / downbursts and fluvial erosion/landslides. Other less hazardous risks are also being addressed. It is a goal of the Town of Georgia to reduce the risk of all hazards affecting the community.

Identified Hazard Mitigation Programs, Projects and Activities

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

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

Mitigation actions are listed in terms of mitigating threat or risk to public health and safety, reduction of hazard to community assets, adherence to Town plan and local ordinances, cost, and feasibility. Actions 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.

The following identified programs, actions and activities are future mitigation strategies for the Town of Georgia. These mitigation strategies have been chosen by the town as the most appropriate policies and programs to lessen the impacts of potential hazards.

Cost-Benefit Analysis

Each project will incorporate a full benefit-cost analysis (BCA) following FEMA’s BCA methodology and latest software to ensure cost effectiveness and maximize savings.

There was a rough cost/benefit analysis done for each project listed in the table. The below cost and benefits tables address the priorities for the mitigation strategies that are stated in the Mitigation Actions Table.

Cost Estimates

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

Benefit Estimates

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

Time Frame

Short term	6 months to one year
Medium term	1-3 years
Long term	4+ years

Implementation of the mitigation actions is summarized in the below table, as far as who, when and how they will be carried out. Further details about some actions can be found following the mitigation actions table, in text.

Table 7.1. Implementation Schedule for Prioritized Mitigation Projects

Table 6.2 – Mitigation Actions						
Priority Score	Mitigation Action / Hazard Addressed	Responsibility/ Oversight	Funding Source	Timeframe	Cost / Benefit	Status
High 36	Upgrade Bridge 28 on Mill River Road Flooding (Fluvial Erosion)	High	State Structures/ VT Better Roads Grant / Grants-In-Aid Grant/ Local	Medium Term. May 2021 start to Aug. 2021 finish.	High / High	Hydraulic study completed. Engineering done. Seeking grant funding.
High 36	Bovat Road Culvert Upgrades Flooding (Fluvial Erosion)	Selectboard, Road Foreman	State Structures/ VT Better Roads Grant / Grants-In-Aid Grant/ Local	Short – term. Jan. 2020 start to July 2020 finish	Medium / High	Hydraulic study completed. Engineering done. Seeking grant funding.
High 36	Reynolds Road culvert upgrade Flooding (Fluvial Erosion)	Selectboard, Road Foreman	State Structures/ VT Better Roads Grant / Grants-In-Aid Grant/ Local	Short – term. Jan. 2020 start to July 2020 finish	Medium / High	Hydraulic study completed. Engineering done. Seeking grant funding.

Medium 34	Arrowhead Mtn. Road stabilization Flooding (Fluvial Erosion)	Selectboard, Road Foreman	State Structures/ VT Better Roads Grant / Grants-In- Aid Grant/ Local	Medium – term May 2021 start to Aug. 2021 finish.	High / High	Need engineering/design. Permitting. Seek funding.
Medium 34	Georgia Mountain Road – Address gully erosion that is occurring at bottom of road. Flooding / Fluvial Erosion	Selectboard, Road Foreman	State Structures/ VT Better Roads Grant / Grants-In- Aid Grant/ Local	Medium – term May 2021 start to Aug. 2021 finish.	High / High	Need engineering/design. Permitting. Seek funding.
High 36	Community Education: How to Prepare for Severe Winter Conditions Severe Winter Storm (Ice Storm)	Fire Chief	Local	On-gong	Low / High	September is National Preparedness Month. Fire Academy, FEMA and Red Cross have winter preparedness education materials that could be the basis for community messaging.
High 36	Support Power Utility Efforts to Protect Utility Corridors (tree / branch removal). Severe Winter Storm /Ice Storm, Severe Thunderstorm (High Wind, Lightning, and Hail)	Selectboard	Local	Long Term Start: Jan. 2020 End: Dec. 2025	Low / High	Support power utility standards of in identifying utility corridors in need of tree pruning.
High 36	Protect Critical Facilities and Infrastructure from Lightning Damage Severe Thunderstorm (High Wind, Lightning and Hail)	Selectboard, Highway, Road Foreman,	Town Budget	On-going support	Low/ High	Install lightning protection and surge suppression protection on critical facility on electronic equipment.

The following is a summary of each mitigation project identified by Georgia:

Bovat Road Culvert Upgrades – There are two culverts that are undersized and contribute to flooding along the road. The first culvert is 4 ft. culvert x 50 ft. long. The bottom of the culvert has deteriorated. A 20’ box culvert is recommended to handle any surge from the beaver ponds upstream. The second culvert is an 18” culvert that is undersized and should be upgraded to 24” to properly channel water away from road. The area has been problematic from flooding and erosion.

Reynolds Road culvert upgrade – Flooding along Reynold Road is due in part from an undersized culvert located approximately 75’ from intersection with Route 7. The existing 6’ culvert should be upgraded to a 9’ culvert according to the hydraulic study. What’s left of the road shoulders in the area show signs of erosion.

Arrowhead Mtn. Road stabilization – Flooding and fluvial erosion along this section of road has from Arrowhead Mountain Lake has impacted the road shoulder. The road shoulder needs to be stabilized to prevent further damage. This road is used heavily for commuter access to the Husky Manufacturing Plant in the Town of Milton.

Georgia Mountain Road, Address gully erosion that is occurring at bottom of road – Area at the bottom of the road above Lamoille River has evidence of gully erosion. The Town has been working to mitigate erosion occurring along the road. This will also help reduce sediment from entering into the Lamoille River.

Community Education: How to Prepare for Severe Winter Conditions - Using social media (Facebook, Front Porch Forum, Town website, direct mailings, and local newsprint) the Town Fire Department will publish information to educate the public on winter storm preparedness. The Department will utilize existing materials developed by the American Red Cross, FEMA and State Fire Marshall’s Office regarding safe operation of emergency generators, safe winter driving tips, maintenance of chimneys, and carbon monoxide safety. This campaign will be done annually.

Support Power Utility Efforts to Protect Utility Corridors (tree / branch removal) - This action will reduce a long-term vulnerability for the Town. The utility lines are privately owned; however, the Town will support the power company’s utility line and corridor tree pruning program in order to protect power lines. Trees or branches that are a concern to impact utility lines will be reported to the power company. The power company has improved upon their line corridor tree pruning program to reduce the impacts of ice storms and falling trees/branches in recent years.

8. PLAN IMPLEMENTATION, MONITORING AND EVALUATION

Monitoring and Updating the Plan – Yearly Review

Once the plan is approved and adopted, the Selectboard in Georgia, along with interested and appointed volunteers and stakeholders, will continue to work with staff at the Northwest Regional Commission to monitor, evaluate, and update the plan throughout the next 5-year cycle. The plan will be reviewed annually at the April Selectboard meeting along with the review of the town’s Local Emergency Management Plan (LEMP), once it is created. During the annual review, the Selectboard will evaluate the plan effectiveness at achieving its stated purpose and goals. This meeting will allow town officials and the public to discuss the town’s progress in implementing mitigation actions and determine if the town is interested in applying for grant funding for projects that can help mitigate future hazardous events; e.g., bridge and culvert replacements, road replacements and grading, as well as buying out any repetitive loss structures that may be in the Special Flood Hazard Area, and revise the plan as needed. Northwest Regional Commission’s staff will assist the Georgia Selectboard with this review, as requested by the Town. Progress on actions will be kept track using a table the NRPC will provide to the Selectboard to update. There will be no changes to the plan, unless deemed necessary by the Town. If so, the post disaster review procedure will be followed.

Plan Maintenance (5 Year Update and Evaluation Process)

The Hazard Mitigation Plan is dynamic and should not be static. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan should be updated every five years in accordance with the following procedure:

The Georgia Selectboard will appoint a team to convene a meeting of the hazard mitigation planning committee. The team will include a Georgia Emergency Management Director who will chair the meeting. Others members should include local officials such as Selectboard members, Town Administrator, Town Planner, ad Commissioner, Health Officer and interested stakeholders. The Emergency Management Director will work with the Northwest Regional Planning Commission staff and be the point person for the Town.

The NRPC staff will guide the Committee through the update process. This update process will include several publicly warned meetings. At these meetings, the Committee will use the existing plan and update as appropriately guided by the NRPC staff to address:

- Update of hazard events and data gathered since the last plan update.
- Changes in community and government processes, which are hazard-related and have occurred since the last review.
- Changes in community growth and development trends and their effect on vulnerability.
- Progress in implementation of plan initiatives and projects.
- Incorporation of new mitigation initiatives and projects.
- Effectiveness of previously implemented initiatives and projects.
- Evaluation of the plan for its effectiveness at achieving its state purpose and goals.
- Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report, and their effect on capabilities of the town.
- Evaluation of hazard-related public policies, initiatives and projects.
- How mitigation strategy has been incorporated into other planning mechanisms.
- Review and discussion of the effectiveness of public and private sector coordination and cooperation.

From the information gathered at these meetings, along with data collected independently during research for the update, the NRPC staff will prepare and update a draft in conformance with the FEMA Local Hazard Mitigation Plan Review Tool document.

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

The changes will be incorporated into the Plan by NRPC staff.

The Selectboard will notify the public that the draft is available for public comment and review. The Town will advertise and make available the draft plan for comments both electronically and in hard copy. The draft plan will be distributed electronically to neighboring municipalities.

Public comments will be incorporated by NRPC staff. The final draft will be provided to the plan development participants and town staff for final review and comment with review comments provided to the Emergency Management Director and incorporated into the plan.

The NRPC staff will finalize the plan, with any remaining comments from the plan participants and town staff incorporated, and then submitted electronically to DEMHS State Hazard Mitigation Officer (SHMO) who will then submit to FEMA Region 1.

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

SHMO and FEMA comments will be addressed in the Plan by NRPC staff.

The Plan will be resubmitted as needed until the plan is approved pending adoption by State/FEMA Region 1. Once the plan is approved by State/FEMA, it will be ready for adoption.

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

The final adopted plan will be submitted by NRPC staff to VEM and FEMA.

FEMA will issue final approval of the adopted plan.

Continued Public Involvement

The Georgia Selectboard is dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. Copies of the plan will be kept at the Town Office. The existence and location of these copies will be publicized in the media (newspaper, web sites, Town Annual Report, etc.) In addition, any proposed changes will be publicized in the media.

Programs, Initiatives and Projects Review

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

The Town of Georgia should incorporate elements of this plan, such as identified projects, into capital planning initiatives and annual budget reviews during Town Meeting.

Post-Disaster Review/Update Procedure

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

Within six months of a declared emergency event, the town will initiate a post disaster review and assessment. Members of the State Hazard Mitigation Committee will be notified that the assessment process has commenced.

This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation projects effectively lowered community vulnerability/damages. New mitigation projects will be discussed, as needed.

A draft After Action Report of the review and assessment will be distributed to the hazard mitigation committee.

A meeting of the committee will be convened by the Selectboard to make a determination of whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed to local communities.

If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on the recommendations and forwards to the Selectboard for public input.

The Selectboard adopts the amended plan after receiving approval-pending-adoption notification from FEMA.

Attachment A

Hazard Identification and Risk Assessment

Town of Georgia

Hazard	Impacted Area (% Community Affected)	Frequency Of Occurrence	Consequence of Occurrence				Total
			Health & Safety	Property	Environment	Economic	
Flooding / Fluvial Erosion	2	5	1	2	2	2	45
Severe Winter Storm (Ice Storm)	3	5	1	1	1	3	45
Severe Thunderstorms (High Winds, Hail, Lightning)	3	5	1	2	1	1	40
Structure Fire	1	5	1	1	1	2	30
Hazardous Materials	1	4	1	1	2	1	24
Drought	3	1	1	1	2	2	9
Tornado	1	1	1	1	1	2	6
Earthquake	1	1	1	1	1	2	6
Major Fire – Wildland	1	1	1	1	1	1	5
Civil Disturbance	1	1	1	0	0	2	4
Terrorism / WMD	1	1	1	0	0	2	4
Extreme Cold	1	1	0	0	0	0	1
Extreme Heat	1	1	0	0	0	0	1
Hurricane	1	0	0	0	0	0	1
Infectious Disease Outbreak	1	0	0	0	0	0	1
Invasive Species	1	0	0	0	0	0	1
Rock Cuts	1	0	0	0	0	0	1
Nuclear Power Plant Failure	1	0	0	0	0	0	1

Rockslide/Landslide 225

Attachment B

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

Facility Name or Facility Designation	Facility Owner	Function	Street or Location
Ascension Church	Rev. Francis E Connors	Religious Facility	Route 7
Georgia Elementary School	Principal: Frank Calano	Education Facility, Hazardous Materials Storage Facility	4416 Ethan Allen Highway
Georgia Fire Department	Town of Georgia	Government Facility	Ethan Allen Highway
Georgia Market/Shell	RH Carr Associates	Hazardous Materials Storage Facility	962 Ethan Allen Highway
Northwestern Urgent Care	Northwest Medical Center	Health Care Facility	927 Ethan Allen Highway
Northwest VT Solid Waste District	Northwest VT Solid Waste District	Solid Waste Center	158 Morse Drive
Georgia Plains Baptist Church	Rev. Charlie Kuthe	Religious Facility	Stonebridge Road
Georgia Public Library	Town of Georgia	Government Facility	1697 Ethan Allen Highway
Georgia Town Garage	Town of Georgia	Government Facility	65 Plains Road
Georgia Municipal Offices	Town of Georgia	Government Facility	47 Town Common Road
Georgia United Methodist Church	Rev. Henry James	Religious Facility	Route 7
Maplefields at Georgia	R.L. Vallee	Hazardous Materials Storage Facility	1207 Ethan Allen Highway
Perrigo Nutritionals	Perrigo, LLC	Hazardous Materials Storage Facility	147 Industrial Park Road
VELCO Substation (Georgia)	VELCO, Inc.	Energy facility or System Hazardous Materials Facility	876 Sand Hill Road
Vermont Agency of Transportation Garage	State of Vermont	Hazardous Materials Storage Facility	380 Ballard Road
Vermont Gas Substations (2)	Vermont Gas Systems, Inc.	Energy facility or System Hazardous Materials Facility	Sandy Hill Road and Plains Road
Yankee Corporation	Jim Bryce	Hazardous Materials Storage Facility	125 Yankee Park Road

**Attachment C
Town of Georgia Project Priority Matrix**

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

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

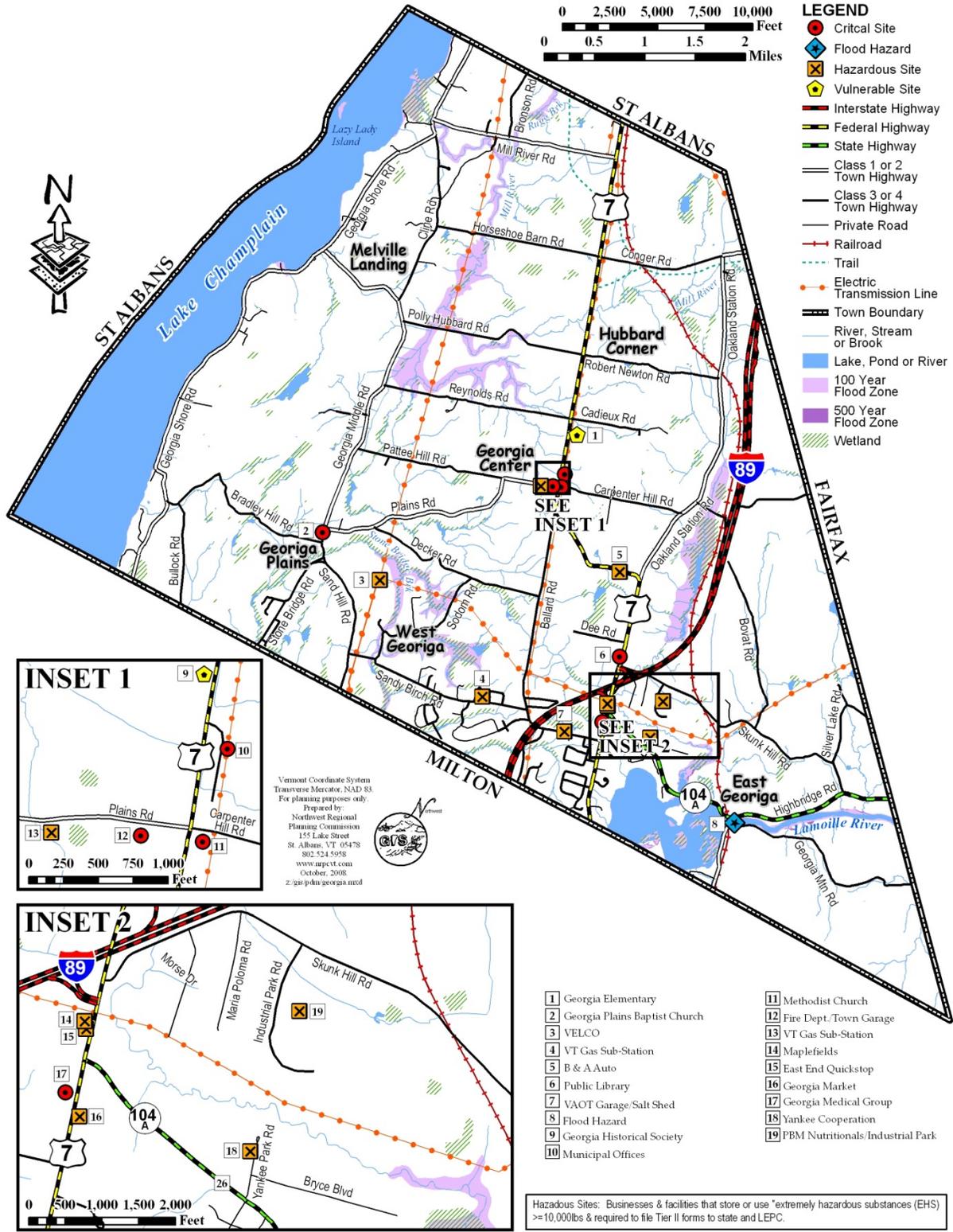
	Projects	Criteria												Total Score
		1	2	3	4	5	6	7	8	9	10	11	12	
Mitigation Action	Upgrade Bridge 28 on Mill River Road	3	3	3	3	3	3	3	3	3	3	3	3	36
	Bovat Road Culvert Upgrades	3	3	3	3	3	3	3	3	3	3	3	3	36
	Reynolds Road culvert upgrade	3	3	3	3	3	3	3	3	3	3	3	3	36
	Arrowhead Mtn. Road stabilization	3	3	3	2	2	3	3	3	3	3	3	3	34
	Georgia Mountain Road – Address gully erosion that is occurring at bottom of road.	3	3	3	2	2	3	3	3	3	3	3	3	34
	Community Education: How to Prepare for Severe Winter Conditions.	3	3	3	2	3	3	3	3	3	3	3	3	35
	Support Power Utility Efforts to Protect Utility Corridors (tree / branch removal).	3	3	3	3	3	3	3	3	3	3	3	3	36
	Protect Critical Facilities and Infrastructure from Lightning Damage	3	3	3	3	3	3	3	3	3	3	3	3	36

Attachment D Public Government Participation

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

- Town of Georgia Select Board
- Town of Georgia Emergency Management
- Town of Georgia Highway Department
- Northwest Regional Planning Commission
- Local Emergency Planning Committee #4 (Franklin County)
- Georgia Volunteer Fire Department
- Georgia Rescue
- Northwest Regional Planning Commission
- Franklin County Sheriff's Office
- Vermont Department of Transportation District 8
- Vermont Emergency Management
- Vermont Agency of Natural Resources
- Vermont Fire Academy
- Northeast States Emergency Consortium
- Federal Emergency Management Agency
- National Weather Service
- National Oceanic Atmospheric Administration
- Vermont Geological Survey

Attachment E
Town of Georgia Hazard Mitigation Map



Attachment F References

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