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

FEMA

JUL 24 2018

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

Dear Ms. Oates:

We would like to acknowledge the Town of South Hero and the State of Vermont for their dedication and commitment to mitigation planning. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I Mitigation Planning Team has completed its review of the Town of South Hero, Vermont Hazard Mitigation Plan 2018 and determined it meets the requirements of 44 C.F.R. Pt. 201.

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

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

The Town of South Hero, Vermont Hazard Mitigation Plan 2018 must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of July 16, 2018** in order to maintain eligibility for mitigation grant funding. We encourage the Town to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

JUL 24 2018

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Melissa Surette at (617) 956-7559.

Sincerely,

Douglas F. Wolcott Jr.
Acting Deputy Regional Administrator

PFF: ms

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

Enclosure

Town of South Hero, Vermont
HAZARD MITIGATION PLAN
2018

Approved Pending Adoption by FEMA: June 25, 2018
Adopted by the Town of South Hero Selectboard: Date: July 9, 2018
FEMA Final Approval: July 16, 2018

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Enclosure

Resolution to Adopt the South Hero Hazard Mitigation Plan

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

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

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

And whereas, 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 South Hero Select Board hereby adopts the 2018 South Hero Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

Date: July 9 2018

Jonathan Shaw - Selectboard Chair

Skip Brown - Selectboard

Anne Zolotas - Selectboard

Sharon Roy - Selectboard

David Carter - Selectboard

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

Project Steering Committee

Jonathan Shaw – South Hero Selectboard
John Beaulac – South Hero Road Foreman
Martha Taylor-Varney – South Hero Zoning Administrator/Selectboard Assistant

Project Coordinator:

Taylor Newton – Northwest Regional Planning Commission

Project Participants:

Town of South Hero Selectboard – Jonathan Shaw, Skip Brown, Anne Zolotas, George Rice, and David Carter
Northwest Regional Planning Commission – Taylor Newton, Senior Planner

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

1. INTRODUCTION

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 South Hero 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. 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. The national mission of Emergency Management is prevention, protection, response, recovery, and mitigation.

Hazard mitigation 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

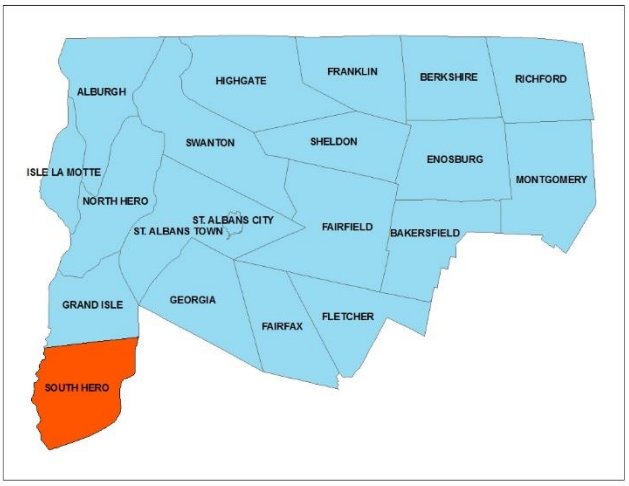
The purpose of this Hazard Mitigation Plan is to assist the Town of South Hero in identifying all hazards facing the county and their community and identify strategies to begin reducing risks from identified hazards. Once adopted, the local mitigation plan is not legally binding; instead, it outlines 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 focusi initiatives whose importance has been ranked.
- Connect hazard mitigation planning to community planning where possible.

Figure 3.1 – Northwest Region

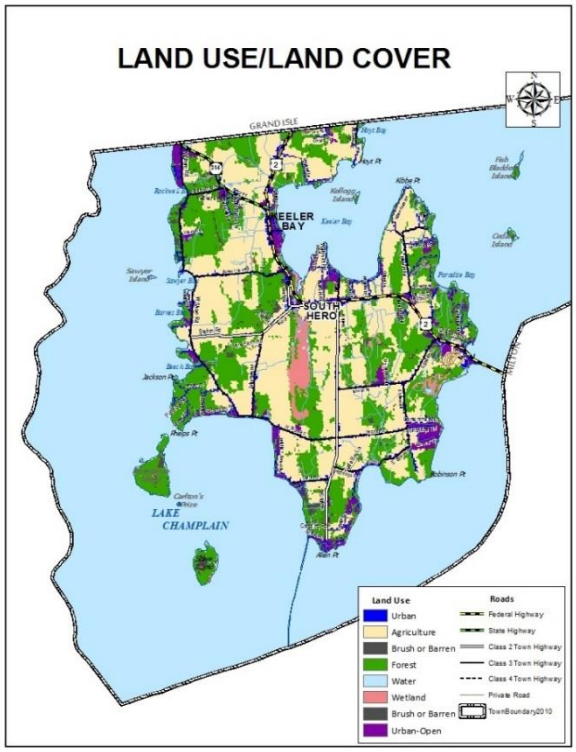


3. COMMUNITY PROFILE

The Town of South Hero is located in the southernmost part of Grand Isle County (44° 38' W, 73° 18'N). South Hero is one of the Lake Champlain islands with Grand Isle to the north and the lake surrounding all other sides. The total area of the town is approximately 9,154 acres or 14.3 square miles. The population of the community is 1,543 according the 2015 American Community Survey.

As an island in Lake Champlain, South Hero is a special place. There are many features of the island that are unique and are essential to the Town's character. Among them are broad scenic views of farm fields, the lake, the Adirondack Mountains to the west and the Green Mountains to the east, broad wetlands, natural areas and fossil sites, wildlife habitat, the lake shoreline and the outer islands. Driven by a beautiful lakeshore, a thriving tourist business economy grew up over a century ago, resulting in a strong seasonal increase in population and a large number of summer homes and camps dotted along the lake. More recently, South Hero has become a bedroom community for workers employed in nearby Chittenden County and across the lake in New York. A significant number of the old seasonal camps and cottages have already been converted to year-round dwellings.

Figure 3.2 – Existing Land Use/Land Cover



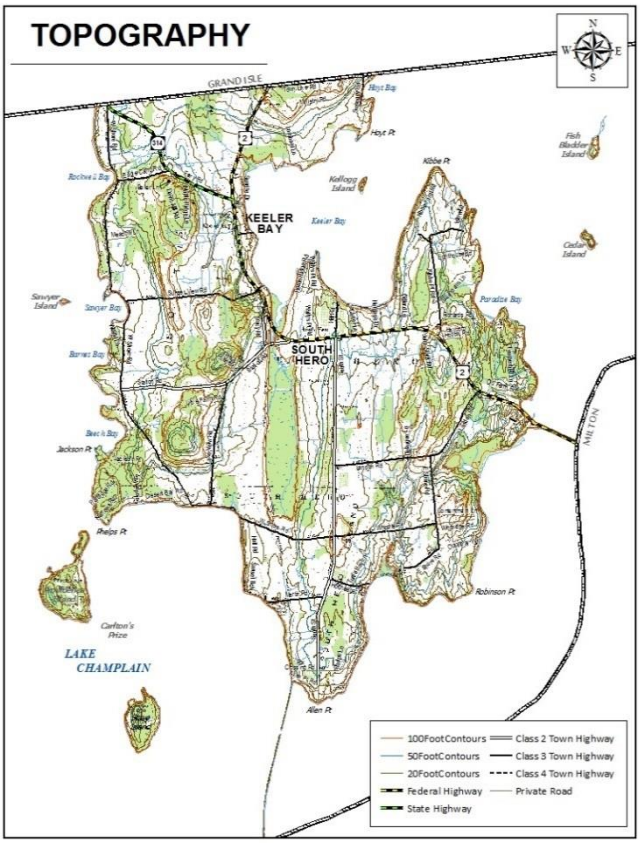
For the most part, the Town's rural character and small New England village appeal is still healthy and strong. The two village areas are South Hero and Keeler Bay. They have withstood the pressure of modernization and strip malls. Agriculture and Agrotourism are important segments of South Hero's economy. Farms provide jobs, products and markets for residents and contribute to the scenic beauty and open spaces of the Town.

<u>Existing Land Use</u>

As of 2016, there were a total of 9,154 acres of land in South Hero divided into 1,243 parcels, averaging 7.36 acres. Nearly one half of the land in Town is used for agriculture (although much of this land is not designated as agriculture on the Grand List). Most of the land is used for permanent residences (42.2 percent of all acreage); an additional 13.5% of the land is used for vacation homes. Thus, residences use just over 55% of the land in the Town.

The largest single land use in the Town of South Hero is farming. (More land is designated as residential according to the 2016 Grand List, but often only a portion of those parcels are used for housing.) There are 22 farms in the town, not including part time or hobby operations. There are 15 animal farms (not including dairy farms), 5 dairy farms, 15 hay farmers, 2 orchards, 2 vegetable farms, 2 horse farms, 1 vineyard and 1 nursery. Many farming operations utilize their land for several uses, and in some cases by several farmers. Of the 4,345 acres in South Hero used by farmers, approximately 2,625 are owned and 1,720 are rented. Agriculture and Agrotourism are an important segment of South Hero's economy.

Figure 3.3 – South Hero Topography



Permanent Residences: Over 73% of the land that is in permanent residential use is in ten acre or greater lots. However, only 130 out of 556 residential parcels are ten acres or more. The average lot size of the 469 lots that are less than ten acres is 2.07 acres.

Commercial Uses: There are 37 commercial parcels of land in the Town; however, this figure does not include businesses that are not reported on the Grand List, such as home businesses, or farms.

Farms: Over 4,345 acres, or nearly one half of the land in South Hero is farmed. However, farmers only own about 58% of this land. Three farmers use close to 1,720 acres or nearly 40% of all the farmland. Six farmers lease at least some land, estimated to total 1,612 acres.

Forested Land: South Hero has scattered areas of forested land, including mature forests, wetland forests, and young forests that are growing up from old farm fields or pastures. The Land Use/Land Cover Map shows forested areas (Map #). The large tracts of forest land shown on the map include small open non-forested areas and young forests that were once hay fields or pasture. Unlike most of Vermont the Lake Champlain islands support growth characteristic of Central Woodlands, such as shagbark hickory, basswood, black walnut, and red and white cedar.

Lake Front: In 2003, about 39%, or 473, of all parcels of land in South Hero have some lake frontage. Most (254) of the parcels that have lake frontage are vacation residences; another 181 parcels are permanent residences. There are another 51 lakefront parcels that are "unimproved", but some of these are used for agriculture.

Village Areas: In 2000, the Village Working Group was formed to "Develop a vibrant village, where all can live and travel safely." Through the use of VT Transportation Grants, they continue to develop and implement traffic calming techniques in the SH villages. The Planning Commission is currently working on implementing new zoning standards for the village areas.

<u>Future Land Use</u>

Residential Development: The predominant land use trend in South Hero is residential subdivision. In the future houses should be located throughout the Town in accordance with Town standards. The major factor affecting

residential use will be the capability of land for sewage disposal. While this land pattern is recognized as wasteful of resources, until approvable innovative, alternative sewage disposal systems are found, it will predominate. Measures, including conservation easements, should be applied on 10+ acre lots to protect resources, particularly prime agricultural soils and to enable farming to continue wherever possible. Steps should be taken to cluster residential development where good soils can be found. The South Hero Development Regulations enables the use of Planned Unit Developments (PUDs), which allow for clustered development and the protection of open space. Residential development at higher densities is also appropriate in the villages. All residential uses should compatibly coexist with prime agricultural land, wetlands, natural areas, shorelines, flood plains, and scenic areas wherever possible, through clustering and use of conservation easements to protect resource areas.

Seasonal Home Conversions to Year-Round Use: The seasonal home community is important to the character of the Town of South Hero. Places that once were only occupied in the warmer months are now occupied year-round. Conversions in places where there is a dense pattern of seasonal homes along the shoreline and where soils for septic systems are poor and road access is limited need attention. To protect water quality of the lake, to enable safe and efficient access to properties, and to protect the scenic beauty and fragile character of the shoreline, the Town will take measure to insure properly functioning septic systems, year-round road access for emergency vehicles and maintain adequate lake shore and yard setbacks.

Villages: The villages of South Hero and Keeler Bay are compact centers for shops, services, low impact industry, offices, tourist services, places of worship, municipal offices and facilities, the museum, the school and homes. They serve as gathering places for a variety of community events and activities. To enable continued growth in the villages, safe alternatives for sewage disposal must be found. In addition, extensions to the water supply system may be considered. Traffic on Route 2 must be controlled in the villages for the safety of pedestrians and to protect the character of these areas. Historic resources contribute to the character of the villages; new development should recognize these resources and use them in a productive and compatible way. Outside of the villages rural countryside will prevail. Future revisions of the South Hero Development Regulations may create village zoning districts which would enable higher density development and encourage commercial uses in the village areas.

Commercial and Industrial Development: Commercial and Industrial Development should be of a scale and impact appropriate for the Town's rural character. Commercial services, retail shops, offices, light industries, agricultural operations, and home businesses and industries are encouraged in the Town. Most commercial and industrial uses will be encouraged in or adjacent to the villages, however the particular use will determine the appropriate location. Commercial and industrial uses outside these areas will have higher standards to meet and will have to show how they will protect the scenic beauty of the entrances to the Town and will be compatible with the resources that the Town is trying to protect. Home occupations will be encouraged throughout the Town provided they fit in with the surrounding neighborhood. All uses must demonstrate that they have adequate road access and all uses requiring a Wastewater and Potable Water Supply Permit shall receive a certificate of occupancy from the Administrative Officer before using or occupying premises.

Agricultural Development: Farms of all types are encouraged to remain on prime agricultural soils in the Town of South Hero. The best locations for farms are designated as prime agricultural land. The Town encourages compatible home occupations on farms, such as farm stands, value added agriculture enterprises, storage operations in barns, and bed and breakfasts. When a farm designated as prime agricultural land is proposed for subdivision, the Town will work with the owner/developer to locate house sites in a way that protects as much of the prime agricultural land as possible.

The character of South Hero's soils, topography, geology, and ground and surface water will influence the future growth and development of the Town. U.S. Soil Conservation Service Soil Survey maps provide valuable information on soils, slopes, geology, ground water, resource potential and wetlands.

Population

The US Census American Community Survey estimated that the population of South Hero was 1,538 in 2016. There were 1,046 total housing units in 2016, of which 519 are owner-occupied, 139 are renter-occupied, and 339 are vacant or seasonal. Most housing units were counted as single units (87.7%).

Energy

Vermont Electric Cooperative, Inc. provides the electrical service to the Town and to one of the out islands - Providence Island. Other out islands use generators or do without electricity. Historically, windmills have provided electricity at summer camps and at farms.

According to the 2016 American Community Survey, fuel oil and kerosene are the most popular home heating fuels and were used by 325 homes. Bottled, tank or LP gas is the second most popular home heating fuel with 178 homes and wood was the third most popular home heating fuel with 96 units

Emergency Services

The town has no local police department. Vermont State Police and the County Sheriffs' Department cover all areas of law enforcement from traffic violations to major crimes. The town currently contracts with the County Sheriff for additional coverage and help with enforcement of local traffic ordinances. This coverage includes patrolling of the Town Beach during the summer months and various other extra coverage.

South Hero has a Volunteer Fire Department and Rescue Squad staffed by well-trained and devoted volunteers. The main funding of the operations of these organizations is through public contributions. Two of the Fire Department buildings, Granny's Attic and the small white building are owned by the Town; the red one is owned by the department. The Rescue Squad's building and land are owned by the squad. Some purchases of equipment for the fire department and rescue are funded by tax dollars.

As for health services, the town has the Keeler Bay Health Center, a physical therapist, a chiropractor, pharmacies, yoga studios, a massage therapist, the Visiting Nurses Association, the Champlain Islands Parent Child Center and Champlain Islanders Developing Essential Resources, Inc. (C.I.D.E.R.), a non-profit group whose mission is "to develop and foster resources that enable the people of Grand Isle County, Vermont to live in their community with dignity."

South Hero adopted a Local Emergency Operations Plan (LEOP) on April 10, 2017 to initiate response to serious crises. The LEOP is reviewed and updated as needed on an annual basis. The Town Selectboard has executed a National Incident Management System (NIMS) resolution and continually strives to remain current on NIMS compliance through training and reporting to Vermont Department of Public Safety.

Water Supply

There is no Town water system. There are several water districts, three of which formed a union, Fire District #4, and constructed a pumping and chlorination system to supply water to most of the residents of South Street and several adjoining streets. The districts maintain their own budgets and fund their operations with assessments separate from Town property taxes. Fire District #4 now serves 315 customers and is fast approaching capacity.

Sewage Disposal

There is no Town sewer system. All residences and businesses must comply with State regulations when installing their systems. Being a Lake community, the Town of South Hero encourages upgrading old wastewater systems before there is a failure issue. New technologies are available that can even pre-treat wastewater.

Transportation

South Hero roads include a Federal Highway, U.S. Route 2 (which goes to Grand Isle which connects to Canada and has a ferry connecting to New York State), a State highway, Route 314 and 22.9 miles of town roads, of which approximately 12 are paved and 10 are gravel. While the roads are shared by all users there are few sidewalks and no bike/pedestrian lanes. South Hero maintains these roads with the use of town owned equipment and a full-time road foreman and a few part time employees. The Select Board appoints a Road Commissioner who directs the work to be done by the road crew. The budget is set by the Select Board and supported by taxes and approximately $50,000 in state aid. There are a large number of privately owned and maintained roads in the Town. The Town provides services on town highways only.

There is no park-and-ride or public transportation system in town but residents commuting to Burlington or St. Albans can use the Park and Ride lot in Chimney Corners and ride the CCTA Link Express which offers multiple trips daily. Also, there is C.I.D.E.R., an acronym for Champlain Islanders Developing Essential Resources, is a local organization dedicated to providing transportation services to seniors and people with disabilities in order to help them remain independent.

4. PLANNING PROCESS

Documentation of the Planning Process, Public Involvement and Input from Neighboring Communities

The Town of South Hero held several planning meetings to discuss the development of a Hazard Mitigation Plan. All meetings were open to the public and some were held at regularly scheduled Selectboard meetings. Public in attendance at the meetings were encouraged to participate. All Selectboard meeting agendas were posted at 3 locations in the municipality in compliance with the requirements of Vermont Open Meeting Law. All meetings were chaired by the Chair of the Selectboard, Jonathan Shaw. Hard copies of drafts discussed at meetings were available to the public in attendance at meetings and upon request.

The Town of South Hero held their initial planning meeting to discuss the draft Hazard Mitigation Plan and to establish a schedule on June 26, 2017. The meeting was at a regularly scheduled Selectboard meeting. The meeting agenda was posted in accordance with Vermont Open Meeting Law. The meeting was attended by the 5 members of the South Hero Selectboard, the Town Clerk, the Zoning Administrator, and staff from Northwest Regional Planning Commission. Discussion concerned the objectives of the plan. It also involved a discussion about the risk assessment from the previous plan (that was not adopted) and updated risk assessment data reviewed by NRPC in advance of the meeting. Upon reviewing this information, the Selectboard authorized that Northwest Regional Planning Commission refine and edit information from the previous plan based on their comments and to work with appropriate municipal officials to identify mitigation strategies.

The 2nd meeting was held on December 26, 2017 and involved a more in-depth discussion about the town's development trends and mitigation strategies. This meeting involved the Selectboard Chair, Road Forman, Zoning Administrator and NRPC Staff. Potential mitigation projects were specifically identified at this meeting and edits were made to the draft plan. The meeting was open to public, but was not advertised since the meeting did not include a quorum of a municipal body.

In January 2018, the draft South Hero Local Hazard Mitigation Plan was submitted to Vermont Emergency Management for additional comment. The Selectboard met again on February 12, 2018 to review the comments

provide by Vermont Emergency Management and to make final edits to the plan. This meeting was at a regularly scheduled Selectboard meeting and the agenda was posted in accordance with Vermont Open Meeting Law. Four members of the Selectboard, the Town Clerk, the Zoning Administrator, and members of the general public were in attendance.

The first draft of the South Hero Local Hazard Mitigation Plan was posted to the Northwest Regional Planning Commission website on their Hazards Page from February 1, 2018 until February 15, 2018 with a link to an email address to provide comments. No email comments on the draft plan were received.

An email was sent to the Planning Commission Chairs of Grand Isle and Milton, Vermont, with a draft version of the plan as an attachment, soliciting comment on the draft via email. The email also contained the date of the Selectboard meeting at which the final draft of the plan would be discussed. The email was sent on February 1, 2018. No comments from surrounding towns was received.

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:

- South Hero, Vermont Town Plan 2015-2023.
- Town of South Hero, Vermont Zoning Bylaws and Subdivision Regulations 2011
- State of Vermont Hazard Mitigation Plan 2013
- Town of South Hero Local Emergency Operations Plan 2017
- Town of South Hero Flood Insurance Study, 1978
- Town of South Hero Flood Insurance Rate Maps 1977
- Northwest Regional Planning Commission Regional Plan 2015

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

5. RISK ASSESSMENT

Identifying Hazards, Profiling Hazards, Estimating Losses and Assessing Vulnerability

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

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

Hazard identification and risk assessment can be a highly complex, time consuming and very costly effort if sophisticated technical and engineering studies are undertaken. The Town of South Hero does not have the

resources to undertake hazard identification and risk assessment studies to this level of detail. The Town of South Hero and the Northwest Regional Planning Commission used a module of Mitigation 20/20 software which included a hazard profile matrix (Attachment A) that was used to develop a risk rating for each identified hazard. The matrix is intended to be completed by relying on hazard identification and risk evaluation information that is available as well as the knowledge and judgment of planning participants. Health and safety consequences, property damage, environmental damage and economic disruption are classified as consequences of occurrence of each hazard. The following is a description of the risk characteristics used to classify each hazard primarily based on Mitigation 20/20 program:

Frequency of Occurrence:

1. Rare: Unknown but likely to occur in the next 500 years
2. Unlikely: Unknown and unlikely to occur in the next 100 years
3. Possible: Likely to occur in the next 100 years
4. Likely: Likely to occur in the next 25 years
5. Highly Likely: Likely to occur once a year or more

Impact or % Community Impacted:

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

Health & Safety Impacts:

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

Property Damage:

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

Environmental Damage:

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

Economic:

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

The risk estimation matrix (See Attachment A) for the Town derives a "relative risk score" using a qualitative process in which to compile estimates of the likely **frequency** of occurrence, the **impact** to the community, 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, severe winter storms, fluvial erosion/landslide and high winds/thunderstorm/lightning. It should be noted that the community's overall risk rating is low (209 out of a possible high of 1,200).

Vulnerability Scores

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

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.

In order to determine estimated losses due to natural and man-made hazards in South Hero, each hazard area was analyzed; results are shown below. Human losses were not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The median value of a home in South Hero is $163,100 according to the 2009 to 2013 Census estimates.

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

Table 5.1 Summary of Hazards and Impacts for the Town of South Hero

Hazard Type	Frequency Of Occurrence	Impact/Magnitude	Risk	Estimated Potential Losses (Dollars)	Vulnerability
Severe Winter Storm/Ice Storm	Highly Likely	Limited to Catastrophic	Moderate to High	n/a	Roads, bridges, commercial and residential structures, seasonal homes, public buildings, (Town Office, PSB, PWB, Rec Center, Library, cemeteries), school, church, and utilities.
Flooding/Fluvial Erosion	Highly Likely	Limited to Catastrophic	Moderate to High	$74,703	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	n/a	Falling limbs and/or trees, power loss, church, school, telecommunications loss, structural damage, crop damage. Commercial and residential structures, seasonal homes, public buildings (Town Office), utilities.
Loss of Electrical Service	Likely	Limited to Critical	Moderate	n/a	Pubic building (Town Office), church, utilities, residential and seasonal homes, commercial structures, including commercial farms.
Structure Fire	Highly Likely	Limited	Low	$489,300	All structure types especially those lacking early detection systems.
Hazardous Materials	Possible	Limited	Low	n/a	Residential and seasonal homes, commercial structures, public buildings including Town Office, Public Safety Building, Public Works Building/Garage, Recreation Center, Library Buildings, State Garage, church, school, utilities, and the environment.
Drought	Possible	Limited to Catastrophic	Low	n/a	Commercial structures – farms, livestock, private wells, public structures (water reservoir, water pumping station and wastewater treatment plant), residential and seasonal homes and vulnerable populations.
Loss of Water & Sewer Service	Rare	Limited	Low	n/a	Public Health, residential and seasonal homes, commercial structures, church, public structures (e.g. Water Reservoir and Wastewater Treatment Plant, Town Office, Public Safety Building).
Telecommunication Systems Failure	Likely	Limited	Low	n/a	Residential structures, seasonal homes, commercial, public buildings (e.g. Town Office) elementary school, utilities. Special needs populations.

Tornado	Possible	Limited	Low	$3,443,483	Falling limbs and/or trees, power loss, telecommunications loss. Structural damage to residential and seasonal homes, public buildings (Town Office, State Garage, Public Works Building/Garage, Public Safety Building, Recreation Center, State Garage, Water Pumping Station) commercial structures and utilities.
Earthquake	Possible	Limited to Catastrophic	Low	$2,222,483	Infrastructure (roads, bridges), structural damage to residences, seasonal homes, commercial building, public buildings (Town Office, State Garage, Public Works Building/Garage, Public Safety Building, Rec Center, Water Pumping Station, Water Reservoir), 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, State Garage, Public Works Building/Garage, Public Safety Building, Rec Center, Water Pumping Station).
Extreme Temperatures*	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, Public Safety Building, Rec 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.					

All the hazards identified in the state hazard mitigation plan were considered. Several of the hazards were studies in depth in the previous South Hero Hazard Mitigation Plan are summarized in Table 5.1. The Committee decided it is not feasible to study each in depth again as many of the hazards were considered unlikely or rare. The hazards not profiled in this plan update are considered to be unlikely or rare in the Town of South Hero and therefore will not be profiled in this plan update. Those hazards that are not considered in the local plan may have been profiled in the State Hazard Mitigation Plan. The hazards not addressed in this plan update along with the justification for not including them are outlined in the following table.

Table 5.2 Justifications for Hazards Not Profiled

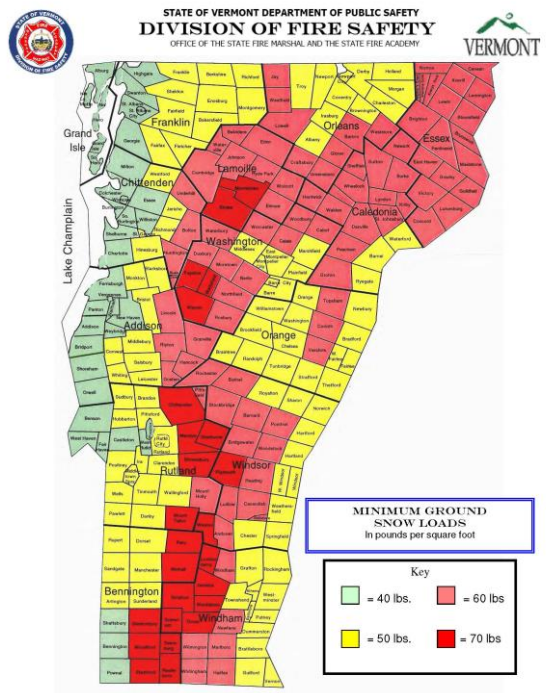
Hazard Not Profiled	Justification
Loss of Electrical Service	Rarely occurs and typically a consequence of other hazards such as winter storm (ice storm). Utilities are privately owned and regulated by public safety board. Town has emergency power generators at old public safety building (and now retired), town highway department, school and a portable is available for the Town Hall.
Ice Jams	There are no rivers in South Hero and therefore there is no hazard posed by ice james.
Dam Inundation	There are no dams in South Hero.
Structure Fire	There are on average 4 calls to the Fire Department related to structure fires in town each year. The Fire Department has set response procedures they follow structure fires. New construction follows state fire marshal codes.
Hazardous Materials	There are no large scale hazmat storage sites or manufacturing facilities in town. Hazardous materials are mostly propane and gasoline. The Town Fire Departments follows set hazmat response protocols should a spill occur.
Drought	Has not occurred in memory. Dry conditions occur briefly in late summer if they occur at all.
Telecommunications Systems Failure	Typically accompanies another hazard such as power loss, winter storm (ice storm). Telecommunications infrastructure that serves town is privately held.
Tornado	Has never occurred in Town. Generally profiled under high winds.
Earthquake	A moderate scale earthquake has never occurred in Town. The Town does not lie near any fault zone. Refer to Vermont State Hazard Mitigation Plan for further information regarding earthquake risk.
Major Fire – Wildland	Large wildland fire complex has never occurred in Town. Small grass fire in spring and summer occur rarely and typically less than an acre in size. Town fire department has response procedures to handle hazard.
Terrorism / WMD and Civil Disturbance	Has never occurred in Town. Vermont State Police would be primary response agency for any terrorist type incident.
Extreme Temperatures	The Committee agreed that extreme temperatures a non-issue because they are brief in duration if they occur at all. Hot spells in summer and cold snaps in winter are just part of life in South Hero 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	South Hero is approximately 180 miles northwest from the nearest nuclear power plant which is the recently decommissioned VT Yankee Nuclear Power Plant owned by Entergy Nuclear Vermont Yankee, LLC.
Rockslide/Landslide	Do not occur in Town. No areas where rockslides are an issue. Mentioned in landslide (fluvial erosion).

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

Severe Winter Storm/Ice Storm

Figure 5.1 – Construction Snow Loads in Vermont

Minimum Snow Loads for Estimating Construction: South Hero (50 lbs. /sq. ft.)



Description

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

Impact and Geographic Area of the Hazard

The primary impacts of a winter storms / ice storm typically include disruptions to transportation networks due to fallen limbs and trees, school closings and occasionally telecommunications and power outages. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards along roadways.

Winter storms / ice storms affect the entire Town and generally cause disruptions to public and private services. Construction standards for snow load (see map below) indicate that structures in South Hero 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.

Table 5.3 – Fall Snowfall in Burlington

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

The primary impacts of an ice storm typically include disruption to transportation networks due to fallen limbs and trees, school closings and occasionally telecommunications and power outages. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards along roadways.

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. Also at risk are farms and livestock. Barns can collapse due to heavy snow and ice loads. Dairy cattle are susceptible to mastitis[1] if they are unable to be milked. Many larger dairy farms have stationary or portable PTO driven generators as back-up power for automated milking equipment. Also at risk are people who use electric heat in their homes when associated power outages occur.

Table 5.4 – Winter Snowfall in Burlington

Burlington, Vermont Top 10 Winter Snowfall Totals Dec-Feb					
Highest			Lowest		
Rank	Snowfall	Year(s)	Rank	Snowfall	Year(s)
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
Source: National Oceanic and Atmospheric Administration					

<u>Extent and Probability</u>

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).

Winter storms / ice storms occur annually in South Hero, 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.

South Hero'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.

[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 tree debris removal equipment. The Town has access to private machinery, including bulldozers, plows, ATVs and snowmobiles, should they be needed in the event of an emergency. Heavy wet snows occurring during early fall and late spring and ice storms in the winter months are the cause of most power failures.

Past Occurrences:

According to the National Climate Data Center, there have been 46 winter storms events affecting Grand Isle County, Vermont including South Hero since January 1, 1998 totaling approximately $695,500 in property damages and no deaths in the region. Additionally, there were 2 severe ice storms in the region causing $1,750,000 in property damages and no deaths.

Table 5.5 – Spring Snowfall in Burlington

Burlington, Vermont
Top 10 Spring Snowfall Totals
Mar-May

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

Source: National Oceanic and Atmospheric Administration

Table 5.6 – Winter Storms/Ice Events in South Hero

Date	Location	Severity Remarks / Description of Area Impacted
January 6, 1998	Addison, Chittenden, Franklin, Grand Isle, Orange, and Windsor	DR 1201. This storm is referred to as the Ice Strom of 1998. Snow turned to freezing rain. Ice accumulations were generally between 1 and 2 inches with locally greater accumulations over portions of Grand Isle County. The impact on the region was dramatic. Trees and power lines snapped due to the weight of the ice. Power outages lasted for several days. Damage to the utility companies ran in the millions. With no electricity, the agricultural community was unable to milk cows with loss of income and damage to cows. Travel was dramatically impacted and many roads and bridges closed due to ice and fallen trees. The National Guard assisted with cleanup operations after the storm. Falling tree limbs and other debris was a significant hazard during and following the storm. It is not known what the financial losses were to the Town as a result of the storm. There was $1,500,000 in damages in Grand Isle County. Public Assistance funding was $5,899,183.
December 20, 2013	Addison, Chittenden, Franklin, Grand Isle, Lamoille, Orleans and Caledonia County	Two rounds of freezing rain accumulated around an inch across Grand Isle causing numerous vehicle accidents as well as damage to trees and utility lines. There were brief power outages during this time. There was an estimate of $250,000 of property damages from the event.

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 1at various ski resorts. From 3 to 8 inches of snowfall accumulated within Grand Isle County and across the Champlain Valley.
January 29, 2009	Grand Isle 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.
October 20, 2006	Grand Isle County	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	Grand Isle County	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 with heaviest amounts above the 700-foot level. The wet snow resulted in some power outages and minor automobile accidents across the state.
February 28, 1995	Grand Isle 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 Grand Isle 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 in Grand Isle County were covered in "black ice". "Black ice" is a thin transparent form of ice allowing the black asphalt surface of a road to be seen through the ice. "Black ice" conditions typically result in numerous traffic accidents as motorists are unaware that the road surface is covered in ice.

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.

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. Flooding in South Hero also comes from inundation, particularly along the shoreline of Lake Champlain.

The following are definitions of flood and fluvial erosion:

Flood: A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties (at least 1 of which is the policyholder's property) from:
--Overflow of inland or tidal waters; or
--Unusual and rapid accumulation or runoff of surface waters from any source; or
--Mudflow; or
Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Fluvial Erosion: is the detachment of material of the river bed and banks.

Impact and Geographic Area of the Hazard

Fluvial erosion hazard mapping was released by the VT Agency of Natural Resources (ANR) in early December 2014. This mapping will assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones. The fluvial erosion hazard exists within what the Agency of Natural Resources defines as the "River Corridor." South Hero is currently developing a river corridor bylaw. Inundation flooding hazards exist generally where there is mapped 100-year floodplain.

Floodplain/River Corridor Mapping

The following maps were created using the Vermont Agency of Natural Resources (ANR) 'Natural Resources Atlas' which is an online mapping tool. The maps depict the River Corridors that VT ANR has designated. It should be noted that the current map effective date (as of this plan writing) for the Flood Insurance Rate Maps (FIRMS) for South Hero is June 16, 1978.

The below map is of the northern half of the Town of South Hero. The yellow shaded area is the ANR River Corridor, created January 2, 2015 which follows a river coming from Keeler Bay that travels along an area containing agriculture, forest, and residential lots. 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 Vermont Hydrography Dataset[2]. Areas within mapped river corridors are currently not included in the restrictions set out in South Hero's floodplain bylaw, but the Town is considering regulating this area in the future. See Attachment F for a map of the River Corridor in South Hero.

According to the most recent data available from the Vermont Agency of Natural Resources, as of January 2015, the Town of South Hero has 13 policies in force with $2,414,000 in insurance in-force and $11,813 total premiums. These residential structures, built prior to the Town enacting flood hazard ordinances, are located in low density residential areas and in flood hazard areas.

A GIS based overlay analysis was conducted using FIRM data with the Vermont E-911 data of structure locations. The results found that there are approximately 58 structures within the 100 year flood plain in South Hero: 2 are commercial sites, 23 are single family residential, 4 are mobile homes, and 29 are camps. This represents 5% of E-911 surveyed structures within the community. Most of these homes are located on the shore of Lake Champlain.

Estimating flood damage of the 8% of structures with 20% damage is $74,703. The cost of repairing or replacing the utilities, roads, bridges, culverts, and contents of structures is not included. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Extent / Probability

Flash floods, rain storms and fluvial erosion occur annually. According to the National Climatic Data Center, there have been 2 recorded flash flood events and 3 flood events causing approximately $50,000 and $20,000 in damages and 0 deaths respectively in Grand Isle County between 1998 and 2017.

Flash floods typically occur during summer when a large thunderstorm or a series of rain storms result in high volumes of rain over a short period of time. Higher-elevation drainage areas and streams are particularly susceptible to flash floods. Flash floods are likely in South Hero, and potential damage to major transportation corridors.

[2] USGS houses the National Hydrography Dataset, out of which you can extract data by state < http://nhd.usgs.gov/>

Parts of South Hero, such as the south end of Keeler Bay, Wally's Point, and parts of West Shore Road, Hochelaga Road, and U.S. Route 2 near Milton are and will continue to be the parts of South Hero most at risk for flooding from Lake Champlain. Hochelaga Road and West Shore Road are Town roads and Route 2 is a U.S. highway. These roads may need to be elevated in places at some time in the future to minimize flood damage.

During the 2011 flood, access to South Hero across the causeway from Milton on U.S. Route 2 was reduced to one lane due to flooding through the wildlife preserve at the State Park. A more severe flood could pose serious access problems for residents of South Hero. Flooding on U.S. Route 2 is of particular concern because there are only three means of vehicular access to the Town of South Hero from the mainland of Vermont or New York: from the north through North Hero, from the west via the Grand Isle Ferry from Cumberland Head, New York, or from the southeast via U.S. Route 2 through the wildlife preserve and Sandbar State Park in Milton.

Exiting South Hero to the north requires driving along US Route 2. This route through Grand Isle and North Hero runs diagonally across North Hero Island from the Alburgh-North Hero Bridge to the North Hero-Grand Isle drawbridge. This route could easily be compromised due to flooding.

There are no lake gauges in South Hero. The closest gauge at the Echo Center in Burlington and the highest recorded measurement was 103.27 feet, which was measured on May 6, 2011. The average height of the Lake is 95.5 feet.

The Vermont Agency of Natural Resources has provided South Hero River Corridor maps, which show areas most prone to fluvial erosion in South Hero, but these maps have not been adopted by the Town. The mapped River Corridor is composed of about 19 acres of land located south of Keeler Bay and west of South Hero Village

Past Occurrences:
There has been a total of 4 floods in South Hero over the last 30 years that have exceeded the USGS Major Flood Stage elevation (101.5 feet Above Sea Level) on Lake Champlain. The Lake has exceeded 100 feet in elevation approximately 12 times during that same time frame.

Table 5.7 Flood Disaster Declarations & Events

Date	Location	Severity Remarks/Description of Area Impacted
Flood Disaster Declarations		
April 23 – May 9, 2011 *Declaration made on June 15, 2011*	State wide.	DR 1995. Lake Champlain's waters reached a height of 103.27 feet above sea level (ASL) as measured at the USGS gage at the Echo Center in Burlington. Flooding was exacerbated by waves caused by high winds.
July 18 - 21, 2008 *Declaration made on August 15, 2008*	State wide. Counties of Caledonia, Grand Isle and Lamoille qualified for Individual Assistance and Public Assistance.	DR 1784. Severe weather and thunderstorms came through most of Northern Vermont from Friday afternoon through the weekend. Some of these storms were very severe and there was an unconfirmed report of a tornado touching down. Multiple local roads were closed in the area. Damages were $53.06 per capita in Grand Isle County.
June 17, 1998 – July 13, 1998 *Declaration made on June 30, 1998.*	Addison, Caledonia, Chittenden, Essex, Franklin, Lamoille, Orange, Orleans, Rutland, Washington and Windsor	FEMA-1228-DR

	Counties for Individual Assistance and Public Assistance	
April 24, 1993	Addison, Chittenden, Franklin, and Grand Isle Counties for Individual Assistance and Public Assistance.	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.
Flood Events		
2011	Grand Isle, Addison and Chittenden Counties	Lake Champlain's waters reached a height of 103.27 feet above sea level (ASL) as measured at the USGS gage at the Echo Center in Burlington. Flooding was exacerbated by waves caused by high winds.
April 20- 30, 2007	Grand Isle, Addison and Chittenden Counties	A minor shoreline flooding occurred due to strong winds and wave action along the shoreline. Several summer camps and cottages experienced flooding and a few docks were damaged as well. The lake remained above flood stage through the end of April. There was $20,000 in damages reported between the Counties.
April 23 to May 9, 2001	Counties of Grand Isle, Addison, Chittenden, Franklin and Rutland.	Spring snow melt and associated runoff resulted in flooding along the shores of Lake Champlain. Lake levels reached the 100.99 foot level (flood stage is 100 feet). There was approximately $21,000 in damages County-wide in April and approximately $17,000 in damages in May between the Counties.
July 1, 1998	Grand Isle County.	Heavy rain during the morning resulted in flooded roads in South Hero. Several homes had flooded basements. There was approximately $50,000 in property damages.
April 1 - 13, 1998	Counties of Grand Isle, Addison, Chittenden, and Franklin.	Spring runoff and flood waters resulted in the Lake Champlain lake level to exceed the 101 foot level during this period. The maximum level reached this year was 101.82 feet on April 5. Flooding of lake shore areas became widespread with water closing some roads and flooding some private property. Due to the high lake level, water back flowed up the rivers that flow into the lake. Some residents were forced to sandbag to protect property. There was an estimated $40,000 in property damages across the four Counties.
November 9, 1996	Grand Isle County.	A strong cold front moved slowly across New York State resulting in periods of heavy. South Hero reported a storm total rainfall of 4.46 inches. Culvert and field flooding was reported in throughout the County resulting in approximately $50,000 in damages.
May 12 - 24, 1996	Grand Isle, Chittenden and Franklin Counties.	Continued runoff into Lake Champlain resulted in the lake level rising above the 100 foot mark with minor lake shore flooding. The highest level recorded during this period in May of 1996 was 100.90 feet on May 16, 1996. $15,000 in property damages were reported.
May 2 – 8, 1996	Grand Isle, Chittenden and Franklin Counties.	Runoff from melting snow and rainfall resulted in the Lake Champlain Lake level reaching or exceeding 100

		feet. There was some minor flooding along the lake shore during this period. There were approximately $15,000 in damages across the affected Counties.
January 19, 1996	Caledonia, Essex, Grand Isle, Lamoille, Orange, Orleans, Washington, Addison, Chittenden, Franklin, Rutland, and Windsor Counties.	A strong winter storm triggered flooding and high winds throughout the County. Power was lost temporarily. The flooding damaged many roads throughout South Hero. Damage estimates were $2,800,000 for the area affected.
April 16, 1994	Grand Isle County	A flood event caused approximately $500,000 in property damages county-wide.
May 1, 1993	Grand Isle County	A low pressure system settled over the region producing heavy rains. Several local roads were inundated with flood waters due to blocked culverts. There was an estimated $500,000 in damages county-wide

Severe Thunderstorms (High Winds, 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 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.

Table 5.8 High Wind Descriptions			
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

Impact and Geographic Area of the Hazard

The Town has experienced a variety of high winds from storm systems that develop along ridgelines. Typically, high winds accompany strong thunderstorms that often generate lightning and/or hail. Micro bursts with high wind speeds and high precipitation accumulations over brief periods often down trees and branches and power lines and can overwhelm local drainage networks for brief periods. There are rare instances where lightning has caused structure fires (barns) and grass fires during dry periods.

High winds are a hazardous threat to the Town and most commonly accompany other storm events. Violent windstorms are possible in South Hero. High winds associated with severe thunderstorms affect forested areas, utility lines and exposed property and are common along the Lake Shoreline corridor throughout Town.

There are no loss estimates for lightning because it is extremely difficult to predict where the event will occur and the type of associated structural damage. Damages could come in the form of destroyed electrical appliances, structure fires, or wildland fires. Death or serious injury could occur to individuals exposed to lightning. Private properties in South Hero have experienced lightning strikes. High elevations and areas around bodies of water such as lakes and ponds are more susceptible. South Hero's road crew is equipped with associated debris removal equipment.

Extent/Probability

There have been 33 thunderstorm events in the region since January 1, 1998 according to the National Climatic Data Center. Of those, 25 are classified as severe thunderstorms with wind speeds of 50 kts. 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 burst have occurred almost annually in the past 10 years according to project participants.

Lightning strikes in Grand Isle County average between 4-6 strikes per square mile each year based on data collected by NASA satellites between 1995 and 2002. Within the Town of South Hero, these numbers would average between 224 -340 lightning strikes per year. There is very little data on lightning strikes in Town. There

are rare instances where lightning has caused barn fires and grass fires during dry periods. Damages from lightning could come in the form of destroyed electrical appliances, structure fires, or wildland fires. Private properties in South Hero have experienced lightning strikes. High elevations and areas around bodies of water such as lakes and ponds are more susceptible. The Town's Highway Department has appropriate debris removal equipment.

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.

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 12 recorded hail events in Franklin County between 1998 and 2016. 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 thunderstorm event occurring to 10% of all structures in Town with 20% damage is $93,378. The estimated cost does not include building contents, land values or damages to utilities. There are no known deaths that have occurred in Town due to n severe thunderstorms.

Past Occurrences

Private properties in South Hero have experienced lightning strikes however, no data on lightning strikes in Town if kept. High elevations and lakeshore areas and open lake areas are more susceptible to lightning strikes. The Town's Highway and Fire Departments have appropriate debris removal equipment to clear trees and limbs from following thunderstorms.

Loss estimates for lightning are difficult to ascertain because it is extremely difficult to predict where the event will occur and the type of associated structural damage. Damages could come in the form of destroyed electrical appliances, structure fires, or wildland fires. Death or serious injury could occur to individuals exposed to lightning.

Table 5.9 High Wind Events

Date	Location	Severity Remarks / Description of Area Impacted
December 26, 2016	Grand Isle County	Sustained winds of 20 to 25 mph with numerous gusts in excess of 40 mph was observed across much of the Champlain Valley with sustained 25 to 35 mph with gusts in excess of 50 mph along the immediate lake shore of Lake Champlain Numerous mesonet observations of 50-55 mph gusts, largely between 2 pm and 10 pm. Several branches were downed by winds and there were resultant power outages affecting approximately 5000 customers. The Lake Champlain Ferry crossing between Grand Isle, VT and Cumberland Head (Plattsburgh), NY was closed due to the strong winds.
July 22, 2016	Grand Isle County	A disturbance moved across the Canadian border during the overnight of July 22-23rd and developed some strong to severe thunderstorms with a few producing locally damaging winds. Trees and power lines were down.

July 21, 2010	Grand Isle County, South Hero	During the afternoon and evening, scattered to numerous thunderstorms developed traveled across northern New York and through Vermont. Several storms strengthened into supercells that produced widespread wind damage to trees, power poles and structures. Several reports of quarter size diameter hail across South Hero, including South Street where some damage to apple orchards and other crops.
August 10, 2001	South Hero	Early morning storms brought lightning to the area. One garage in Town was struck by lightning and destroyed by the resulting fire. Damage estimate were $20,000.
June & July, 2007	South Hero	Hail storms produced widespread crop damage throughout South Hero.
February 17, 2006	Counties of Grand Isle, Chittenden, and Franklin.	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.
September 29, 2005	Counties of Grand Isle and Chittenden.	A storm system moved rapidly out of Quebec, Canada. The associated cold front moved across western Vermont and was accompanied by showers and thunderstorms. Damaging winds preceded and followed the front. Trees and power lines were blown down countywide across both Grand Isle and Chittenden counties, and thousands were without power for a time. Winds were generally estimated at sustained of 40 to 45 mph with gusts over 50 mph. Property damage estimates for the 3 Counties were $250,000.
October 16, 2005	Counties of Grand Isle, Addison, Chittenden, Franklin 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.
July 8, 2004	Grand Isle County	A low pressure system from Canada moved into the area and produced a series of strong thunderstorms. There were reports of nickel sized hail that fell across the County. There are no damage estimates from the event.
February 10, 2001	Grand Isle County	A strong storm system moved across Quebec, Canada. The associated cold front brought high winds across the County. Damage estimates were $10,000.
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. Apple orchards sustained some damage in South Hero. The strongest winds reported were 43 knots (50 mph) in South Hero and on adjacent Lake Champlain. Rainfall across the county associated with the remnants of Floyd was 3 1/2 to 4 inches. Property damages was estimated to be $50,000 and crop damage estimates at $10,000.
June 22, 1998	South Hero	A series of strong thunderstorms occurred over the Town of South Hero. One lightning strike struck a barn in town causing $10,000 in damages.
February 15, 1995	Grand Isle and Franklin 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.

6. ASSESSING VULNERABILITY

Structures in the SFHA

There are approximately 58 structures within FEMA-designated Special Flood Hazard Areas (SFHAs)[3]. Properties within SFHAs, that have a mortgage, are required to purchase flood insurance. South Hero's participation in the National Flood Insurance Program (NFIP) gives residents and business owners access to discount flood insurance through the National Flood Insurance Program. Flood insurance can still be purchased privately, however it is more expensive. Development in SFHAs must meet additional construction standards as outlined in South Hero's floodplain regulations.

Repetitive Loss Properties

According to the State Hazard Mitigation Officer, the Town of South Hero has no repetitive loss properties. The definition of severe repetitive loss as applied to this program was established in the National Flood Insurance Act. 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. [4]

Critical Facilities

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

The critical facilities identified in the Town of South Hero Hazard Mitigation Plan include shelters; health care facilities; electric, and communication utilities; water treatment plants, pump stations and reservoirs; public safety facilities, government offices, hazardous materials storage sites; church and school.

[3] Flood Hazard Summary Report for South Hero, available on VT ANR's Floodready website <https://anrweb.vt.gov/DEC/FoFReports/>

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

Table 6.1 Market Value of Structures in South Hero[1]		
Type	**Number**	**Value Including Land**
Residential Homes	676	$3,095,057
Seasonal Homes	208	$1,008,350
Mobile Homes – Unlanded	169	$71,848
Mobile Homes - Landed	30	$64,677
Farms	16	$58,481
Commercial	15	$71,996
Commercial Apts	1	$3,127
Other (Utilities, Woodland and Miscellaneous)	114	$295,411
Total Listed Value	1229	$4,668,947

Data from South Hero Planning Commission, Northwest Regional Planning Commission, Local Emergency Planning Committee and South Hero Emergency Services were used to assist in the analysis of areas affected by various hazards. The results of the analysis are listed in Attachment B. The community hazard mitigation maps are included in Attachment E. The community map depicts hazard areas, critical facilities, and vulnerable sites based on the best available data derived from local, regional, state and federal sources.

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 South Hero in 1978. Flood Insurance Rate Maps (FIRMs) were prepared by FEMA in 1978. Flood hazard areas were identified along the brooks and streams that run through the town. The FIRMs and Study are available for review at the South Hero Town Office and on-line at FEMA.gov.

Creation of the Flood Hazard District in the Town's Subdivision and Zoning bylaws enabled South Hero 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 of South Hero by restricting development in flood prone areas. South Hero is a member in good standing with the NFIP (CID 500226). The latest floodplain ordinance was adopted September 13, 2011. 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.

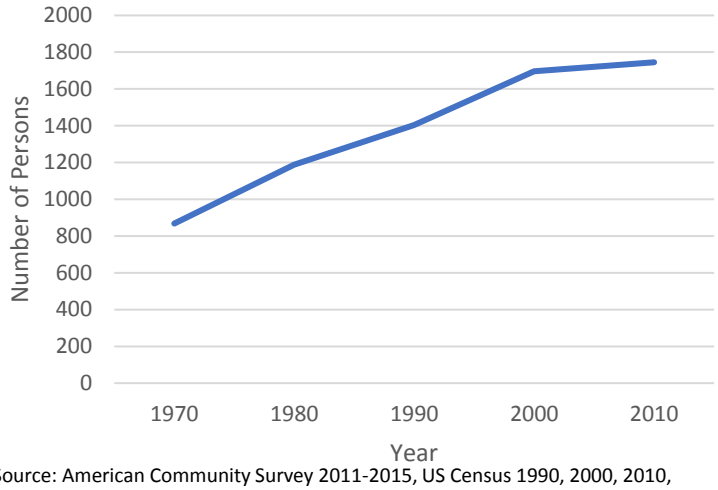
The latest record indicates that there are 13 active NFIP policies in South Hero. The policies have a total coverage value of $2,414,000. There have been 12 NFIP claims filed in South Hero since 1978 totaling $67,814.

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.

Development Trends

South Hero's population historically has been steady. However, between 1970 and 2010 the population increased steadily (Figure 6.2). Population projections are based on past trends in birth, deaths and migration which provide reasonable estimates of future conditions. The Vermont Agency of Commerce and Community Development produced a report calculating projections based on past trends from two time periods; the 1990-2000 predict higher growth and 2000-2010 predicts lower growth. Based on these projections, South Hero could experience growth of just over 50% by 2030 or a decline of about 10% of the population. South Hero has zoning bylaws in place that protects high risk areas.

Figure 6.2 - Population of South Hero 1970 - 2010



Source: American Community Survey 2011-2015, US Census 1990, 2000, 2010,

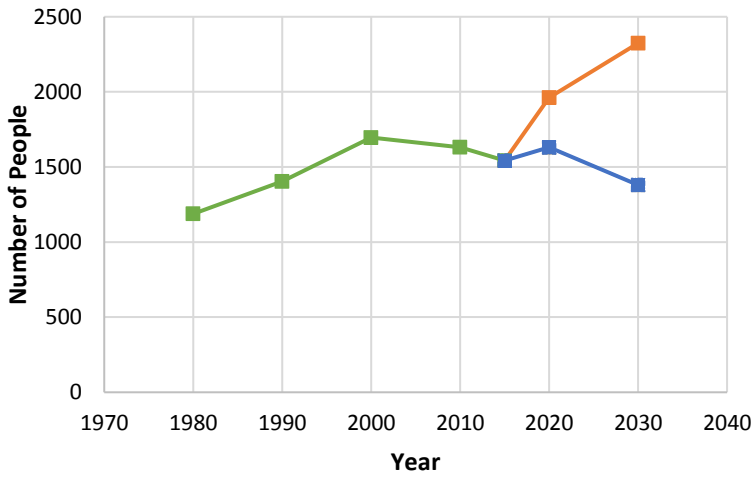
Development is characterized by a concentration of structures and land uses devoted to small-scale commercial, residential, governmental and recreational uses. The character of the Center and the Village is an important social and economic asset to the community. The Town does not have adequate sewer making the potential for additional development in these two areas problematic. This coincides with Montgomery's desire to maintain its rural character.

The town sees population fluxes because the tourist season in the summer. However, the town is spread out and has less concentrated infrastructure to accommodate the influx of summer travelers. There is a second home population, because of proximity and access to the lake. They have a low full-time population but a very high seasonal population. This ties up resources and mutual aid is called in if there is an emergency. They are considered to have similar resources as towns of their size in the region.

7. MITIGATION STRATEGY

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

Figure 6.3 - Projected Population in South Hero



Data Source: U.S. Census, Vermont ACCD Population Projections 2020-2030 Report

General 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 Operations Plan.
- Ensure the general public is part of the hazard mitigation planning process.

Town Plan (Adopted 2015) Goals & Policies That Support Hazard Mitigation

- Recognize in plans and regulations that there are certain parts of Town that are more appropriate for development than others due to the capability of the soils for septic systems, presence of wetlands, natural areas, scenic areas, and primary agricultural soils, and existence of State and federal regulations.
- Support innovative solutions for safe sewage disposal.
- Support reduction of lake, groundwater and air pollution.
- Support and participate in Federal, State and local efforts to improve water quality in Lake Champlain. Ensure Town Development Regulations support that effort.
- Support the expansion of the Fire District #4 private water district and/or setting up other water districts in concentrated areas of the Town.
- Continue to maintain town roads in good condition as money and natural contingencies allow, with emphasis on the safety of all users thereof and in compliance with State regulations.
- Continue to maintain its 26 miles of roads in compliance with State regulations.
- Continue a process of road improvements as money permits.
- Promote the voluntary and participatory role of citizens in town government.
- Address the staffing issues posed by the Rescue Squad and the Fire Department.
- Ensure a reliable, fast, and efficient telecommunications system throughout the Town.
- Encourage a variety of telecommunications infrastructure. To this end, the Town should encourage solutions that minimize possible conflicts that might arise from these varied sources. Emergency broadcasting capabilities should be preserved first and foremost.
- Coordinate future growth with telecommunications providers to ensure that areas of expansion are adequately served.
- Encourage flood emergency preparedness and response planning in South Hero.
- Encourage the protection and restoration of floodplains, wetlands and upland forested areas that attenuate and moderate flooding and fluvial erosion.

- Continue to be a member of the National Flood Insurance Program. The Planning Commission and Zoning Administrator shall ensure that the Land Development Regulations meet all NFIP minimum requirements. The Planning Commission shall ensure that the Land Development Regulations continue to protect floodplains, prevent damage to property, and mitigate risk to human lives.
- The Planning Commission, Selectboard, and Town emergency services personnel shall work with State and Federal agencies to ensure that connection to mainland Vermont via U.S. Route 2 is maintained during a flood event.
- The Selectboard shall annually adopt a Local Emergency Operations Plan (LEOP).
- The Planning Commission and Zoning Administrator should work with the Vermont Agency of Natural Resources to investigate future adoption of River Corridor or Fluvial Erosion maps and regulations.
- Build upon and continue to improve our relationships with neighboring towns.

Existing Hazard Mitigation Programs, Projects and Activities

Flooding & Fluvial Erosion/Landslide

- The Town has flood zone regulations which designate a Flood Hazard District and Shore District whose purpose is to minimize future public and private losses caused by development in flood hazard areas.
- The town participates in the National Flood Insurance Program (NFIP). Maintaining compliance with NFIP regulations both now and in the long term is a high priority activity.
- Flood Hazard Areas in South Hero are identified on Flood Hazard Boundary Maps (FHBMs) and Flood Insurance Rate Maps (FIRMs) produced by FEMA (from 1978). 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.
- Ditches located in areas susceptible to flooding are inspected and maintained on an annual basis. Ditches in general are inspected and cleaned
- Culverts are inspected at least once a year. Seasonal maintenance is developed based on an annual inspections.

Severe Winter Storms (Ice Storm)

- Town Highway Department has snow removal equipment.
- Shelter agreement between Folsom School and American Red Cross are renewed on a semi-annual basis.
- Road crews have response equipment to deal with downed trees and branches.

Structure Fire and Wildland Fire

- Annual ISO inspection.
- Fire fighter personal protection equipment upgrades through Federal grant programs.
- Upgrades to fire fighting offensive and defensive equipment through Federal grant programs.
- Fire fighter training through Vermont Fire Academy.
- Member of Grand Isle County Mutual Aid Association.
- NIMS/ICS Training for members to meet state NIMS strategy.

Loss of Electrical Service

- Town Hall has a portable generator with transfer switches installed at Town Hall.
- Folsom School has a stationary generator and transfer switch for use as a community shelter.
- On-going regularly scheduled road maintenance programs includes cutting vegetation away from utility lines.

On-Going Mitigation and Preparedness Activities

- Town is interested in State and Federal funding for mitigation projects and activities.
- Town applies for state grants (Local Roads, Bridge and Culvert) to address road construction/improvement projects.
- Regularly scheduled maintenance programs ongoing (culvert survey & replacement, ditching along roadways, cutting vegetation to allow visibility at intersections).
- Traffic calming and alternate transportation project.
- Town has mapped critical facilities and infrastructure.
- Adopted Emergency Operations Plan (updated annually).
- Continue to identify and equip, as appropriate community shelters.
- Community participates in the Vermont Enhanced 911 System.

Identified Hazard Mitigation Actions, Programs, 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?
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.

Recent disasters that have occurred have not caused a change in priorities. The projects have been prioritized as part of the Town's on-going comprehensive planning process following state land use law.

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

<u>Cost-Benefit Analysis</u>

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 action 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

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. South Hero considered additional mitigation actions related winter storms/ice and thunderstorm/wind/hail, but did not decide to include any specific actions related to these hazard in the plan.

Table 7.1 Prioritized Mitigation Actions

Priority / Score	Hazard / Action	Mitigation Action	Time – Frame	Responsible Party	Funding / Support	Cost / Benefit	Initial Implementation Steps
High 36	All Hazards	Generator for Fire Station	2018 to 2019	Selectboard	FEMA Grants	Low / High	None
High 34	Flooding/Fluvial Erosion	Landon Road Culvert Upgrade	2019 to 2022	Selectboard and Highway Department	FEMA or State Grants	Low/Medium	None
High 34	Flooding/Fluvial Erosion	Martin Road Culvert Upgrade	2019 to 2022	Selectboard and Highway Department	FEMA or State Grants	Low/Medium	None
High 33	Flooding/Fluvial Erosion	Kibbe Point Road Culvert Upgrade	2019 to 2022	Selectboard and Highway Department	FEMA or State Grants	Low/Medium	None
Moderate 31	All Hazards	NIMS/ICS Training for Selectboard/Highway Department	2018 to 2019	Selectboard and Highway Department	General Fund	Low/Medium	None
Moderate 28	Flooding/Fluvial Erosion	Update Bylaw to incorporate River Corridor standards for fluvial erosion	2018 to 2019	Selectboard and Planning Commission	General Fund	Low/Medium	Draft regulations created by Town Planning Commission

The culvert upgrades noted in Table 7.1 including "upsizing" currently installed culvert to mitigate the future impact of flooding due to culverts in those locations being undersized. Upgrades of several other culverts were considered, as were movement of roads from their current location due to flood risk, but these potential actions have not been included because of their exorbitant potential costs. South Hero also considered including creation of stricter standards for development in the floodplain and River Corridor, including the requirement for "freeboard," but did not include that in the list because there would be no cost to implement this mitigation strategy. The South Hero Zoning Administrator continuously completes mitigation activities in educating property

owners regarding the dangers of flooding, but this activity was not included in the list because this mitigation strategy is continuous. Additional mitigation activities were not considered because of the limited tax base in South Hero.

Existing Planning and Regulatory Capabilities

South Hero is a rural town with a low population. The Town staff includes a Full-Time Town Clerk/Treasurer and an Assistant Town Clerk/Treasurer, and three full-time Highway Department staff. The Highway Department staff covers 14.42 miles of town highway. They are constantly treating roadways in winter months, so they are strained to do other things that come up. The full-time staff size is similar to other towns in northern Vermont of similar size. They have a volunteer Planning Commission, and Development Review Board. The Full-Time Zoning Administrator. Floodplain/shoreline development is an issue for South Hero due to seasonal lake flooding and high demand for lakeshore property.

The South Hero Fire Department contains is a Volunteer force with 25 members, 12 of which are firefighters, but is in need of additional volunteers, especially to cover daytime hours. The Town of South Hero currently maintains an ambulance squad (South Hero Rescue) of 9 members providing emergency medical services to Town residents and the surrounding area as needed. The Fire Department and South Hero Rescue are situated in the same building and need a new facility as there are numerous deficiencies including structural issues, health and safety issues, and that the facilities lack basic functionality. A Department Facilities Review Committee was created to review the current utilization of facilities, identify specific problems, and make a recommendation to the Fire Department Executive Committee on how best to move forward.

One of the strains on the town's emergency personnel is that South Hero draws a lot of recreational visitors during the summer for lake recreation activities and bicycle tours, during the fall for the colorful foliage season and apple harvest, and during the winter for ice fishing. Weekend traffic through South Hero increases greatly during the summer season from May to September and in the Fall during September and October. The town's capabilities are limited for such an increase in traffic. During peak summer season, emergency resources could be tied up dealing with motor vehicle accidents and boating incidents, so the fire department and South Hero rescue relies on mutual aid at times.

How this Plan will Improve Existing Capabilities

The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the Town of South Hero. In cooperation with NRPC, the Town Emergency Management Coordinator (a member of the Selectboard) analyzed these programs for their effectiveness and noted improvements needed. South Hero uses all of the plans listed below to help plan for current and future activities with the town. For example: the Local Emergency Operation 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 2015 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.

As South Hero goes through the update process for the planning mechanisms outlined in the table below, they will look to the Hazard Mitigation Plan's Table of Actions and Risk and Vulnerability Assessments to help guide land use district decisions, and guide goals and policies for those districts. They have agreed to this. After Town Meeting every March, policies and action items in the Town Plan are reviewed and integrated into hazard mitigation as needed. The Local Emergency Operations Plan contact list is updated after Town Meeting each year, including updates to vulnerable geographic locations, as well as locations of vulnerable populations. Updates to each of the planning mechanisms outlined in the table below are handled by the responsible party identified in

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

South Hero is currently working to update its zoning bylaws and is considering adoption of a River Corridor standards to mitigate damages from flooding and fluvial erosion hazards. The LEOP is updated yearly and was updated last in 2017.

The following authorities, policies, programs, and resources related to hazard mitigation are currently in place and/or being implemented in the Town of South Hero 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 7.2 Town Policies and Plans

Existing Protection	Description	Effectiveness/Enforcement/ Hazard that is addressed	Gaps in Existing Protection/Improvements Needed
Town Plan	Policies that provide protection and limited development in wellhead protection areas, wetlands, steep slopes, and shallow soils.	Policies and vision for future land use. Includes flood resiliency element. Adopted August 10, 2015.	None found
Zoning Bylaws and Flood Hazard Area Regulations.	Restrictions on development in potential hazardous areas such as steep slopes, floodplains. Also regulates land development in FEMA flood areas.	Land Use Regulation recently updated. Adopted September 12, 2011.	Include River Corridor Overlay District with associated protection measures. This will prevent future development in areas prone to fluvial erosion.
Local Emergency Operations Plan	Summary of emergency response and notification procedures, situation reports, ICS forms, Local Declaration forms, Local Situational Reports, Emergency Stream Protective Measures.	2017. Updated annually.	Does not identify local shelter manager. Does not contain Debris Management Annex.
Fire Mutual Aid	Assistance from county fire, rescue, municipal and public works departments.	Grand Isle County Mutual Aid Agreement, 2006.	Does not include ambulance rates.

School Emergency Response	Responses by various types of emergency incidents at school.	Vermont School Crisis Guide.	Needs updating.
Maintenance Programs	Bridge and Culvert Inventory. Municipal Road Stormwater Erosion Inventory.	First established in 2002. New State requirement that is part of municipal roads general permit program.	Bridge and Culvert Inventory will be updated in 2018. Road Erosion Inventory completed in 2017. .

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

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

Flooding and Development Regulations

The Town of South Hero 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 1978, 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

At present, the Town of South Hero is considering an amendment to its zoning bylaws that would include regulating river corridors created by the Vermont Agency of Natural Resources. This would create 50 foot riparian buffer on each side of stream is required for any proposed development. The goal is to protect the health, welfare and safety of the public, help control soil erosion and protect water quality.

8. PLAN IMPLEMENTATION, MONITORING & EVALUATION

Monitoring and Updating the Plan – Yearly Review

Once the plan is approved and adopted, the Selectboard in South Hero, along with interested and appointed volunteers and stakeholders, will continue to work with the Emergency Planner at the Northwest Regional Commission to monitor, evaluate, and update the plan throughout the next 5-year cycle. The plan will be reviewed annually at the May Selectboard meeting along with the review of the town's Local Emergency Operations Plan (LEOP). During the annual review, the Selectboard will evaluate the plan effectiveness at achieving its stated purpose and goals This meeting will allow town officials and the public to discuss the town's progress in implementing mitigation actions and determine if the town is interested in applying for grant funding for projects that can help mitigate future hazardous events; e.g., bridge and culvert replacements, road replacements and

grading, as well as buying out any repetitive loss structures that may be in the Special Flood Hazard Area, and revise the plan as needed. Northwest Regional Commission's emergency planner will assist the South Hero 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:

1. The South Hero Selectboard will appoint a team to convene a meeting of the hazard mitigation planning committee. The team will include a South Hero Emergency Management Director who will chair the meeting (this is a rotating Selectboard position). Others members should include local officials such as Selectboard members, Fire Chief, Zoning Administrator, Public Works Director, Road Commissioner, Health Officer and interested stakeholders. The Emergency Management Director will work with the Northwest Regional Planning Commission Emergency Planner and be the point person for the Town.

2. The NRPC Emergency Planner will guide the Committee through the update process. This update process will include several publicly warned meetings. At these meeting the Committee will use the existing pan and update as appropriately guided by the NRPC Emergency Planner to address:
    a. Update of hazard events and data gathered since the last plan update.
    b. Changes in community and government processes, which are hazard-related and have occurred since the last review
    c. Changes in community growth and development trends and their effect on vulnerability.
    d. Progress in implementation of plan initiatives and projects
    e. Incorporation of new mitigation initiatives and projects.
    f. Effectiveness of previously implemented initiatives and projects.
    g. Evaluation of the plan for its effectiveness at achieving its state purpose and goals.
    h. 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.
    i. Evaluation of hazard-related public policies, initiatives and projects.
    j. How mitigation strategy has been incorporated into other planning mechanisms.
    k. Review and discussion of the effectiveness of public and private sector coordination and cooperation.

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

4. 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.

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

6. The Selectboard will notify the public that the draft is available for public comment and review. The Town will advertise and make available the draft plan for comments both electronically and in hard copy. The draft plan will be distributed electronically to the neighboring municipalities of Belvidere, Eden, Westfield, Lowell, Bakersfield, Enosburgh, and Richford for review and comment.

7. Public comments will be incorporated by the NRPC Emergency Planner. 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.

8. The NRPC Emergency Planner 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.

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

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

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

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

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

14. FEMA will issue final approval of the adopted plan.

Continued Public Involvement

The South Hero 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.). The plan will also include the Selectboard Chair's contact information to facilitate and track public comments. 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 South Hero 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 Coordinator, the NRPC Emergency Planner, and those involved in the five year update process described above. This review will occur in accordance with the following procedures:

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

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

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

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

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

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

Attachment A

Hazard Identification and Risk Assessment

Town of South Hero

Hazard Type	Frequency Of Occurrence	Impact/Magnitude	Risk	Estimated Potential Losses (Dollars)	Vulnerability
Severe Winter Storm/Ice Storm	Highly Likely	Limited to Catastrophic	Moderate to High	n/a	Roads, bridges, commercial and residential structures, seasonal homes, public buildings, (Town Office, PSB, PWB, Rec Center, Library, cemeteries), school, church, and utilities.
Flooding/Fluvial Erosion	Highly Likely	Limited to Catastrophic	Moderate to High	$74,703	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	n/a	Falling limbs and/or trees, power loss, church, school, telecommunications loss, structural damage, crop damage. Commercial and residential structures, seasonal homes, public buildings (Town Office), utilities.
Loss of Electrical Service	Likely	Limited to Critical	Moderate	n/a	Pubic building (Town Office), church, utilities, residential and seasonal homes, commercial structures, including commercial farms.
Structure Fire	Highly Likely	Limited	Low	$489,300	All structure types especially those lacking early detection systems.
Hazardous Materials	Possible	Limited	Low	n/a	Residential and seasonal homes, commercial structures, public buildings including Town Office, Public Safety Building, Public Works Building/Garage, Recreation Center, Library Buildings, State Garage, church, school, utilities, and the environment.
Drought	Possible	Limited to Catastrophic	Low	n/a	Commercial structures – farms, livestock, private wells, public structures (water reservoir, water pumping station and wastewater treatment plant), residential and seasonal homes and vulnerable populations.
Loss of Water & Sewer Service	Rare	Limited	Low	n/a	Public Health, residential and seasonal homes, commercial structures, church, public structures (e.g. Water Reservoir and Wastewater Treatment Plant, Town Office, Public Safety Building).

Telecommunication Systems Failure	Likely	Limited	Low	n/a	Residential structures, seasonal homes, commercial, public buildings (e.g. Town Office) elementary school, utilities. Special needs populations.
Tornado	Possible	Limited	Low	$3,443,483	Falling limbs and/or trees, power loss, telecommunications loss. Structural damage to residential and seasonal homes, public buildings (Town Office, State Garage, Public Works Building/Garage, Public Safety Building, Recreation Center, State Garage, Water Pumping Station) commercial structures and utilities.
Earthquake	Possible	Limited to Catastrophic	Low	$2,222,483	Infrastructure (roads, bridges), structural damage to residences, seasonal homes, commercial building, public buildings (Town Office, State Garage, Public Works Building/Garage, Public Safety Building, Rec Center, Water Pumping Station, Water Reservoir), 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, State Garage, Public Works Building/Garage, Public Safety Building, Rec Center, Water Pumping Station).
Extreme Temperatures*	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, Public Safety Building, Rec 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.					

Attachment B

Critical Facilities, Hazmat Storage Facilities, and Vulnerable Sites
Town of South Hero

Facility Name or Facility Designation	Facility Owner	Function	Street or Location
Allenholm Air Strip	Ray Allen	Transportation	South St.
Allenholm Farm	Ray Allen	Emergency Operations Center	150 South St.
Appletree Bay Marina	Champlain Oil	Hazmat Storage Facility	US Route 2
Camp Hochelaga		Vulnerable Site	Hochelaga Road
Folsom Education and Community Center	Town of South Hero	Educational Facility/Shelter Hazmat Storage Facility	75 South St.
Island Beverage Redemption	R.L. Valley, Inc.	Hazmat Storage Facility	1 Ferry Road
Keeler Bay Variety	Champlain Oil Company, Inc.	Hazmat Storage Facility	500 US Route 2
McGregor's Pharmacy	Riyaz Merali	Drug Store & Pharmacies	330 Route 2
Phoenix Wire, Inc.		Hazmat Storage Facility	Tracy Road
Saint Rose Lima Church	St. Rose of Lima	Hazmat Storage Facility	501 US Route 2
South Hero Fire Department	Town of South Hero	Emergency Services	US Route 2
South Hero Short Stop	S. B. Collins, Inc.	Hazmat Storage Facility	337 US Route 2
South Hero Rescue Building	Town of South Hero	Emergency Services	US Route 2
South Hero Town Garage	Town of South Hero	Government Facility	US Route 2
South Hero Town Offices	Town of South Hero	Government Facility	US Route 2
Substation (Appletree)	VELCO, Inc.	Energy Facility	117 US Route 2
Substation (South Hero)	VELCO, Inc.	Energy Facility	19 Eagle Camp Rd
U.S. Post Office	US Postal Service	Government Facility	US Route 2

Attachment C

Town of South Hero 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 technically feasible?
8. Is the action administratively possible?
9. Is the action politically acceptable?
10. Is the action legal?
11. Does the action offer reasonable benefits compared to its cost of implementation?
12. Is the action environmentally sound?

		Criteria												Total Score
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Mitigation Action	Generator for Fire Station	3	3	3	3	3	3	3	3	3	3	3	3	**36**
	Landon Road Culvert Replacement	3	3	3	3	2	3	3	3	3	3	3	2	**34**
	Martin Road Culvert Replacement	3	3	3	3	2	3	3	3	3	3	3	2	**34**
	Kibbe Point Road Culvert Replacement	2	3	3	3	2	3	3	3	3	3	3	2	**33**
	NIMS/ICS Training for Selectboard and Highway Department	1	3	2	1	3	3	3	3	3	3	3	3	**31**
	Update Bylaw to incorporate River Corridor standards	2	3	1	3	2	2	3	2	2	3	2	3	**28**

Attachment D

Public Government Participation

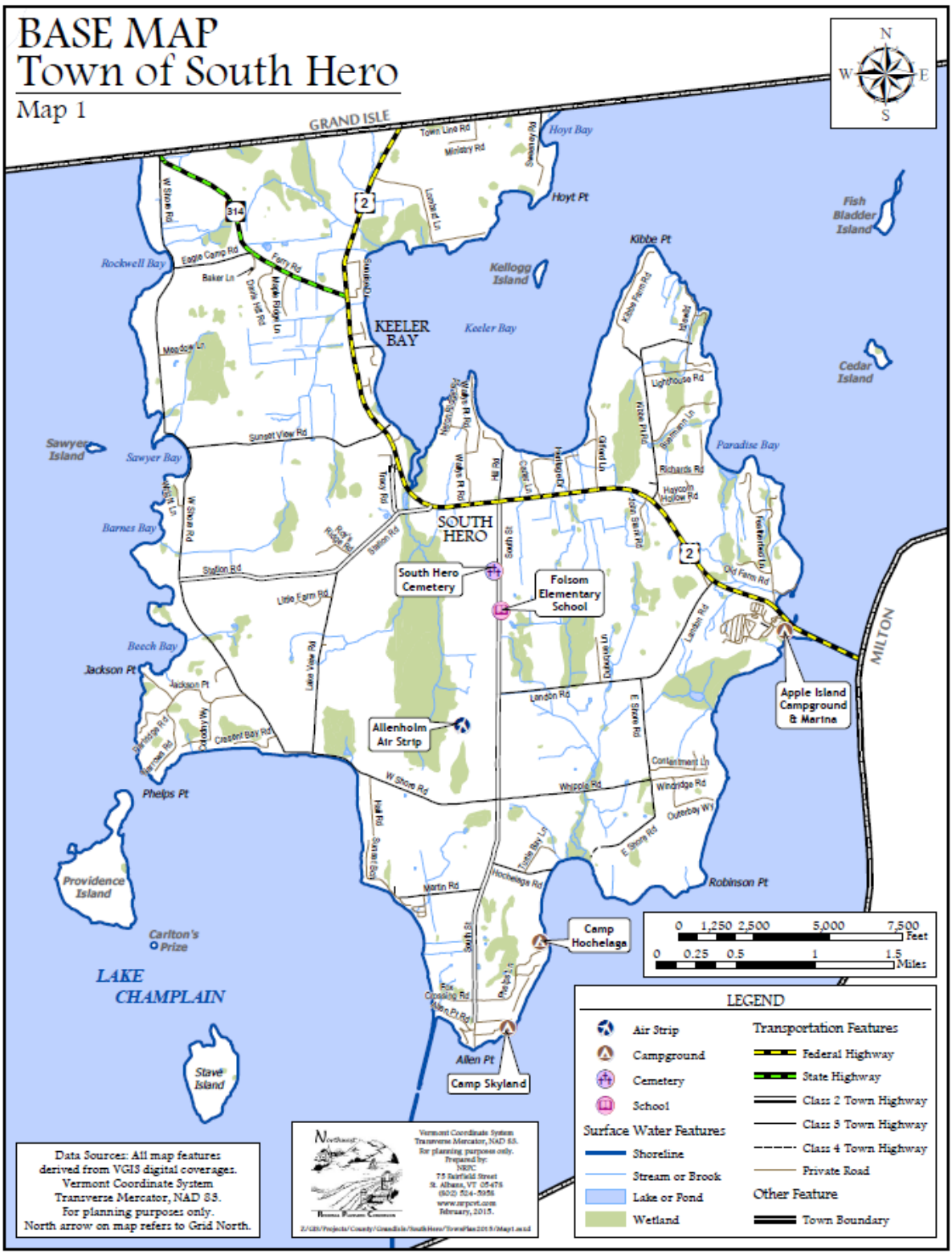
Information in the Hazard Mitigation Plan is based on research from a variety of sources. It encompassed research using a historical perspective and future projections for the vulnerability assessment. The research methods and various contributions to the plan included but were not limited to:

- Town of South Hero Select Board

- Northwest Regional Planning Commission

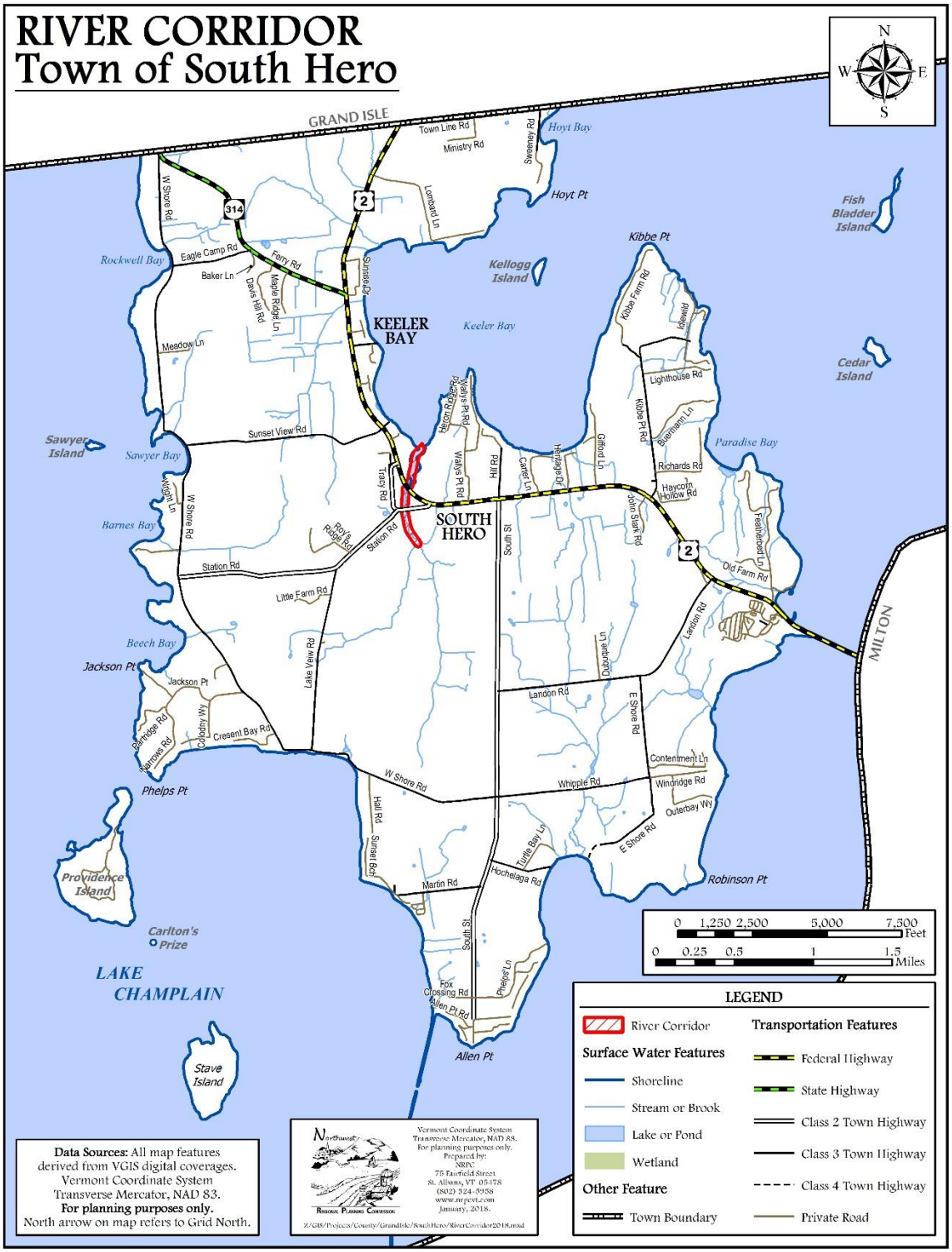
Attachment E

Town of South Hero Map –



Attachment F

Town of South Hero - River Corridors and Flood Zones Map



Attachment G

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