



## 9.29 Town of Shelter Island

This section presents the jurisdictional annex for the Town of Shelter Island. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the Town participated in the planning process; an assessment of the Town of Shelter Island’s risk and vulnerability; the different capabilities utilized in the Town; and an action plan that will be implemented to achieve a more resilient community.

### 9.29.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Shelter Island’s hazard mitigation plan primary and alternate points of contact.

**Table 9.29-1. Hazard Mitigation Planning Team**

Primary Point of Contact	Alternate Point of Contact
Name/Title: James Read, Chief of Police Address: P.O. Box 1056, Shelter Island, NY 11964 Phone Number: 631-749-0600 Email: jread@shelterislandtown.us	Name/Title: Jennifer Beresky, Senior Office Assistant Address: P.O. Box 1056, Shelter Island, NY 11964 Phone Number: 631-749-0600 Email: jberesky@shelterislandtown.us
NFIP Floodplain Administrator	
Name/Title: Jonathan Chris Tehan, Senior Building Inspector Address: 38 North Ferry Road, Shelter Island, NY 11964-0970 Phone Number: (631) 749-0291 Email: ctehan@shelterislandtown.us	

### 9.29.2 Municipal Profile

#### Brief History

The Town of Shelter Island was incorporated in 1730. The Nature Conservancy’s Mashomack Preserve comprises one-third of the island’s area, preserving natural forests, wetlands, and habitat for native species. Shelter Island has more than 25 miles of coastline, including many saltwater marshes and tidal wetlands. Summer tourism is the Island’s primary industry. Tourists visiting the island enjoy its many parks, public beaches, marinas, and the Heights Historic District.

Shelter Island has several unique qualities that enhance its sensitivity to natural hazards. These include its small aquifer, large amount of coastline, and isolation from mainland resources. Unlike much of Long Island, 90% of the population of Shelter Island relies on individual property well and septic systems. The island relies on a small aquifer as the sole source of water. The aquifer is sensitive to drought, decreased infiltration due to development, and saltwater intrusion near the coast. The island’s extensive coastline is subject to erosion and flooding in many areas. Transportation on and off of the island is provided by two privately owned ferry companies: North Ferry provides access from Shelter Island Heights to Greenport on the North Fork, and South Ferry provides access to the South Fork via North Haven. The ferries serve as an essential link to Route 114, and avulsion or erosion affecting the ferries affects access by residents to off-island services. During severe storm events, the island may be isolated from the mainland, and additional emergency resources could become unavailable.



The Town of Shelter Island is located in eastern Suffolk County, between the North and South Forks. The island covers an area of 12 square miles. The Village of Dering Harbor is the Town’s only village, with a population of 11 and a land area of 0.2 square miles.

The Town’s government is comprised of a Town Supervisor and four council members. The Town’s government is elected by its citizens. This governing body will assume responsibility for adoption and implementation of this plan. Many committees support the Town Board in an advisory capacity. The police department is responsible for emergency management operations within the Town of Shelter Island and the Village of Dering Harbor.

According to the U.S. Census, the 2010 population for the Town of Shelter Island was 2,381. The estimated 2017 population was 2,744, a 15.2 percent increase from the 2010 Census. Data from the 2017 U.S. Census American Community Survey indicate that 3.0 percent of the population is 5 years of age or younger and 32.0 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### 9.29.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction’s overall risk to its hazards of concern. Table 9.29-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development. The figures at the end of this annex illustrate the geographically-delineated hazard areas and the location of potential new development, where available. The recent and anticipated development depicted on these figures excludes the Suffolk County wastewater upgrades; refer to Section 4 (County Profile) for additional information on this development.

**Table 9.29-2. Recent and Expected Future Development**

Type of Development	2014		2015		2016		2017		2018		2019	
<b>Number of Building Permits for New Construction Issued Since the Previous HMP* (within regulatory floodplain/ Outside regulatory floodplain)</b>												
	<b>Total</b>	<b>Within SFHA</b>	<b>Total</b>	<b>Within SFHA</b>	<b>Total</b>	<b>Within SFHA</b>	<b>Total</b>	<b>Within SFHA</b>	<b>Total</b>	<b>Within SFHA</b>	<b>Total</b>	<b>Within SFHA</b>
Single Family	12	N/A	17	N/A	14	N/A	16	N/A	10	N/A	18	N/A
Multi-Family	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
Other (commercial, mixed-use, etc.)	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
<b>Total Permits Issued</b>	<b>12</b>	<b>N/A</b>	<b>17</b>	<b>N/A</b>	<b>14</b>	<b>N/A</b>	<b>16</b>	<b>N/A</b>	<b>10</b>	<b>N/A</b>	<b>18</b>	<b>N/A</b>
Property or Development Name	Type of Development		# of Units / Structures		Location (address and/or block and lot)		Known Hazard Zone(s)*		Description / Status of Development			
<b>Recent Major Development and Infrastructure from 2015 to Present</b>												
White Subdivision	Residential		10 lots		S. Menantic Road		V, a and X zones		Undeveloped			
Pandion	Residential/Commercial		8 lots		Burns Rd./Pandion Rd.		VE 10 and X		2 commercial buildings complete			
<b>Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years</b>												
None anticipated												



Note: The Town of Shelter Island does not differentiate between flood prone permits and regular permits. The totals above for permitting are all-inclusive.

SFHA Special Flood Hazard Area (1% flood event)

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.29.4 Capability Assessment

The Town of Shelter Island performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Information on National Flood Insurance Program (NFIP) compliance.
- Classification under various community mitigation programs.
- The community’s adaptive capacity for the impacts of climate change.

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. Areas with current mitigation integration are summarized in Capability Assessment (Section 9.29.4). The Town of Shelter Island identified specific integration activities that will be incorporated into municipal procedures and are included in the updated mitigation strategy. Appendix G provides the results of the planning/policy document review and the answers to integration survey questions.

### Planning, Legal, and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Shelter Island and where hazard mitigation has been integrated.

**Table 9.29-3. Planning, Legal, and Regulatory Capability**

	Do you have this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible	State Mandated	Has this been integrated?	
						If no - can it be a mitigation action?	
<b>Codes, Ordinances, &amp; Requirements</b>							
Building Code	Yes	Building Construction, Chapter 43, Town Code, date adopted 11-2-01, latest amendment 7-19-19	Local, State	Building Inspector	Yes	Yes	-
Comment: The Building Inspector is hereby designated as the Superintendent of Buildings under the code. The Town Board of the Town of Shelter Island may appoint a Deputy Building Inspector as the need may appear, to act under the supervision of the Building Inspector and to exercise any portion of his powers and duties. Whenever the Building Inspector is absent or unable to act, the Deputy Building Inspector is authorized to perform his functions.							
Zoning Code	Yes	Town Code, Chapter 133, date adopted 5-16-00,	Local	Zoning Board	No	Yes	-



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	Do you have this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible	State Mandated	Has this been integrated?	
						If no - can it be a mitigation action?	
		latest amendment 6-14-19					
Comment: The Zoning Code regulates development and construction in the Town.							
Subdivisions	Yes	Town Code, Chapter 111, date 10-01-05	Local	Planning Board	No	Yes	-
Comment: These regulations are established to require that every person or corporation, except church cemetery organizations, who, as owner or agent, subdivides real property into lots, plots, blocks or sites with or without streets, regardless of how they are conveyed or for what kind of land use they are intended, file in the offices of the County Clerk, the Town Clerk and Building Inspector of the Town of Shelter Island a map thereof.							
Stormwater Management	Yes	Town Code, Chapter 110 Storm Sewers, dates adopted-various	Local	Stormwater Officer	Yes	Yes	-
Comment: The Storm Sewers chapter was adopted in order to: A. To meet the requirements of the SPDES general permit for stormwater discharges from MS4s, Permit No. GP-02-02, or as amended or revised; B. To regulate the contribution of pollutants to the MS4 since such systems are not designed to accept, process or discharge non-stormwater wastes; C. To prohibit illicit connections, activities and discharges to the MS4; D. To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this article; and E. To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, grease, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment and other pollutants into the MS4.							
Post-Disaster Recovery	No	-	-	-	No	-	-
Comment:							
Real Estate Disclosure	Yes	Property Condition Disclosure Act, NY Code - Article 14 §460-467	State	NYS Department of State, Real Estate Agent	Yes	Yes	-
Comment:							
Growth Management	No	-	-	-	No	-	-
Comment:							
Site Plan Review	Yes	Site Plan Review, Chapter 109, Town Code, date adopted 9-5-17, latest amendment 5-14-19	Local	Planning Board	No	Yes	-
Comment: In considering and acting upon site plans, the Planning Board shall take into consideration the public health, safety and welfare, the comfort and convenience of the public in general and the residents of the immediate neighborhood in particular and may prescribe appropriate conditions and safeguards as may be required in order that the result of its action may, to the maximum extent possible.							
Environmental Protection	Yes	Town Code, Chapter 60 Environmental Quality Review, date adopted 12-12-86	Local	Wetlands Officer	Yes	Yes	-
Comment: The purpose of this chapter is to implement, for the Town of Shelter Island, excluding the Incorporated Village of Dering Harbor, the provisions of the State Environmental Quality Review Act and the State Environmental Quality Review Regulations, thereby incorporating environmental factors and understanding into local planning and decision-making processes.							



	Do you have this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible	State Mandated	Has this been integrated?	
						If no - can it be a mitigation action?	
Other environmental protections chapters include Chapter 91 Nature Preserve System, Chapter 128 Waterways, and Chapter 129 Wetlands							
Flood Damage Prevention	Yes	Flood Damage Prevention, Chapter 68, Town Code, date adopted 7-31-98	Local	Building Inspector	Yes - BFE+2 feet for all construction in the SFHA (residential and non-residential)	Yes	-
Comment: The Purpose of the Flood Damage Prevention Chapter is: A. To protect human life and health. B. To minimize expenditure of public money for costly flood control projects. C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public. D. To minimize prolonged business interruptions. E. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, sewer lines, streets and bridges located in areas of special flood hazard. F. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas. G. To provide that developers are notified that property is in an area of special flood hazard. H. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.							
Municipal Separate Storm Sewer System (MS4)	Yes	Storm Sewers, Chapter 110, Town Code, date adopted-various	Local	Stormwater Officer	Yes	Yes	-
Comment: The Storm Sewers chapter was adopted in order to: A. To meet the requirements of the SPDES general permit for stormwater discharges from MS4s, Permit No. GP-02-02, or as amended or revised; B. To regulate the contribution of pollutants to the MS4 since such systems are not designed to accept, process or discharge non-stormwater wastes; C. To prohibit illicit connections, activities and discharges to the MS4; D. To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this article; and E. To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, grease, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment and other pollutants into the MS4.							
Emergency Management	Yes	Town Code Chapter 19 Board of Police Commissioners, date adopted 4-24-92 Chapter 20 Policemen, date adopted 10-8-76	Local	Police Department	Yes	Yes	-
Comment:							
Climate Change	No	-	-	-	Yes	-	-
Comment:							
Disaster Recovery Ordinance	No	-	-	-	No	-	-
Comment:							
Disaster Reconstruction Ordinance	No	-	-	-	No	-	-
Comment:							
Low-Nitrogen Sanitary System Rebate Program	Yes	Low-Nitrogen Sanitary System Rebate Program	Local	Administration	No	Yes	-



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	Do you have this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible	State Mandated	Has this been integrated?	
						If no - can it be a mitigation action?	
		Chapter 88, Town Code, date adopted 7-19-19					
Comment: Reduce nitrogen contamination in groundwater and runoff							
<b>Planning Documents</b>							
Comprehensive Plan	Yes	Shelter Island Comprehensive Plan; January 13, 1994	Local	Town Board	No	No	-
Comment:							
Capital Improvement Plan	No	-	-	-	No	-	-
Comment:							
Disaster Debris Management Plan	Yes	Suffolk County Multi-Jurisdictional Debris Management Plan	County, Local	Suffolk County FRES	No	Yes	-
Comment: This NYS and FEMA approved comprehensive Multi-Jurisdictional Debris Management Plan was developed through the cooperative efforts of Suffolk County and each of the ten (10) Towns, working together in conjunction with partners from private, state and federal agencies.							
Floodplain or Watershed Plan	Yes	Watershed Management Plan	Local	Building Dept	No	Yes	-
Comment: The purpose of a Watershed Management Plan is to provide a comprehensive approach to educate, plan for and implement incremental improvements with a goal of protecting and restoring watershed health. Shelter Island's resources are fragile, and human influences and actions affect the island's waterbodies, both directly and indirectly. This is particularly evident in West Neck Bay and Dering Harbor, where known impairments due to pathogens, nitrogen levels and harmful algal blooms exist.							
Stormwater Plan	Yes	Town Code, selections in Chapter 62; Date 10-1-05	Local	Building Dept	No	Yes	-
Comment:							
Open Space Plan	Yes	Element of Comprehensive Plan, January 13, 1994. Land Use, Zoning and Open Space	Local	Town Board	Yes	Yes	-
<p>Comment. Chapter 91 establishes and creates the Nature Preserve System.:</p> <p>A. The purpose of this chapter is to establish a Town Nature Preserve System so that certain Town-owned and privately owned properties can be protected from inappropriate use and development.</p> <p>B. Due to the growth of the population and the development of the economy in the Town, many properties located in the Town are subject to human activity and development. It is necessary and desirable that the natural diversity which currently exists in and on the lands and waters located in the Town to be preserved as natural areas for the benefit of present and future generations in order to achieve any of the following objectives:</p> <p>(1) Heritage: to protect natural areas which provide living museums of the original heritage of the Town and contribute to the public health and welfare of the inhabitants. Rural ambiance and environmental quality have traditionally contributed to the Town's economic base and continue to provide economic opportunity to the residents of the Town.</p> <p>(2) Environmental quality: to protect the existing natural areas and, where desirable, to promote an improved environmental quality of natural areas in the Town, including but not limited to critical environmental areas, significant coastal fish and wildlife habitats and unique site types.</p> <p>(3) Habitat for aquatic and upland ecological communities: to preserve ecosystems and the rich diversity of flora and fauna living thereon, including rare, threatened, endangered and protected species. (4) Unique geological features: to protect the diversity of unique geological features found within the Town, including beaches, dunes, bluffs, swales, kettleholes, kames, morainal highlands and outwash plains.</p> <p>(5) Wetlands: to protect wetlands as a means of flood control, water purification and breeding and nursery grounds for shellfish, fish and other aquatic flora and fauna.</p> <p>(6) Recreational, educational and scientific opportunities: to provide opportunities for wilderness experience, diverse recreational activities and environmental educational programs and academic research programs.</p>							





	Do you have this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible	State Mandated	Has this been integrated?	
						If no - can it be a mitigation action?	
(7) Buffer areas: to provide buffer areas to existing natural areas. (8) Watershed areas: to protect watershed areas critical to recharging precipitation into the Town's sole-source aquifer or maintaining surface water quality. (9) Aquifer protection: to protect tracts of land that are critical to the Island's fragile sole-source aquifer.							
Urban Water Management Plan	No	-	-	-	No	-	-
Comment:							
Habitat Conservation Plan	No	-	-	-	No	-	-
Comment:							
Economic Development Plan	No	-	-	-	No	-	-
Comment:							
Shoreline Management Plan	Yes	Near Shore Overlay Town Code 133-12 dated 3/15/07	Local	Town Board	-	Yes	-
Comment:							
Community Wildfire Protection Plan	No	-	-	-	No	-	-
Comment:							
Forest Management Plan	No	-	-	-	No	-	-
Comment:							
Transportation Plan	Yes	Comprehensive Plan	Local	Town Board	No	No	-
Comment: Element of Comprehensive Plan, January 13, 1994							
Agriculture Plan	No	-	-	-	No	-	-
Comment:							
Other (this could include a climate action plan, tourism plan, business development plan, etc.)	No	-	-	-	No	-	-
Comment:							
<b>Response/Recovery Planning</b>							
Comprehensive Emergency Management Plan	Yes	Suffolk County Comprehensive Emergency Management Plan (2018)	Suffolk County and Associated Jurisdictions	Suffolk FRES	Yes	Yes	-
Comment: The County Comprehensive Emergency Management Plan (CEMP) describes the emergency obligations of County government and its capability and capacity to undertake emergency assignments or acquire those resources necessary to support its emergency mission. The Concept of Operations of the CEMP describes the management of emergencies within the National Incident Management System (NIMS) and details emergency management programmatic efforts to accommodate present standards.							
Strategic Recovery Planning Report	No	-	-	-	No	-	-



	Do you have this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible	State Mandated	Has this been integrated?	
						If no - can it be a mitigation action?	
Comment:							
Threat & Hazard Identification & Risk Assessment (THIRA)	No	-	-	-	No	-	-
Comment:							
Post-Disaster Recovery Plan	No	-	-	-	No	-	-
Comment:							
Continuity of Operations Plan	Yes	Continuity of Operations Plan	Local	Police	No	Yes	-
Comment:							
Public Health Plan	No	-	-	-	No	-	-
Comment:							
Other	No	-	-	-	No	-	-
Comment:							

**Table 9.29-4. Development and Permitting Capability**

Indicate if your jurisdiction implements the following	Response Yes/No; Provide further detail
Development Permits. If yes, what department?	Yes, Building Department
Permits are tracked by hazard area. For example, floodplain development permits.	No
Buildable land inventory If yes, please describe If no, please quantitatively describe the level of buildout in the jurisdiction.	No

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Town of Shelter Island.

**Table 9.29-5. Administrative and Technical Capabilities**

Resources	Available? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning Board, Zoning Board of Appeals
Mitigation Planning Committee	Yes	Safety Committee, Deer & Tick Committee, Emergency Medical Services Advisory Board, Ferry Study Group, Capital Planning Grant Committee
Environmental Board/Commission	Yes	Conservation Advisory Council, Water Advisory Committee, Water Quality Improvement Advisory Board, Green Options Committee





Resources	Available? (Yes or No)	Department/ Agency/Position
Open Space Board/Committee	Yes	Conservation Advisory Council, Taylor’s Island Preservation and Management Committee
Economic Development Commission/Committee	No	-
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	CodeRED, website
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	The Shelter Island Police with the assistance and input from the Town of Shelter Island, Shelter Island EMS, Shelter Island Fire Department and Suffolk County Fire Rescue and Emergency Services as well as FEMA have established working relationships and operational plans for coordinated efforts of emergency response
<b>Technical/Staffing Capability</b>		
Planners or engineers with knowledge of land development and land management practices	Yes	Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineer
Planners or engineers with an understanding of natural hazards	Yes	Engineer
Staff with expertise or training in benefit/cost analysis	Yes	On Staff
Professionals trained in conducting damage assessments	Yes	Building Department
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Police Personnel
Scientist familiar with natural hazards	Yes	Consultants \ Local Knowledgeable specialists
NFIP Floodplain Administrator (FPA)	Yes	Town Building Inspector
Surveyor(s)	Yes	Not on staff (contract as needed)
Emergency Manager	Yes	Chief of Police
Grant writer(s)	Yes	Contract entity
Resilience Officer	No	-
Other (this could include stormwater engineer, environmental specialist, etc.)	No	-

**Fiscal Capability**

The table below summarizes financial resources available to the Town of Shelter Island.

**Table 9.29-6. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes-West Neck Water District
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No



Financial Resources	Accessible or Eligible to Use (Yes/No)
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	Yes, see below
Other (for example, Clean Water Act 319 Grants [Nonpoint Source Pollution])	Yes, (Community Preservation Fund 2% Real Estate Transfer Tax) Purchase open space

### Education and Outreach Capability

The table below summarizes the education and outreach resources available to the Town of Shelter Island.

**Table 9.29-7. Education and Outreach Capabilities**

Indicate if your jurisdiction has the following resources	Yes/No; Please describe
Public information officer or communications office?	Yes, Police Detective/Sergeant
Personnel skilled or trained in website development?	Contractor provides website services
Hazard mitigation information available on your website; if yes, describe	Yes, the emergency preparedness section of the site includes information on storms and coronavirus.
Social media for hazard mitigation education and outreach; if yes, briefly describe.	Yes, Town and Police Facebook pages & Town Instagram page
Citizen boards or commissions that address issues related to hazard mitigation; if yes, briefly describe.	Yes, Water Advisory Committee, Water Quality Improvement Advisory Board, Ferry Advisory Committee, Fire Commissioners
Other programs already in place that could be used to communicate hazard-related information; if yes, briefly describe.	CodeRED
Warning systems for hazard events; if yes, briefly describe.	CodeRED
Natural disaster/safety programs in place for schools; if yes, briefly describe.	Yes, County and Town complete programming
Other	None

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Shelter Island.

**Table 9.29-8. Community Classifications**

Program	Participating? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	NP	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	4/4	2004
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	5/9	-
NYSDEC Climate Smart Community	NP	-	-
Storm Ready Certification	NP	-	-
Firewise Communities classification	NP	-	-
Other	No	-	-

Note:

N/A Not applicable





NP Not participating  
 - Unavailable

**Adaptive Capacity**

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current ability to adjust to, protect from, or withstand a hazard event. This term is often discussed in reference to climate change; however, adaptive capacity also includes an understanding of local capacity for adapting to current and future risks and changing conditions. The table below summarizes the adaptive capacity for each hazard and the jurisdiction’s rating.

**Table 9.29-9. Adaptive Capacity**

Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low*
Coastal Erosion	High
Cyber Security	Medium
Disease Outbreak	High
Drought	Medium
Earthquake	Medium
Expansive Soils	Medium
Extreme Temperature	Medium
Flood	Medium
Groundwater Contamination	High
Hurricane	High
Infestation and Invasive Species	Medium
Nor’Easter	High
Severe Storm	Medium
Severe Winter Storm	Medium
Shallow Groundwater	Medium
Wildfire	Medium

*\*High Capacity exists and is in use*  
*Medium Capacity may exist; but is not used or could use some improvement*  
*Low Capacity does not exist or could use substantial improvement*  
*Unsure Not enough information is known to assign a rating*

The Town has access to resources to determine the possible impacts of climate change upon the municipality and is supportive of integrating climate change in policies or actions. Climate change integration into current policies/plans or actions (projects/monitoring) within the municipality include raising roadways. When considering stormwater system upgrades, the Town unofficially uses a guideline of the 10-year 1-hour storm event. The Town has designed bulkheads so that they can be raised while replacing. The Town uses NYC DEC guidance for 16 inches of sea level rise (2050 timeframe).

**9.29.5 National Flood Insurance Program**

This section provides specific information on the management and regulation of the regulatory floodplain.

**NFIP Floodplain Administrator (FPA)**

J. Chris Tehan, Senior Building Inspector

**National Flood Insurance Program (NFIP) Summary**

The following table summarizes the NFIP statistics for the Town of Shelter Island.





Table 9.29-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties
Town of Shelter Island	249	104	\$1,804,536	10

Source: FEMA 2020  
 Notes: According to FEMA statistics as of 7/13/2020  
 RL Repetitive Loss

### Flood Vulnerability Summary

The Town of Shelter Island does not maintain a list of properties that have been damaged by flooding or property owners interested in mitigation. Following Hurricane Sandy, no homes or structures sustained damage due to flooding. Any flooding issues were addressed through property owner’s flood insurance.

There are currently no RiskMAP projects underway in the Town. Substantial Damage determinations are reviewed by the Commissioner of Public Works and the Town Engineer. No properties have been mitigated to the Town’s knowledge. The Town feels that flood hazard maps adequately address flood risk. By utilizing the FIRM map information from FEMA, the Town stays compliant with requirements.

### Resources

The Building Department is responsible for floodplain management. There are no certified floodplain managers on staff but the FPA is in the process of taking floodplain management training courses offered through FEMA’s EMI program. The Town is working to get additional training for inspectors.

The Town utilizes GIS mapping and FIRM maps and performs permit review. The Town requires engineered solutions for flood/storm water remediation. Substantial improvements are determined based on cost/percentage of construction as per FEMA requirements.

The Town has access to information on the impact of climate change on flooding through FEMA and other sources.

The Town has noted that limited funding and personnel present barriers to running an effective NFIP program in the community.

In the Town of Shelter Island, the following educational and/or outreach activities related to the NFIP are utilized: posting information on Town website and purchasing advertisement space in local newspaper.

### Compliance History

Shelter Island joined the NFIP on February 1, 1978 and is currently an active member of the NFIP. The current effective Flood Insurance Rate Maps are dated September 25, 2009. The community is currently in good standing in the NFIP and has no outstanding compliance issues. The last Community Assistance Visit (CAV) was performed on August 17, 2011.

The Town of Shelter Island meets the minimum requirements for floodplain management regulations and ordinances set forth by FEMA and New York State.

### Regulatory

The community’s Flood Damage Prevention Ordinance (FDPO), found at Chapter 68 of the local code, was last updated in 2009. Two additional local ordinances relate to floodplain management within Shelter Island.





Ordinance 1333-11.1 (Causeway District) and 133-12 (Near Shore and Peninsular Overlay District) were adopted to ensure construction standards are restricted in shoreline areas and areas vulnerable to flooding. Special permits are also required for residential structures with more than 6,000 sq.ft of living space. Finished basements are also included in the 6,000 sq.ft.

### Community Rating System

Shelter Island is not currently a CRS community. Additional information and training regarding floodplain management and Community Rating System (CRS) would be welcomed and is encouraged.

### 9.29.6 Integration with Other Planning Initiatives

As this HMP update is implemented, the Town of Shelter Island will use information from the plan as the best available science and data for natural hazards. The capability assessment presented in this annex identifies codes, plans, and programs that provide opportunities for integration. The Suffolk County and local action plans developed for this HMP update actions related to plan integration, as well as progress on these actions, and will be reported through the progress reporting process described in Volume I. New opportunities for integration also will be identified as part of the annual progress report.

### Existing Integration

It is the intention of this municipality to incorporate hazard mitigation planning and natural hazard risk reduction as an integral component of ongoing municipal operations. The following textual summary and table identify relevant planning mechanisms and programs that have been/will be incorporated into municipal procedures, which may include former mitigation initiatives that have become continuous/on-going programs and may be considered mitigation “capabilities”:

- **EMS Department:** The Shelter Island Emergency Medical Services team takes pride in quickly responding to medical emergencies and rapidly getting patients to the area hospital that best suits their needs despite being surrounded on all sides by water.
- **Shelter Island Highway Department:** The Shelter Island Highway Department and Department of Public Works serves the community of Shelter Island with pride and professionalism. The Department offers a wide array of services for the citizens of Shelter Island.
  - Beach Cleaning
  - Cutting Brush
  - Garbage Can Pick-Up
  - Mowing Sides of Roads
  - Plowing Snow
  - Recycling Area
  - Repaving of Roads
  - Road and Waterway Signs
  - Sanding for Ice Control
  - Town Building Maintenance
- **Police Department:** During an emergency, the role of the Shelter Island Town Police is to support citizens and first responders to safeguard our community, citizens and property. The Shelter Island Town Police work hand in hand with the Emergency Response Teams from the Shelter Island EMS and Shelter Island Fire Department. The Police have additionally developed a “tier” level response



approach that involves coordinated efforts between key essential organizations for the purposes of shelter, care for the elderly, care for pets, food and water as well as transportation and ferriage.

- **Town Engineer:** The Town Engineer assists with, provides engineering support for, and acts as the technical advisor in matters of an engineering nature for the Town. The position is an appointed one and is full time. The Town Engineer reports to the Town Board but works closely with the Superintendent of Highways / Commissioner of Public Works. Engineering work in this position focuses primarily on Town infrastructure and in areas for which the Town has a technical, governmental responsibility. The Town Engineer is also a designated appointee to the Water Advisory Committee, but does not serve as the chairperson.
- **MS4:** Stormwater issues (also referred to as MS4 pursuant to the federal/state legislation that requires the town to deal with stormwater issues) are the responsibility of the Town Engineer and are also addressed via a shared service arrangement with the Town of Southold engineering department. In the last two years excellent progress has been made in this area.
- **Conservation Advisory Council:** In New York State, Conservation Advisory Councils are established to advise in the development, management and protection of the Town's natural resources. To this end, specific areas of concern for a CAC are to conduct research in land resources in the community via appropriate media, maintain an inventory of all Town Open Space, including marsh lands, and recommend ecologically suitable uses for such lands in places. A CAC must also maintain accurate recording of such activities. The Council's role is purely advisory, primarily to the Town Board, meaning the CAC has no decision-making authority by right. Instead, a Town Board will look to a CAC to provide advice and technical support on such matters as proposals affecting change to: salt and fresh water wetlands, the Island's aquifer and woodlands, use of major parcels of open space and management of Town lands. The CAC also has responsibility for recommending properties for inclusion in the Shelter Island Nature Preserve and developing land management plans for parcels included in the system. One of the CAC's major functions is education, to increase community awareness and involvement in the protection of our natural resources in a manner consistent with the Comprehensive Plan.
- **Deer and Tick Committee:** The Deer and Tick Committee works to manage and control deer and tick populations at levels that are appropriate for human and ecological concerns. Goals include:
  - To continue to support a multi-pronged approach that specifically is aimed at the culling of the deer herd, reducing tick-density, and educating the public in order to protect human health and ecological concerns.
  - To continue to measure the progress of management goals by utilizing scientific and statistical data.
  - To continue to recruit additional hunters, including those with a NWCO license, as well as seek additional properties around Shelter Island for hunting purposes.
  - To continue to help educate the Shelter Island Community, concerning the importance of protection against tick-borne disease and related issues.
  - To obtain local, county, and state government support that helps address tick-borne disease and deer density as a major health issue.
- **Capital Planning-Grants Committee:** The Capital Planning-Grants Committee works to develop and maintain a long-range strategic plan to manage, monitor and maintain or replace Town assets that considers priorities, costs and funding resources.



- Green Options Advisory Committee:** The map of Shelter Island's walkable open space and preserved land has been prepared by the Green Options Advisory Committee and printed with support from the Shelter Island Chamber of Commerce. Copies are available at the Shelter Island Town Hall and the Shelter Island Public Library, and at many of the Island's business establishments. This map is provided for the benefit of both our residents and visitors. It is the Town's goal to protect the natural heritage of Shelter Island. The Town encourages respectful public access to the treasured resources of woods, meadows, creeks, ponds, beaches, and wildlife within its preserved spaces.
- Water Advisory Committee:** The Town, through its Water Advisory Committee (WAC) and the United States Geological Survey (USGS), has recently inaugurated water quality testing at four test wells on the island, and the initial findings indicate high nitrate levels in the center of the island near the School. The Town immediately shared these results with School officials who indicate they also test their water quality regularly. The WAC has prepared and is implementing a Ground and Surface Water Management Plan.

**Opportunities for Future Integration**

- Wildfire Buffers (2020-Shelter Island-004):** Large forested areas within the Town could lead to wildfire potential. The Town plans to explore the possibility of vegetative buffer requirements and installation of cisterns at various locations to lessen the likelihood of wildfire impacting structures.

**9.29.7 Evacuation, Sheltering, Temporary Housing, and Permanent Housing**

Evacuation routes, sheltering measures, temporary housing, and permanent housing must all be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

**Evacuation Routes**

The Town of Shelter Island is located entirely on an island. The only options for evacuation are the North Ferry into Southold or the South Ferry into North Haven. The ferry services are privately owned. The Town has noted that flooding of the ferry terminals prevents evacuation from Shelter Island and has previously led to problems when flooding restricts emergency vehicles from coming on or off of the island.

**Sheltering**

The Town of Shelter Island has a sheltering agreement with the American Red Cross. The Town has identified the following locations as potential shelters within the Town.

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Shelter Island Senior Center	44 South Ferry Road, Shelter Island, NY	63	No	Yes	Yes	N/A	None identified
Shelter Island Legion Hall	1 Bateman Rd., Shelter Island, NY	122	No	Yes	Yes	N/A	None identified
Shelter Island School	33 North Ferry Road, Shelter Island, NY	369	Yes	Yes	Yes	N/A	Pet Shelter-Red Rover





Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Our Lady of the Isle Church	5 Prospect Ave., Shelter Island Heights, NY	568	No	Yes	Yes	N/A	None identified

### Temporary Housing

Intermediate and long-term housing options must be available to relocate displaced residents to maintain post-disaster social and economic stability. The Town has identified space at Fiske Field for the placement of permanent housing and have noted other locations such as the Town-owned airfield could also be made available.

### Permanent Housing

Structures located in the SFHA may need to be relocated, or new properties must be built once severely damaged properties are demolished. The Town does not have any suitable space available for the placement of relocated homes.

## 9.29.8 Hazard Event History Specific to the Town of Shelter Island

Suffolk County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The Town of Shelter Island’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Suffolk County. Table 9.29-11 provides details regarding municipal-specific loss and damages the Town experienced during hazard events. Information provided in the table below is based on reference material or local sources. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

**Table 9.29-11. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
February 8 – 9, 2013	Severe Winter Storm and Snowstorm (FEMA DR-4111)	Yes	Low pressure that formed along the northern Gulf coast by the morning of Thursday, February 7, 2013 moved northeast to near Cape Hatteras by the morning of Friday, February 8, 2013. The low then rapidly intensified while moving northeast to a position east of Cape Cod by the morning of Saturday, February 9, 2013, producing very heavy snowfall and blizzard conditions across central and eastern Long Island on February 8th and 9th, and winter storm conditions across the rest of southeast New York.	Overtime for public works and emergency management
January 27, 2015	Winter Storm Juno	No	A low pressure system redeveloped off the Mid Atlantic coast on the 26th and rapidly intensified into a strong nor'easter, bringing heavy snow and strong winds to much of southeastern New York, and blizzard conditions to	Overtime for public works and emergency management





Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
			Suffolk County. Nearby Brookhaven Airport experienced one-quarter mile visibility in heavy snow and north winds gusting frequently over 35 mph from about 2 AM to about 5 AM.	
July 1, 2015	Thunderstorm Wind	No	A passing warm front triggered a severe thunderstorm that impacted Northeastern Suffolk County.	A tree was reported down along Osprey Road on Shelter Island with \$1K in property damage.
August 4, 2015	Thunderstorm Wind	No	An approaching cold front triggered a cluster of severe thunderstorms producing multiple microbursts that impacted the North Shore of Long Island, from Northwest Nassau County onto the North Fork of Long Island.	Trees and wires were reported down across Shelter Island with \$7.5K in property damage.
January 26, 2016	Winter Storm Jonas	No	Low pressure moving across the deep South on Thursday January 21st and Friday January 22nd intensified and moved off the Mid Atlantic coast on Saturday January 23rd, bringing heavy snow and strong winds to southeast New York, and blizzard conditions to Long Island. Nearby Gabreski Airport (Westhampton Beach) ASOS and East Hampton Airport AWOS observations showed blizzard conditions, with visibility less than one quarter mile in heavy snow and frequent wind gusts over 35 mph through the day on Saturday January 23rd. High surf took place along the coast.	Overtime for public works and emergency management
March 14 – 15, 2017	Severe Winter Storm and Snowstorm (FEMA DR-4322)	Yes	On Tuesday, March 14th, rapidly deepening low pressure tracked up the eastern seaboard resulting in damaging winds in Suffolk County.	Overtime for public works and emergency management
September 6, 2017	Thunderstorm Wind	No	A passing cold front triggered an isolated severe thunderstorm which impacted Eastern Suffolk County.	Wires and branches were reported down on Shelter Island resulting in \$1.5K in property damage.
January 4, 2018	Winter Storm Grayson	No	Rapid intensification of the storm led to heavy snow, strong winds, and blizzard conditions over Long Island, and in Queens in New York City and the Lower Hudson Valley. Near-blizzard conditions occurred across Manhattan, the Bronx, and Brooklyn. Thundersnow was also observed across eastern Long Island. The nearby Francis S. Gabreski Airport ASOS (Westhampton Beach, NY) observations showed blizzard conditions, with visibility less than one quarter mile in heavy snow and frequent wind gusts over 35 mph during the morning on January 4th.	Overtime for public works and emergency management
March 12-13, 2018	Winter Storm Skylar	No	A strong area of low pressure tracked well offshore of the eastern seaboard, but tracked close enough to eastern	Overtime for public works and emergency management



Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
			Long Island to bring heavy snow bands during the morning and early afternoon on Tuesday, March 13, 2018. Snowfall rates were 1 to 2 inches per hour at times in the morning across eastern Long Island. Trained spotters, COOP observers, CoCoRaHS observers, and the public reported 6 to 12.5 inches of snow.	
June 30, 2019	Thunderstorm Wind	No	A strong upper level disturbance triggered severe thunderstorms across Southeastern New York	Wires brought down on West Neck Road in Shelter Island resulted in \$2K in property damage.
August 22, 2019	Thunderstorm Wind	No	A cold front triggered severe thunderstorms across Southeastern New York.	Trees and wires down throughout island in Shelter Island resulted in \$7K in property damage.

Notes:

- EM      Emergency Declaration (FEMA)
- FEMA    Federal Emergency Management Agency
- DR      Major Disaster Declaration (FEMA)
- N/A     Not applicable

### 9.29.9 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5 (Risk Assessment) of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes critical facility and community lifeline flood exposure, and the hazards of greatest concern and risk to the Town of Shelter Island. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.

A gradient of certainty was developed to summarize the confidence level regarding the input used to populate the hazard ranking. A certainty factor of high, medium or low was selected and assigned to each hazard to provide a level of transparency and create increased understanding of the data used to support the resulting ranking. The following scale was used to assign a certainty factor to each hazard:

- High—Defined scenario/event to evaluate; probability calculated; evidence-based/quantitative assessment to estimate potential impacts through hazard modeling.
- Moderate—Defined scenario/event or only a hazard area to evaluate; estimated probability; combination of quantitative (exposure analysis, no hazard modeling) and qualitative data to estimate potential impacts.
- Low—Scenario or hazard area is undefined; there is a degree of uncertainty regarding event probability; majority of potential impacts are qualitative.

### Critical Facilities

New York Department of Environmental Conservation (DEC) Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a Special Flood Hazard Area (SFHA) unless constructed according to specific mitigation specifications, including being raised 2’ above the Base Flood Elevation (BFE). This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in





an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities and community lifelines located in the 1-percent and 0.2-percent floodplain. It also summarizes if the facility is already mitigated in compliance with NYS standards (i.e., to the 0.2-percent annual chance event or worse-case scenario), or if a new mitigation action is proposed in the plan update.

**Table 9.29-12. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure			Complies with NYS Standards	Addressed by Proposed Action
		1% Event		0.2% Event		
		A-Zone	V-Zone			
West Neck Anchorage*	Ferry/Marine	X	-	X	Yes	2020-Shelter Island-017
Coecles Harbor Anchorage*	Ferry/Marine	X	-	X	Yes	2020-Shelter Island-017
Congdon's Creek Town Dock*	Ferry/Marine	X	-	X	No	2020-Shelter Island-017
Chase Creek Bridge	Transportation	-	X	X	State-Owned	2020-Shelter Island-017
Gardiners Creek Bridge	Transportation	-	X	X	County-Owned	2020-Shelter Island-017
POD	POD	-	-	X	-	-
POD	POD	-	-	X	-	-
West Neck Anchorage	Ferry/Marine	X	-	X	Yes	2020-Shelter Island-017
North Ferry Co., Shelter Island Ferry	Ferry/Marine	-	X	X	No	2020-Shelter Island-001
South Ferry Terminal	Ferry/Marine	-	X	X	No	2020-Shelter Island-002
Dering Harbor Town Dock	Ferry/Marine	-	X	X	No	2020-Shelter Island-017
North Ferry Terminal	Ferry/Marine	-	X	X	No, Privately-Owned	2020-Shelter Island-017
J.W. Piccozzi, Dering Harbor Heating Oil	Port Facility	-	X	X	No, Privately-Owned	2020-Shelter Island-017

Source: Suffolk County 2020; FEMA 2009

Notes: x = Facility is located in the floodplain boundary.

\*Community Lifeline

### Hazard Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment) of the plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.



As discussed in Section 5.3 (Hazard Ranking), each participating jurisdiction may have differing degrees of risk exposure and vulnerability compared to Suffolk County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Town of Shelter Island. The Town of Shelter Island has reviewed the county hazard risk/vulnerability risk ranking table and provided input to its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the Town of Shelter Island indicated the following:

- The Town changed the hazard ranking for coastal erosion from medium to high and noted that there have been considerable County expenditures over the last 6 years.
- The Town changed the hazard ranking for disease outbreak from medium to high, noting the impacts of the coronavirus pandemic.
- The Town changed the hazard ranking for groundwater contamination from medium to high and noted that local work has been done to address contamination since adoption of the 2014 Hazard Mitigation Plan. Efforts include: The Town of Shelter Island Watershed Management Plan was completed in June 2014. A hydrogeologic data review and evaluation was also completed in 2014. A water quality and saltwater intrusion monitoring study was completed by the Town and the US Geological Survey in 2016 for the purpose of providing information needed to properly manage the Town’s sole-source drinking water aquifer. The Town also constructed a mass balance aquifer model in 2018 applicable to the island's center in an effort to approximate the behavior of nitrates in the drinking water in this region, along with examining 5400 water test results covering a 20-year time frame. The Town prepared a Ground and Surface Water Management Plan in 2020. In accordance with the findings and recommendations contained in these reports and efforts, the Town has proceeded with policy revisions and the design of several projects. Policy revisions have included provisions for private well relocation to Town property as may be needed for potable supplies, water demand analysis for renovations and new construction, and Theis or Cooper-Jacob aquifer impact analysis for Special Permit projects. In 2019, it applied for and received funding from New York State and Suffolk County for the following: Fresh Pond feasibility study for in-waterbody control of nutrients; Island Center municipal wastewater feasibility study; and Goat Hill Town golf course water re-use feasibility study. The latter project is a public-private partnership between the Town and the Shelter Island Heights Property Owners Corporation, which owns and operates a sewage treatment plant. Surface water and groundwater quality benefits will be realized through the re-use of treated effluent for irrigation purposes. Work on these and other groundwater protection initiatives is ongoing.

**Table 9.29-13. Hazard Ranking**

<b>Coastal Erosion</b>	<b>Cyber Security</b>	<b>Disease Outbreak</b>	<b>Drought</b>	<b>Earthquake</b>	<b>Expansive Soils</b>
High	Medium	High	Low	Low	Low
<b>Extreme Temperature</b>	<b>Flood</b>	<b>Groundwater Contamination</b>	<b>Hurricane</b>	<b>Infestation and Invasive Species</b>	<b>Nor’Easter</b>
Medium	Medium	High	High	Medium	High
<b>Severe Storm</b>	<b>Severe Winter Storm</b>	<b>Shallow Groundwater</b>	<b>Wildfire</b>		
Medium	Medium	Low	Medium		



## Identified Issues

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The municipality has identified the following vulnerabilities within their community:

In addition to those identified above, the municipality has identified the following vulnerabilities:

- Major hazard problem facing the Town of Shelter Island is coastal flooding/erosion. Several of the past hurricanes (Sandy and Irene) brought record flooding to the Town's coastal communities. Our small business district has had repetitive flooding of Bridge Street and many roads and causeways experience wash-over and erosion making them inoperable for emergency access.
- The North and South Ferries are privately owned and represent the only ingress and egress to the Town. Both ferry terminals are floodprone. Flooding prevents evacuation and emergency response vehicles are not equipped to handle possible flooding at the terminals. A past flooding event and a medical emergency resulted in the need to use a privately owned high profile vehicle to evacuate a resident onto a ferry.
- Reel Point: Erosion occurs on the easterly face on the spit due to a 45 mile open fetch. Nor'easters create longshore transport that deposits sand in the inlet blocking the harbor. The County has spent in excess of \$1M on multiple dredging efforts.
- Ram Island Drive connects Ram Island to the rest of Shelter Island. The barrier beach has been lost and subsequently repaired. Utilities were put under the dune and protected by a bulkhead. However, the dune has now eroded away. The project was initially designed around 1993 with construction done in 1995. It is unlikely that sea level rise was taken into account during design. The roadway represents the only ingress and egress for dozens of homes.
- Large coastal flood events can result in salting of private drinking wells.
- The Town has concerns for wildfire, due to the large forested lands and high winds that can occur due to being coastal.
- The Town has numerous roads that have been identified as being vulnerable to coastal flooding:
  - North Ferry Terminal
  - South Ferry Terminal
  - Bridge Street
  - West Neck Road (Terry Drive-Westmoreland)
  - Ram Island Road (Sheep Pasture-Gardiners Bay Drive)
  - 1st Causeway
  - 2nd Causeway
  - 3rd Causeway
  - End of Congdon's Road
- The Town has identified numerous roads that are vulnerable to rainfall/urban flooding:
  - Clark Place (area)
  - Valley Road
  - Linda Road
  - Osprey Road
  - Smith Street (Midway-114)



- Midway Road (N. Jaspa)
- Midway Road (south)
- Westmoreland Drive
- West Neck Road (Nostrand Parkway)
- All of Silver Beach (high water table)
- Emerson Lane (dead end)
- Hay Beach (area)
- Big Ram (area)
- North 114 meets South 114 (medical center)
- COUNTY ROADS-
- Menantic Road (County Road)
- Smith Street-Bowditch Road (County Road)
- Crescent Beach (by bath houses) (County Road)

Specific areas of concern based on resident response to the Suffolk County Hazard Mitigation Citizen survey include:

- Ferry ramps flood during extreme high tides.
- Piccozzi's gas station is in a flood prone area

### 9.29.10 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2014 HMP. Actions that are carried forward as part of this plan update are included in the updated mitigation strategy table (Table 9.29-15). Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.



Table 9.29-14. Status of Previous Mitigation Actions

Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
TSI-1 (Sandy HMGP LOI #936)	Marsh Island Creation in Dickerson Creek.– Cornell Cooperative Extension	Coastal Erosion, Flooding, Nor Easters, Hurricane, Severe Storms	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist		No Progress	Cost		1. Discontinue 2. 3. The project was proposed by Cornell Cooperative Extension and no actions have been taken to date to the Town’s knowledge.
TSI-2 (Sandy HMGP LOI #1300)	Shelter Island Structural Shoreline Stabilization – Cornell Cooperative Extension	Coastal Erosion, Flooding, Nor’Easters, Hurricane, Severe Storm	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist		No Progress	Cost		1. Discontinue 2. 3. The project was proposed by Cornell Cooperative Extension and no actions have been taken to date to the Town’s knowledge.
TSI-3 (Sandy HMGP LOI #1303)	Marsh Island Creation in Gardiners Creek.	Coastal Erosion, Nor’Easters, Hurricanes, Flooding, Severe Storms	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist		No Progress	Cost		1. Discontinue 2. 3. The project was proposed by Cornell Cooperative Extension and no actions have been taken to date to the Town’s knowledge.
TSI-4 (Sandy HMGP LOI #142)	Emergency Services Interoperability Communications Project	Coastal Erosion, Flooding, Nor-Easters, Hurricanes, Severe Storms, Delay in emergency communications	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat		No Progress; Project has not been started. No tax-based funding available.	Cost		1. Include in 2020 HMP 2. 3.



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
			Restoration Outreach Specialist Town of Shelter Island					
TSI-5 (Sandy HMGP LOI #1305)	Hay Beach Point Re-Vegetation– Cornell Cooperative Extension	Coastal Erosion, Flooding, Nor-Easters, Hurricanes, Severe Storms	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist		No Progress	Cost		1. Discontinue 2. 3. The project was proposed by Cornell Cooperative Extension and no actions have been taken to date to the Town’s knowledge.
TSI-6	Assess and prioritize the options available to upgrade and protect the electric grid, to provide a reliable power supply from the North and South Forks of Long Island	Earthquake, Flood, Hurricane, Nor’Easter, Severe Storm, Wildfire, Winter Storm	PSE&G		Complete	Cost		1. Discontinue 2. 3. Complete
TSI-7	Assess and prioritize the options available to elevate utilities, businesses and roadway on Bridge Street.	Flood, Hurricane, Nor’Easter, Severe Storm, Shallow GW			No Progress	Cost		1. Include in 2020 HMP 2. 3.
TSI-8	Assess and prioritize the options available to elevate West Neck Road between Hilo Drive and Westmoreland Drive.	Flood, Hurricane, Nor’Easter, Severe Storm, Shallow GW			No Progress	Cost		1. Discontinue 2. 3. Merged with another project
TSI-9	Assess and prioritize the options available to elevate the entrance to Westmoreland Drive.	Flood, Hurricane, Nor’Easter, Severe Storm, Shallow GW			No Progress	Cost		1. Discontinue 2. 3. Merged with another project





Section 9.29: Town of Shelter Island

Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Evidence of Success	
TSI-9b (Sandy HMGP LOI 762)	Raising Westmoreland Drive, Shelter Island	Community isolated during storm flooding	Town of Shelter Island		Complete	Cost	Evidence of Success	1. Discontinue 2. 3. Complete
TSI-10	Assess and prioritize the options available to elevate Ram Island Road between Cobbett's Lane and Sheep Pasture Road.	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW			In Progress; Portions have been completed	Cost	Evidence of Success	1. Include in 2020 HMP 2. 3.
TSI-11	Assess and prioritize the options available to elevate Ram Island Drive 1 <sup>st</sup> Causeway from center to base of Little Ram Island.	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW			No Progress	Cost	Evidence of Success	1. Include in 2020 HMP 2. 3.
TSI-12	Assess and prioritize the options available to elevate both low-lying ends of Ram Island Drive 2 <sup>nd</sup> Causeway.	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW			No Progress	Cost	Evidence of Success	1. Include in 2020 HMP 2. 3.
TSI-13	Build-up of stone and sand replenishment at Ram Island, 2nd Causeway.	Coastal erosion, flooding, hurricane, nor'easter, severe storm, severe winter storm	Town, DPW, FHWA, DEC, Army Corps of Engineers		No Progress	Cost	Evidence of Success	1. Include in 2020 HMP 2. 3.
TSI-14	Beach groins and stabilization at the entrance to Shell Beach.	Coastal Erosion	Town of Shelter Island		Complete	Cost	Evidence of Success	1. Discontinue 2.





Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Damages Avoided; Evidence of Success	Cost	
						Damages Avoided; Evidence of Success		3. Complete
TSI-14b  (Sandy LOI 968)	Shell Beach Groins and Bulkhead.		Town of Shelter Island		In Progress; Some groins and rock wall entrance completed	Cost		1. Include in 2020 HMP 2. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-15	Establish an emergency communications system to place all Emergency Management Operations on a single shared frequency.	Coastal Erosion, Earthquake, Flood, Hurricane, Infestation, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm			No Progress; Project has not been started. No tax-based funding available.	Cost		1. Include in 2020 HMP 2. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-16	Upgrade a half-mile section of the fencing along the public beach portions of Crescent Beach. This measure will include stabilizing existing fencing, adding sand and repairing groins.	Hurricane, Nor'Easters, Severe storms	County of Suffolk and Town of Shelter Island		In Progress; Less than 50% complete	Cost		1. Include in 2020 HMP 2. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-17	Stabilize Reel Point at the Coecles Harbor entrance. Constant silting is affecting the entrance to this major harbor. The project includes ongoing maintenance and is about 80% complete.	Coastal Erosion, Hurricane, Flooding, Nor'Easter, Severe Storm, Severe Winter Storm	Town of Shelter Island, DPW		In Progress; Design plan has changed	Cost		1. Include in 2020 HMP 2. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-18	Consider the installation of storm shutters at the Emergency Operations shelter.	Hurricane, Nor'Easter, Severe Storm			No Progress; Windows have recently been replaced. The prior windows had a protective	Cost		1. Include in 2020 HMP 2. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection Damages Avoided; Evidence of Success	
					film, which no longer exists.			
TSI-19	Stabilize the public portions of the Peconic Avenue bulkhead with rock at the base of existing bulkhead.	Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm	Town of Shelter Island, DPW		Complete	Cost		1. Discontinue 2. 3. Complete
TSI-20	Reengineer and reconstruct 30 town-maintained bulkheads.	Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm	Town of Shelter Island, DPW		In Progress; One bulkhead completed, planning on completing one per year, unless other funding opportunities present themselves.	Cost		1. Include in 2020 HMP 2. 3.
TSI-21	Enhance the Town Code.	Coastal Erosion, Drought, Earthquake, Expansive Soils, Flood, Groundwater Contamination, Hurricane, Infestation, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm			No Progress	Cost		1. Include in 2020 HMP 2. 3.
TSI-22	Increase structural stability and drainage capacity of culverts by replacing deteriorated culverts that prevent road flooding.	Flooding, Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm	Town of Shelter Island, DPW, private		In Progress	Cost		1. Include in 2020 HMP 2. 3.



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
TSI-23	Implement tree management programs to prevent power outages from falling limbs and to improve post-disaster debris management. Educate public on removal of dead/diseased trees.	Earthquake, Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm			Ongoing Capability; Ongoing process with PSEG, who has provided information to the public and continues to maintain power lines in cooperation with the Town.	Cost		1. Discontinue 2. 3. Ongoing Capability
TSI-24	Adopt a program to increase public participation in maintenance of municipal drainage by reducing roadway/recharge basin litter, dumping yard/household waste into streets, identification of neighborhood inlets, and notifying DPW of drainage problems.	Flood, Groundwater Contamination, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Winter Storm			Complete	Cost		1. Discontinue 2. 3. Complete
TSI-25	Support/enhance building and/or flood code enforcement programs at the local level. The Town is seeking to increase its public education and awareness of current codes efforts.	Coastal Erosion, Drought, Earthquake, Expansive Soils, Flood, Groundwater Contam, Hurricane, Infestation, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm			No Progress	Cost		1. Discontinue 2. 3. Incorporated into another project
TSI-26	Design or enhance existing municipal drainage systems to provide increased capacity and decrease road flooding. This is an ongoing effort by the Town.	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Winter Storm			Ongoing Capability	Cost		1. Discontinue 2. 3. Ongoing Capability



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success		
TSI-27	Regulate low-density land use in high risk coastal, surface water and groundwater zones.	Coastal Erosion, Expansive Soils, Flood, Groundwater Contam, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Wildfire			No Progress	Cost		1. Discontinue 2. 3. Merged with other project
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-28	Assess and prioritize options to protect the drinking water supply by installing and maintaining storm water collection systems that will minimize fresh water and contaminates from running into the bays, and implement as funding becomes available.	Groundwater Contamination, Drought, Flood	DPW		No Progress	Cost		1. Discontinue 2. 3. Merged with other project
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-29	Reduce the white tailed deer herd to the recommended density.	Infestation	PD/DPW		Ongoing Capability	Cost		1. Discontinue 2. 3. Ongoing Capability
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-30	Install 4 poster feeding stations	Infestation	Town PD/DPW		No Progress	Cost		1. Discontinue 2. 3. DEC changed regulations which prevented Town from implementing program
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-31	Educate the public regarding tick-borne illness.	Infestation	PD/DPW		Ongoing Capability	Cost		1. Discontinue 2. 3. Ongoing Capability
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-32			Town DPW			Cost		1. Discontinue



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Level of Protection	Damages Avoided; Evidence of Success	
	Raise flood prone roadways to an elevation that will not be inundated by flooding events.	Flooding, Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm			In Progress			2. 3. Merged with another project
TSI-33	Assess and prioritize options to protect shoreline roads from destruction, and implement as funding is made available. Assess and prioritize options to harden low-lying roadways from repetitive storm surge destruction, and implement as funding is made available.	Hurricane, Flood, Coastal Erosion	DPW		In Progress	Cost		1. Discontinue 2. 3. Merged with another project
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-34	Assess and prioritize options for increasing the stream flow capacity in creeks to allow for proper flushing of the waters, while protecting the natural environment. Implement as funding is made available.	Hurricane, Flood, Coastal Erosion	SC		No Progress	Cost		1. Discontinue 2. 3. No longer a priority
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-35	Assess and prioritize options to acquire or retrofit repetitive loss properties, and implement as funding is made available.	Hurricane, Flood, Coastal Erosion	Shelter Island Town		In Progress	Cost		1. Discontinue 2. 3. Merged with another project
						Level of Protection		
						Damages Avoided; Evidence of Success		
TSI-36 (former TSI-7, -8, -9)	Support and participate in county led initiatives intended to build local and regional mitigation and risk-reduction capabilities (see Section 9.1), specifically: <ul style="list-style-type: none"> <li>Mitigation Education for Natural Disasters (natural hazard awareness and personal scale risk</li> </ul>	All Hazards	Suffolk County, as supported by relevant local department leads,		Ongoing Capability	Cost		1. Discontinue 2. 3. Ongoing Capability
						Level of Protection		
						Damages Avoided; Evidence of Success		



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	<ul style="list-style-type: none"> <li>• reduction/mitigation public education and outreach program)</li> <li>• Build Local Floodplain Management and Disaster Recovery Capabilities (enhanced floodplain management, and post-disaster assessment and recovery capabilities)</li> <li>• County-Wide Debris Management Plan</li> <li>• Jurisdictional Knowledge of Mitigation Needs of Property Owners (improved understanding of damages and mitigation interest/activity of private property owners)</li> <li>• Create a Multi-Jurisdictional Seismic Safety Committee in Suffolk County (build regional, county and local capabilities to manage seismic risk, both pre- and post-disaster)</li> <li>• Alignment of Mitigation</li> </ul>							



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	Initiatives through all levels of Government (effort to build State and Federal level recognition and support of the County and local hazard mitigation planning strategies identified in this plan).							
TSI-37	Assess and prioritize options to retrofit and protect critical facility structures- such as the Emergency Operations Center- and implement as funding becomes available,	All Hazards	Shelter Island Town		In Progress; Added generators to some critical facilities, including Town Hall, Justice Court (alternate EOC), Police Department (EOC) was upgraded, and two shelters.	Cost		1. Include in 2020 HMP
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3.





### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Shelter Island has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2014 HMP:

- None identified.

### **Proposed Hazard Mitigation Initiatives for the HMP Update**

The Town of Shelter Island participated in a mitigation action workshop in June 2020 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Floodprone Structures’ (March 2007) and FEMA ‘Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards’ (January 2013).

Table 9.29-15 summarizes the comprehensive range of specific mitigation initiatives the Town of Shelter Island would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), fourteen criteria are used to evaluate and prioritize each proposed mitigation action. A numeric factor is assigned (-1, 0, or 1) to each criterion to provide a relative indication of the opportunities and constraints of each action. A numerical sum of the input provides the basis of the prioritization of actions wherein each action is assigned a category of Low, Medium, or High to indicate an implementation hierarchy. A High priority action indicates the jurisdiction will prioritize its implementation and apply for funding, if needed, as opportunities become available during the plan period of performance. This does not prevent the jurisdiction from implementing other ranked actions; however, this provides a snapshot of implementation priority at the time of this plan update.

Table 9.29-16 provides a summary of the evaluation and prioritization for each proposed mitigation initiative. Refer to the action worksheets at the end of this annex for more details on the high-ranked hazards identified first for implementation.



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2020-Shelter Island-001	North Ferry Terminal	1,2,5,7,8	Flood	<p><b>Problem:</b> Ferry operations are routinely impeded by flooding associated with sea level rise, storm activity and tidal activity, impacting regional transportation systems, life safety, and the economy.</p> <p><b>Solution:</b> Design and implement capital improvements to elevate roadways, ferry plazas, ramps and dock infrastructure to reduce the incidence, frequency and severity of flood events and storm related damage.</p>	Yes	None	Within 5 years	North Ferry Company, Town	High	Ferry terminal protected from flooding	HMGP, BRIC, Town and Company budgets	High	SIP	PP
2020-Shelter Island-002	South Ferry Terminal	1,2,5,7,8	Flood	<p><b>Problem:</b> Ferry operations are routinely impeded by flooding associated with sea level rise, storm activity and tidal activity, impacting regional transportation systems, life safety, and the economy.</p> <p><b>Solution:</b> Design and implement capital improvements to elevate roadways, ferry plazas, ramps, and dock infrastructure to reduce the incidence, frequency and severity of flood events and storm related damage.</p>	Yes	None	Within 5 years	South Ferry Company, Town	High	Ferry terminal protected from flooding	HMGP, BRIC, Town and Company budgets	High	SIP	PP
2020-Shelter Island-003	Elevate Ram Island Second Causeway	3, 5	Flood, Coastal Erosion	<p><b>Problem:</b> Ram Island Drive connects Ram Island to the rest of Shelter Island. The barrier beach has been lost and subsequently repaired. Utilities were put under the dune and protected by a bulkhead. However, the dune has now</p>	No	TBD	Within 5 years	Town of Shelter Island Administration, USACE	TBD by USACE study	Reduction in erosion, reduction in flooding	USACE, HMGP, PDM, BRIC	High	LPR, SIP, NSP	PP, NR





Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				eroded away. The project was initially designed around 1993 with construction done in 1995. It is unlikely that sea level rise was taken into account during design. The roadway represents the only ingress and egress for dozens of homes. <b>Solution:</b> The Town will work with the USACE to determine the best protections to put in place for the Ram Island Drive Second Causeway area to prevent coastal erosion and flooding damages.										
2020-Shelter Island-004	Stewardship of preserved land/community wildfire protection	1, 2, 3, 5, 6, 7	Wildfire	<b>Problem:</b> The Town has preserved large tracts of land. As time has gone on, the wildfire risk to this land has increased. Communities and infrastructure at the wildland/urban interface are also at risk. <b>Solution:</b> The Town will prepare a Community Wildfire Protection Plan, including a stewardship program for preserved land, and implement recommended actions to address to reduce wildfire risk. Highest priority actions will address water supply, fuel reduction, and local firefighting capacity improvements (e.g. training, equipment).	No	Yes, may require permitting from NYS DEC for prescribed burns or other measures	3 years	Administration, Fire Department	TBD	Reduction in wildfire risk, protection of forest ecosystems on Shelter Island	FEMA, Municipal budget, NYS DEC	High	NSP	NR
2020-Shelter Island-005	Stormwater Improvements	2	Flood, Severe Storm	<b>Problem:</b> The Town has noted there are areas in need of stormwater improvements.	No	None	Within 5 years	Town Engineer	Medium	Stormwater system maintained and	HMGP, BRIC, Town budget	High	SIP	SP



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				<b>Solution:</b> The Town will work to increase structural stability and drainage capacity of culverts by replacing deteriorated culverts that prevent road flooding.						improved where possible				
2020-Shelter Island-006	Public Water	1, 8	Groundwater Contamination	<p><b>Problem:</b> Large coastal flood events can result in salt intrusion of private drinking wells. Nitrates and chemical contaminants have been detected in groundwater.</p> <p><b>Solution:</b> The Town will enter discussions with the SCWA to discuss establishing public water for Shelter Island. If working with SCWA is feasible, the Town will determine next steps.</p>	No	No	Within 1-2 years	Town of Shelter Island Administration, Village of Dering Harbor Administration, SCWA	High	Clean drinking water supply established. Resources for protection of wells at County level.	SCWA, Municipal Bond, USDA Community Facilities Grant	High	SIP	PP
2020-Shelter Island-007	Home Elevation/Acquisition Program	1, 2	Flood, Severe Storm, Nor'Easter, Hurricane	<p><b>Problem:</b> The Town of Shelter Island has numerous repetitive loss properties in low lying areas closest to the shoreline.</p> <p><b>Solution:</b> Conduct outreach to 30 flood-prone property owners, including RL/SRL property owners and provide information on mitigation alternatives. After preferred mitigation measures are identified, collect required property-owner information and develop a FEMA grant application and BCA to obtain funding to implement acquisition/purchase/moving/elevating residential homes in the flood prone areas that experience frequent flooding (high risk areas).</p>	No	No	Within 5 years	FPA	TBD by residential properties interested in mitigation	Reduction in flood damages and repetitive losses	HMGP, FMA, PDM, BRIC	High	SIP	PP



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2020-Shelter Island-008	Bridge Street	1, 2	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow Groundwater	<b>Problem:</b> Bridge Street is low lying and prone to flooding. <b>Solution:</b> Elevate utilities, businesses and roadway on Bridge Street	No	None	Within 5 years	DPW	High	Roadway protected from flooding	HMGP, BRIC, Town budget, private owners	High	SIP	PP
2020-Shelter Island-009	Elevate Ram Island Road to First Causeway	1, 2	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow Groundwater	<b>Problem:</b> Ram Island Road is low lying and prone to flooding. <b>Solution:</b> The Town will assess and prioritize the options available to elevate Ram Island Road between Cobbett's Lane and Sheep Pasture Road, Ram Island Drive 1st Causeway from center to base of Little Ram Island.	No	May require permitting for sand replenishment	Within 5 years	Town, DPW, FHWA, DEC, Army Corps of Engineers	High	Roadway protected from flooding	HMGP, BRIC, Town budget	High	SIP	PP
2020-Shelter Island-010	Shell Beach Groins and Bulkhead	3, 4, 5	Coastal Erosion	<b>Problem:</b> Shell Beach has experienced erosion. In 2009, the failure of a single groin resulted in over \$700,000 of damage to the beach and roadway. <b>Solution:</b> The Town will complete removal/replacement of bulkhead/groins.	No	May require permitting	Within 5 years	DPW	\$360,676	Coastal erosion risk reduced	HMGP, BRIC, Town budget	High	SIP	PP
2020-Shelter Island-011	Crescent Beach Fence Stabilization	3, 4, 5	Coastal Erosion	<b>Problem:</b> Crescent Beach experiences erosion. Severe storms have undermined the integrity of the fencing along the public beach which is both an aid to public safety and a structure protecting the integrity of the beach. <b>Solution:</b> Upgrade a half-mile section of the fencing along	No	May require permitting	Within 5 years	DPW, Suffolk County	\$148,000	Coastal erosion risk reduced	HMGP, BRIC, Town budget	High	NSP, SIP	NR, PP



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2020-Shelter Island-012	Reengineer and Reconstruct 3-5 Town-Maintained Bulkheads.	2	Coastal Erosion, Flood	<p><b>Problem:</b> Town bulkheads require reengineering and reconstruction to offer proper protection from flood and coastal erosion.</p> <p><b>Solution:</b> The Town will restore and replace bulkheads.</p>	No	May require permitting	Within 5 years	DPW	High	High	HMGP, BRIC, Town budget	High	SIP	PP
2020-Shelter Island-013	Stabilize Reel Point at the Coecles Harbor Entrance	2, 8	Coastal Erosion, Hurricane, Flooding, Nor'Easter, Severe Storm, Severe Winter Storm	<p><b>Problem:</b> The Reel Point Preserve (RPP) is experiencing chronic erosion that is resulting in impacts to the flood and erosion protection, existing native habitat, and navigation of the region.</p> <p><b>Solution:</b> Design and implement a living shoreline project to provide protection and stabilization to Reel Point, encompassing an adaptive living shoreline, inlet backpassing beach nourishment and dune restoration with planting of native vegetation as the preferred alternative to provide stabilization to the region.</p>	No	May require permitting	Within 5 years	DPW	High	High	HMGP, BRIC, USACE, Town budget	High	NSP	NR
2020-Shelter Island-014	Storm Shutters at Emergency Operations Shelter	1, 2, 7	Hurricane, Nor'Easter, Severe Storm	<p><b>Problem:</b> Windows have recently been replaced at Emergency Operations shelter. The prior windows had a protective film, which no longer exists.</p>	Yes	None	Within 5 years	OEM	Medium	Medium	HMGP, BRIC, USDA Community Facilities	High	SIP	PP



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				<b>Solution:</b> The Town will complete the installation of storm shutters at the Emergency Operations shelter.							Grant Program, Town budget			
2020-Shelter Island-015	Enhance the Town's Code	1, 2, 5	All Hazards	<p><b>Problem:</b> The Town code requires updating to address hazards.</p> <p><b>Solution:</b> Support/enhance building and/or flood code enforcement programs at the local level. The Town is seeking to increase its public education and awareness of current code efforts. Regulate low-density land use in high risk coastal, surface water and groundwater zones.</p>	No	None	Within 5 years	Administration	Low	Medium	Town budget	High	LPR	PR
2020-Shelter Island-016	Pandemic Response	1	Disease Outbreak	<p><b>Problem:</b> A pandemic event with a respiratory component places residents and personnel at risk of infection. Economic impact of pandemic related shutdowns threaten ongoing operations of the Town's two privately-operated ferry companies, potentially limiting or ceasing access to all off-island resources such as hospital care, employment centers, food, fuel and other essential needs.</p> <p><b>Solution:</b> Assess Town facilities to identify opportunities to improve social distancing and infection control measures; implement priority actions. Secure economic adjustment assistance necessary to sustain ferry operations.</p>	Yes	May require permitting	Within 1 year	Administration	TBD	High	FEMA BRIC, NYS Homeland Security/Health, Town budget	Medium	SIP	PR



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2020-Shelter Island-017	Assess and prioritize options to retrofit and protect critical facility structures	2	Flood	<p><b>Problem:</b> Critical facilities must be protected from hazards to allow for continuity of operations and protection of critical services.</p> <p><b>Solution:</b> Assess and prioritize options to retrofit and protect critical facility structures- such as the Emergency Operations Center- and implement as funding becomes available. Floodprone facilities will be protected to the 500-year flood level.</p>	Yes	None	Within 5 years	Administration	High	High	HMGP, BRIC, USDA Community Facility Grant Program, Town budget	High	SIP	PP
2020-Shelter Island-018	Emergency Services Interoperability Communications Project	7	All Hazards	<p><b>Problem:</b> The Emergency Services needs to be able to communicate with each other but currently operates on separate radio platforms.</p> <p><b>Solution:</b> The Town will purchase the necessary equipment to allow for interoperability communications.</p>	Yes	None	Within 5 years	OEM	\$105,000	High	USDA Community Facility Grant Program, Town budget	High	LPR	ES
2020-Shelter Island-019	Groundwater Monitoring & Modeling Study	1, 3, 5	Groundwater contamination	<p><b>Problem:</b> All drinking water is sourced from an aquifer isolated from the mainland of Long Island. In some locations the aquifer thickness is estimated to be as little as 20 ft. Low lying areas are experiencing high chlorides from salt water intrusion, expected to worsen significantly as climate change induces increased frequency and severity of storms and global warming causes sea level rise. Nitrates and chemical contaminants have been detected.</p>	Yes	None	Within 1 year	Administration	\$350,000	Increased knowledge of aquifer contaminants and their movement in groundwater will enhance watershed management and reduce public health risk.	NYS DEC, Suffolk County, FEMA, Town budget	High	SIP	NR





Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				<b>Solution:</b> Conduct an engineering/hydro-geological study to design an effective monitoring and modeling program for the Island. This study will provide a foundation for future mitigation actions. Increased knowledge of aquifer contaminants and their movement in groundwater will enhance watershed management and reduce public health risk.										
2020-Shelter Island-020	Deer/Tick Management Projects	1, 3	Disease Outbreak	<p><b>Problem:</b> Shelter Island has a serious public health issue with tick borne illnesses. Incidence is higher than nearby communities. Currently, there are six different tick-borne diseases on the island: Lyme Disease, Babesiosis, Ehrlichiosis, Lone Star Tick Disease, Rocky Mountain Spotted Fever, and Tularemia. Some of these diseases can turn into life threatening illnesses.</p> <p><b>Solution:</b> Plan, design and implement a comprehensive tick control program.</p>	No	May require permitting	Within 1 year	Administration	TBD	High	NYS DEC, NYS Health Dept, NYS Ag & Mkts, FEMA, Town budget	High	NSP	PR
2020-Shelter Island-021  (Formerly TSI-9b; Sandy	Elevate Westmoreland Drive	1, 2, 3, 5, 7	Flood	<b>Problem:</b> The entry of Westmoreland Drive near West Neck Road, is a low point that floods during extreme high tides and during storms. Flooding cuts off all access/egress to residential community of 46 homes as	Yes 💧	May require permitting	Within 1 year	Administration	\$346,000	Medical evacuation access. Access/egress by residents and	FEMA BRIC, PDM, HMGP	High	SIP	SP



Table 9.29-15. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
HMGP LOI 762)				well as a designated landing field for medical evacuations. <b>Solution:</b> Design and construct project to elevate the roadway by approximately 16"-24".						emergency services. Avoided damages to roadway				
2020-Shelter Island-022	Cybersecurity	7	Cybersecurity	<b>Problem:</b> Cyber incidents pose a threat to Town information systems, posing risks to security, economy, and public health and safety. <b>Solution:</b> Conduct a cyber security self-assessment to identify vulnerabilities and determine capability gaps; prepare an actionable cyber security plan; and implement the plan.	Yes	None	Within 1 year	Administration	TBD	Avoid data loss or ransomware losses, maintain data confidentiality and integrity	FEMA BRIC, NYS Homeland Security, Town budget	Medium	SIP	ES
2020-Shelter Island-023	Cooling Center	1	Extreme Temperature	<b>Problem:</b> Residents without access to indoor air conditioning are at risk from extreme high temperature events. <b>Solution:</b> Design and implement a Town cooling center.	No	May require permitting	Within 1 year	Administration	TBD	Life safety benefits for vulnerable residents	FEMA BRIC, NYS Homeland Security, Town budget	Medium	SIP	PR

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Planning and Historic Preservation
- FEMA Federal Emergency Management Agency

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:






FPA Floodplain Administrator  
 HMA Hazard Mitigation Assistance  
 N/A Not applicable  
 NFIP National Flood Insurance Program  
 OEM Office of Emergency Management

A description of the estimated benefits, either quantitative and/or qualitative.

Critical Facility:

Yes  Critical Facility located in 1% floodplain

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities



Table 9.29-16. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
2020-Shelter Island-001	North Ferry Terminal	1	1	1	1	1	0	0	1	1	1	0	0	1	1	10	High
2020-Shelter Island-002	South Ferry Terminal	1	1	1	1	1	0	0	1	1	1	0	0	1	1	10	High
2020-Shelter Island-003	Elevate Ram Island Second Causeway	1	1	1	0	1	0	0	1	1	1	0	0	1	1	9	High
2020-Shelter Island-004	Stewardship of preserved land/community wildfire protection	1	1	1	0	1	0	1	1	1	1	0	0	1	1	10	High
2020-Shelter Island-005	Stormwater Improvements	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
2020-Shelter Island-006	Public Water	1	0	1	1	1	1	1	1	1	1	1	1	1	1	13	High
2020-Shelter Island-007	Home Elevation/Acquisition Program	1	1	1	1	1	1	0	1	0	0	1	0	1	1	10	High
2020-Shelter Island-008	Bridge Street	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
2020-Shelter Island-009	Elevate Ram Island Road to First Causeway	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
2020-Shelter Island-010	Shell Beach Groins and Bulkhead	0	1	1	1	1	1	-1	1	0	1	1	1	1	1	10	High
2020-Shelter Island-011	Crescent Beach Fence Stabilization	1	1	1	0	1	1	0	1	0	0	0	1	1	1	9	High
2020-Shelter Island-012	Reengineer and reconstruct 3-5 town-maintained bulkheads.	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
2020-Shelter Island-013	Stabilize Reel Point at the Coecles Harbor entrance	0	1	1	1	1	1	0	1	1	0	1	0	1	0	9	High
2020-Shelter Island-014	Storm Shutters at Emergency Operations Shelter	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
2020-Shelter Island-015	Enhance the Town's Code	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2020-Shelter Island-016	Pandemic Response	1	0	-1	0	1	1	0	0	1	1	0	0	1	0	5	Medium
2020-Shelter Island-017	Assess and prioritize options to retrofit and	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High



Table 9.29-16. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
	protect critical facility structures																
2020-Shelter Island-018	Emergency Services Interoperability Communications Project	1	1	1	1	1	1	0	1	1	0	1	1	1	1	12	High
2020-Shelter Island-019	Groundwater Monitoring & Modeling Study	1	1	1	1	1	1	0	1	1	0	1	0	1	1	11	High
2020-Shelter Island-020	Deer/Tick Management Projects	1	0	1	1	1	1	0	0	1	1	0	1	1	0	9	High
2020-Shelter Island-021  (Formerly TSI-9b; Sandy HMGP LOI 762)	Elevate Westmoreland Drive	1	1	1	1	0	1	-1	0	1	1	1	1	1	0	9	High
2020-Shelter Island-022	Cybersecurity	1	1	0	0	1	1	0	0	0	1	0	1	1	0	7	Medium
2020-Shelter Island-023	Cooling Center	1	0	1	0	1	1	0	0	1	1	0	0	1	0	7	Medium

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



### 9.29.11 Proposed Mitigation Action Types

The table below indicates the range of proposed mitigation action categories.

**Table 9.29-17. Analysis of Mitigation Actions by Hazard and Category**

Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
Coastal Erosion	2020-Shelter Island-003, 2020-Shelter Island-015, 2020-Shelter Island-018,	2020-Shelter Island-003, 2020-Shelter Island-010, 2020-Shelter Island-011, 2020-Shelter Island-011, 2020-Shelter Island-012, 2020-Shelter Island-021	2020-Shelter Island-003, 2020-Shelter Island-011, 2020-Shelter Island-013		2020-Shelter Island-015	2020-Shelter Island-003, 2020-Shelter Island-010, 2020-Shelter Island-011, 2020-Shelter Island-012		2020-Shelter Island-003, 2020-Shelter Island-011, 2020-Shelter Island-013		2020-Shelter Island-018
Cyber Security	2020-Shelter Island-015, 2020-Shelter Island-018, 2020-Shelter Island-022				2020-Shelter Island-015					2020-Shelter Island-018
Disease Outbreak	2020-Shelter Island-015, 2020-Shelter Island-016, 2020-Shelter Island-018, 2020-Shelter Island-019				2020-Shelter Island-015, 2020-Shelter Island-016					2020-Shelter Island-018
Drought	2020-Shelter Island-015, 2020-				2020-Shelter Island-015					2020-Shelter Island-018



Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
	Shelter Island-018									
Earthquake	2020-Shelter Island-015, 2020-Shelter Island-018				2020-Shelter Island-015					2020-Shelter Island-018
Expansive Soils	2020-Shelter Island-015, 2020-Shelter Island-018				2020-Shelter Island-015					2020-Shelter Island-018
Extreme Temperature	2020-Shelter Island-015, 2020-Shelter Island-018, 2020-Shelter Island-023				2020-Shelter Island-015					2020-Shelter Island-018
Flood	2020-Shelter Island-003, 2020-Shelter Island-015, 2020-Shelter Island-018	2020-Shelter Island-001, 2020-Shelter Island-002, 2020-Shelter Island-003, 2020-Shelter Island-005, 2020-Shelter Island-006, 2020-Shelter Island-007, 2020-Shelter Island-008, 2020-	2020-Shelter Island-003, 2020-Shelter Island-013		2020-Shelter Island-015	2020-Shelter Island-001, 2020-Shelter Island-002, 2020-Shelter Island-003, 2020-Shelter Island-006, 2020-Shelter Island-007, 2020-Shelter Island-008, 2020-Shelter Island-009, 2020-		2020-Shelter Island-003, 2020-Shelter Island-013	2020-Shelter Island-005	2020-Shelter Island-018



Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
		Shelter Island-009, 2020-Shelter Island-012, 2020-Shelter Island-017, 2020-Shelter Island-021				Shelter Island-012, 2020-Shelter Island-017				
Groundwater Contamination	2020-Shelter Island-015, 2020-Shelter Island-018, 2020-Shelter Island-019	2020-Shelter Island-006			2020-Shelter Island-015	2020-Shelter Island-006				2020-Shelter Island-018
Hurricane	2020-Shelter Island-015, 2020-Shelter Island-018	2020-Shelter Island-007, 2020-Shelter Island-008, 2020-Shelter Island-009, 2020-Shelter Island-014	2020-Shelter Island-013		2020-Shelter Island-015	2020-Shelter Island-007, 2020-Shelter Island-008, 2020-Shelter Island-009, 2020-Shelter Island-014		2020-Shelter Island-013		2020-Shelter Island-018
Infestation and Invasive Species	2020-Shelter Island-015, 2020-Shelter Island-018, 2020-Shelter Island-020				2020-Shelter Island-015					2020-Shelter Island-018
Nor'easter	2020-Shelter Island-015, 2020-Shelter Island-	2020-Shelter Island-007, 2020-Shelter Island-	2020-Shelter Island-013		2020-Shelter Island-015	2020-Shelter Island-007, 2020-Shelter Island-		2020-Shelter Island-013		2020-Shelter Island-018





Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
	Island-018	008, 2020-Shelter Island-009, 2020-Shelter Island-014				008, 2020-Shelter Island-009, 2020-Shelter Island-014				
Severe Storm	2020-Shelter Island-015, 2020-Shelter Island-018	2020-Shelter Island-005, 2020-Shelter Island-007, 2020-Shelter Island-014			2020-Shelter Island-015	2020-Shelter Island-007, 2020-Shelter Island-014			2020-Shelter Island-005	2020-Shelter Island-018
Severe Winter Storm	2020-Shelter Island-015, 2020-Shelter Island-018				2020-Shelter Island-015					2020-Shelter Island-018
Shallow Groundwater	2020-Shelter Island-015, 2020-Shelter Island-018	2020-Shelter Island-008, 2020-Shelter Island-009			2020-Shelter Island-015	2020-Shelter Island-008, 2020-Shelter Island-009				2020-Shelter Island-018
Wildfire	2020-Shelter Island-015, 2020-Shelter Island-018		2020-Shelter Island-004		2020-Shelter Island-015			2020-Shelter Island-004		2020-Shelter Island-018

Note: Section 6 (Mitigation Strategy) provides for an explanation of the mitigation categories.

### 9.29.12 Staff and Local Stakeholder Involvement in Annex Development

The Town of Shelter Island followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many Town departments, including: the Police Department, Building Department, Engineering, Highway Department, Clerk, and Town Council. The Chief of Police represented the community on the Suffolk County Hazard Mitigation Plan Planning Partnership, Steering Committee, and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.



The following table summarizes who participated and in what capacity. Additional documentation on the municipality’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meeting Documentation).

**Table 9.29-18. Contributors to the Annex**

<b>Name</b>	<b>Title/Entity</b>	<b>Method of Participation</b>
James Read	Chief of Police	Primary POC, attended plan participant meetings, offered input on mitigation strategy, provided exposure information
Jennifer Beresky	Police Clerk	Attended plan participant meetings, offered input on mitigation strategy, provided exposure information
Jonathan Chris Tehan	Building Inspector	Floodplain Administrator, attended plan participant meetings, offered input on mitigation strategy, provided exposure information
John Cronin, PE	Town Engineer	Attended plan participant meetings, offered input on mitigation strategy, provided exposure information
Robert DeStefano	Town Attorney	Attended plan participant meetings, offered input on mitigation strategy, provided exposure information
Brian Sherman	Highway Superintendent	Attended plan participant meetings, offered input on mitigation strategy, provided exposure information
Michael J Bebon, PE	Councilman	Attended plan participant meetings, offered input on mitigation strategy, provided exposure information
Amanda Gutiw	Clerk	Attended plan participant meetings, offered input on mitigation strategy, provided exposure information

### 9.29.13 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Town of Shelter Island that illustrate the probable areas that may be impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. The maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Shelter Island has significant exposure.



Figure 9.29-1. Town of Shelter Island Hazard Area Extent and Location Map 1

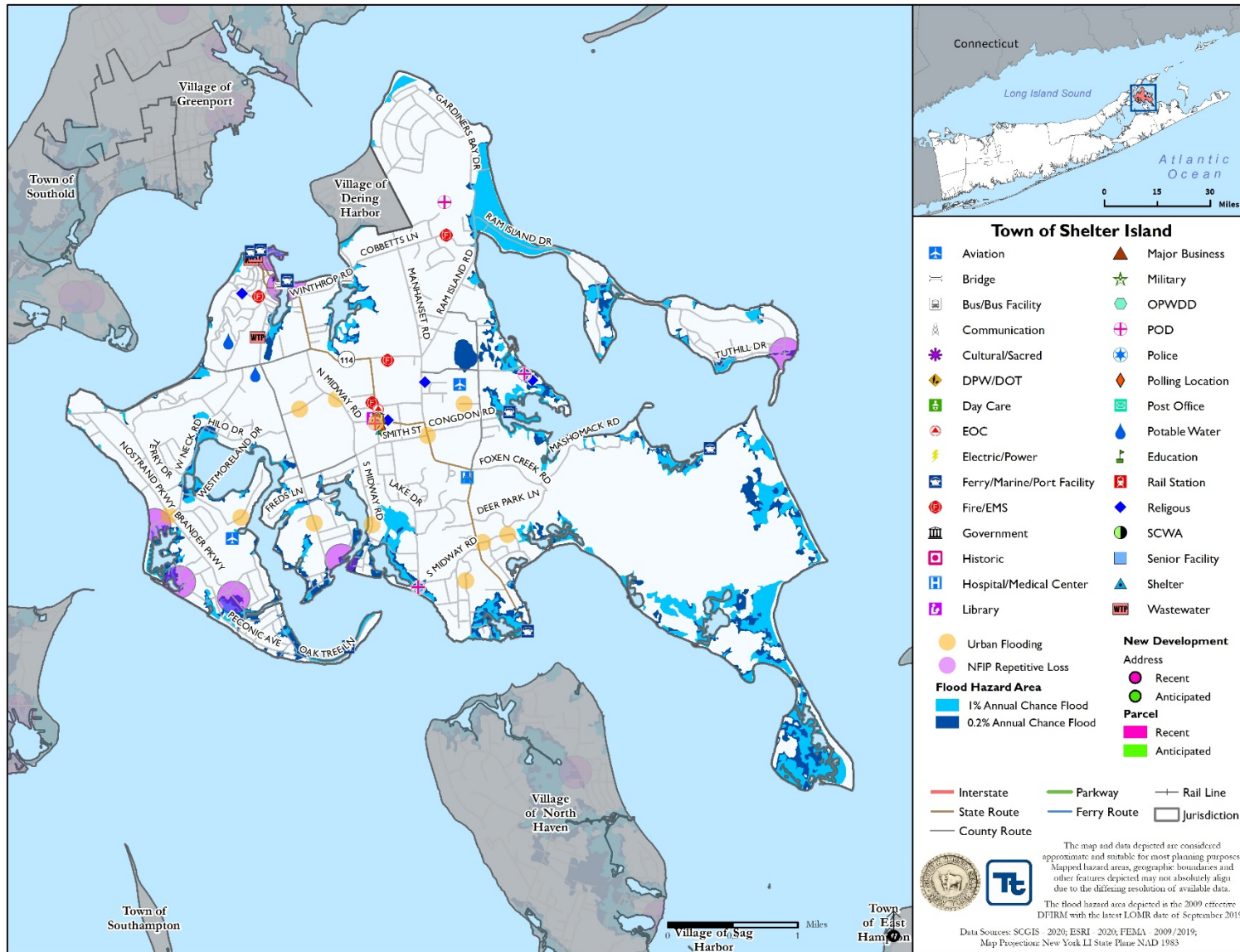




Figure 9.29-2. Town of Shelter Island Hazard Area Extent and Location Map 2

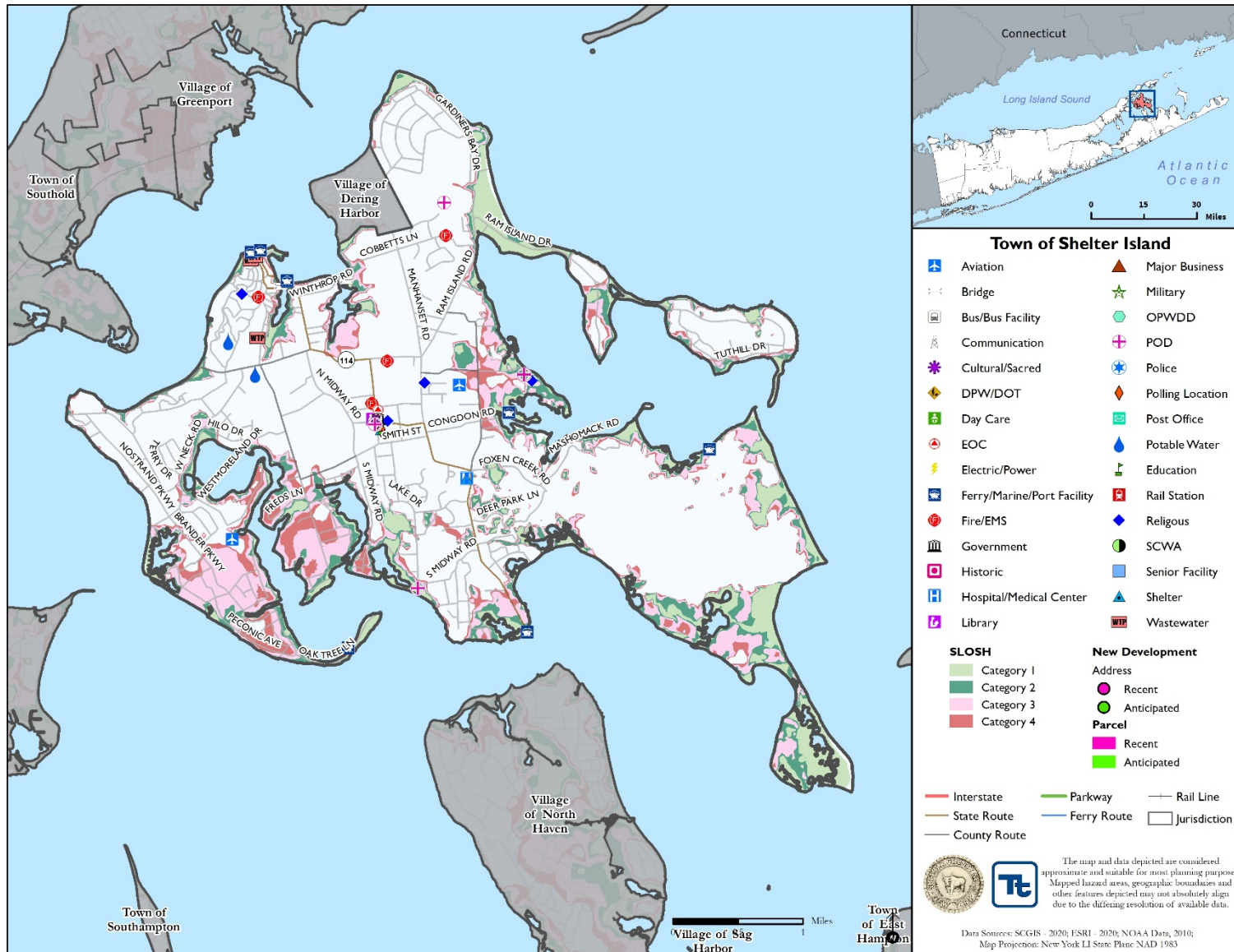




Figure 9.29-3. Town of Shelter Island Hazard Area Extent and Location Map 3

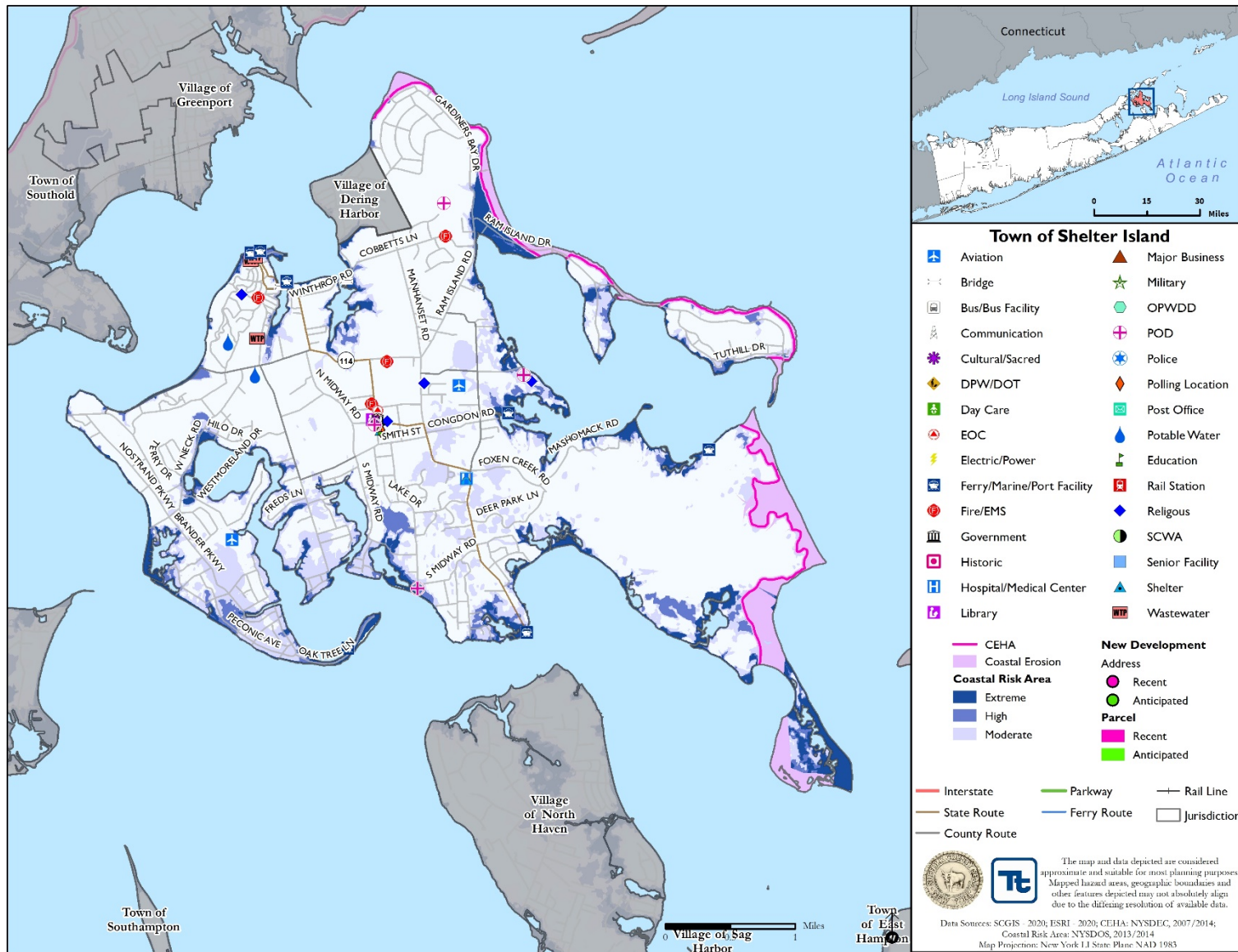




Figure 9.29-4. Town of Shelter Island Hazard Area Extent and Location Map 4

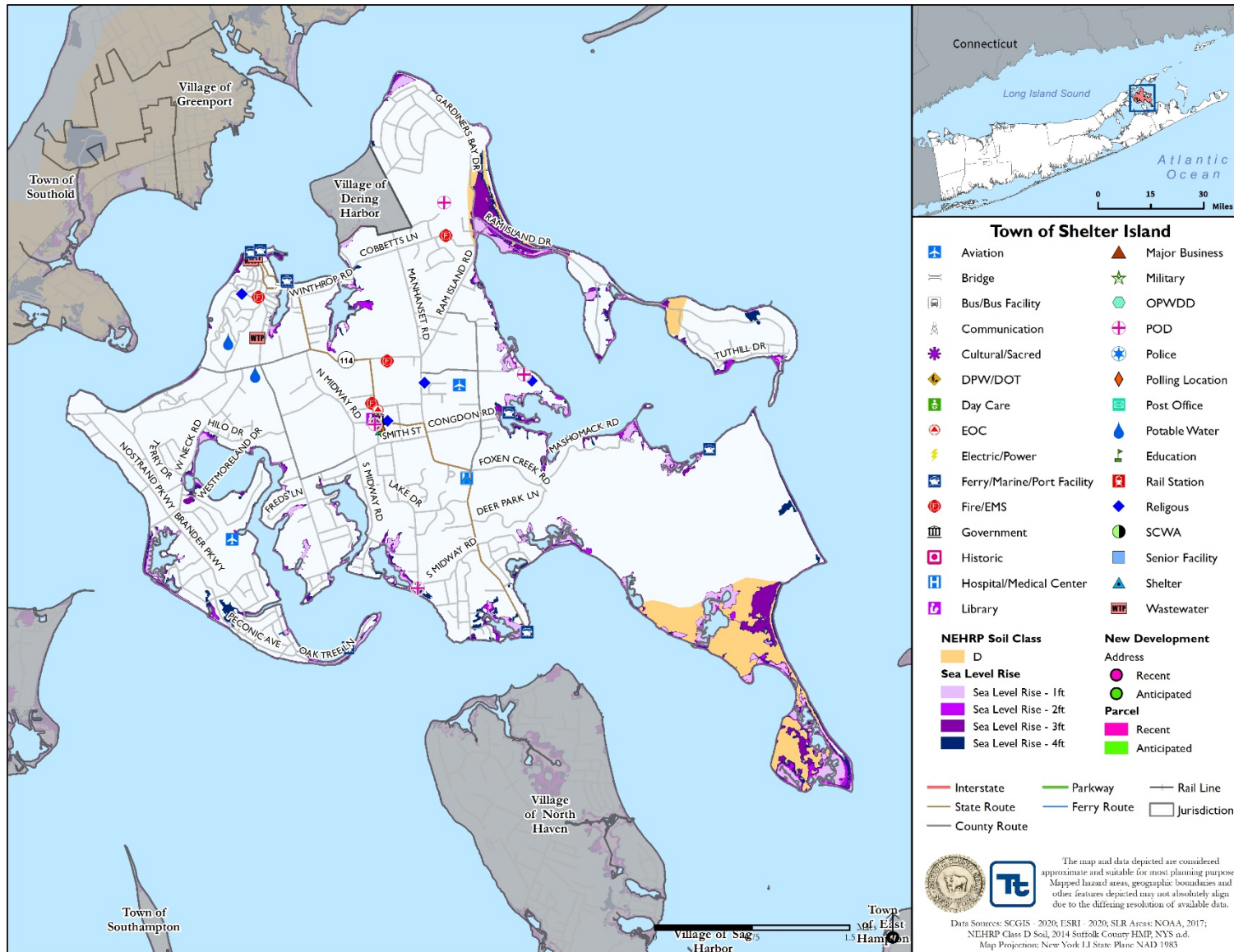
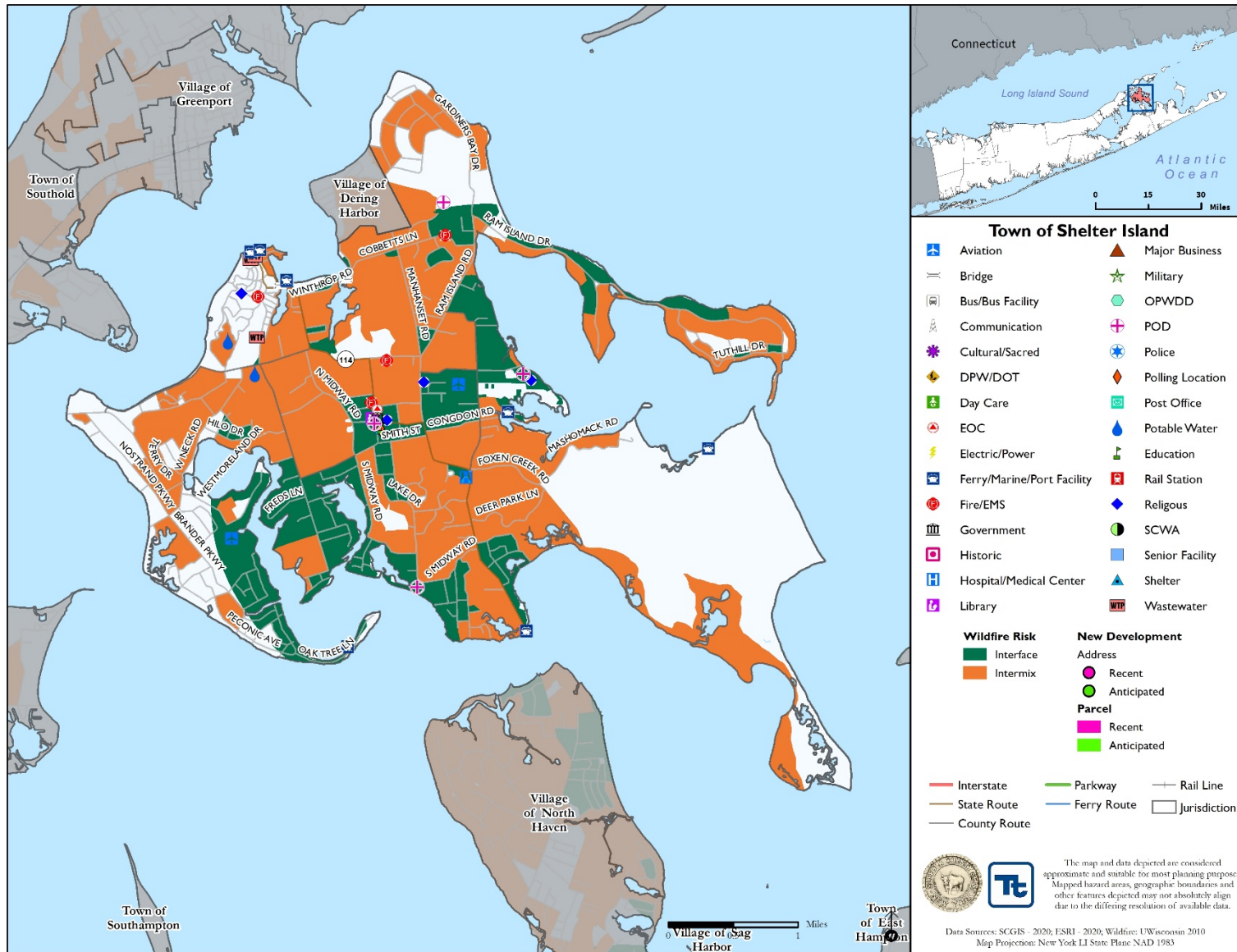




Figure 9.29-5. Town of Shelter Island Hazard Area Extent and Location Map 5





Action Worksheet			
<b>Project Name:</b>	North Ferry Terminal		
<b>Project Number:</b>	2020-ShelterIsland-001		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	<p>The Town of Shelter Island is surrounded on all sides by water, and is accessible only by ferry. The North Ferry Company is one of two private ferry companies that provides transportation for vehicles and passengers to and from the island. The North Ferry provides service between the north end of Shelter Island and Greenport, NY. The ferry terminals involve multiple stakeholders. The Metropolitan Transit Authority leases the Greenport docks, slips and terminal to the North Ferry. The Shelter Island docks, slips and terminal are leased from the Shelter Island Heights Property Owners Corporation. In effect, the North Ferry route across the North Shelter Island Sound connects the north fork of Long Island and the Town of Shelter Island through NYS Route 114.</p> <p>Ferry operations are episodically impeded by flooding associated with sea level rise, storm activity and tidal activity. Operational disruptions vary from low-level flooding that prevents some vehicle types from boarding (such as low-clearance personal vehicles, motorhomes, and heavy vehicles such as fire trucks, ambulances and coaches), to total loss of use for all vehicles. Service disruptions last for the duration of the flood event. Historically, disruptions can last from two hours to approximately one day. In addition, floodwaters and storm action damage ferry infrastructure, leading to expensive repairs bills.</p> <p>The North Ferry provides an essential public service, transporting approximately 795,000 vehicles and 1.5M passengers annually for all purposes, such as transportation to employment, shopping, medical appointments, emergency medical transport, public works, and commerce. The ferries are critical for supporting the region’s key economic engine – the seasonal tourism industry. Loss of ferry service negatively impacts and can endanger all aspects of daily life and commerce.</p> <p>There is no hospital on Shelter Island. Loss of ferry service presents a threat to life safety if there is a medical emergency and an ambulance or other emergency vehicle cannot transport the patient to an off-island hospital in a timely manner.</p>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Design and implement capital improvements at both the Shelter Island and Greenport ferry terminals to elevate roadways, ferry plazas, ramps, and dock infrastructure (ramps, etc.) to reduce the incidence, frequency and severity of flood events that impede ferry operations.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	TBD based on design	<b>Estimated Benefits (losses avoided):</b>	Loss of use – lost ferry revenue, impeded emergency response, economic activity, health care access. Loss of use for connecting state/county/ public roadways. Structural Damages/repairs. Economic dislocation/disruptions to commerce. Critical link removed from a multimodal transportation hub
<b>Useful Life:</b>	TBD based on design	<b>Goals Met:</b>	1,2,5,7,8
<b>Estimated Cost:</b>	TBD based on design	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project (SIP)





Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	TBD based on design	<b>Potential Funding Sources:</b>	FEMA PDM, HMGP, BRIC, Ferry, Federal/State transportation funds
<b>Responsible Organization:</b>	North Ferry Company, Town of Shelter Island, Village of Greenport	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard mitigation planning
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues and worsens due to the effects of climate change.
	Build a bridge	High	Not feasible due to cost
	Discontinue ferries	\$0	Not feasible. Shelter Island would be cut off from mainland resources including medical care, food, fuel, emergency services, employment centers, etc.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	North Ferry Terminal	
<b>Project Number:</b>	2020-ShelterIsland-001	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Project protects life through maintaining evacuation and emergency response route
<b>Property Protection</b>	1	Project protects ferry terminal from flood damage
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	1	
<b>Political</b>	1	
<b>Legal</b>	0	Project involves private property owner
<b>Fiscal</b>	0	Project requires funding support
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Flood
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	South Ferry Company, Town of Shelter Island
<b>Other Community Objectives</b>	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	South Ferry Terminal		
<b>Project Number:</b>	2020-ShelterIsland-002		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	<p>The Town of Shelter Island is surrounded on all sides by water, and is accessible only by ferry. The South Ferry Company is one of two private ferry companies that provide transportation for vehicles and passengers to and from the island. The South Ferry provides service between the south end of Shelter Island and the Village of North Haven, NY. The ferry terminals involve multiple stakeholders. New York State and Town of Shelter Island roads are connected by the ferry.</p> <p>Ferry operations are routinely impeded by flooding associated with sea level rise, storm activity and tidal activity. Operational disruptions vary from low-level flooding that prevents some vehicle types from boarding (such as low-ground clearance personal vehicles, motorhomes, and heavy vehicles such as fire trucks, ambulances and coaches), to total loss of use for all vehicles. Service disruptions last for the duration of the flood event. Historically, disruptions can last from two hours to approximately one day. In addition, floodwaters and storm action damage ferry infrastructure, leading to expensive repairs bills.</p> <p>The South Ferry provides an essential public service, transporting approximately 750,000 vehicles and 1.25M passengers annually for all purposes, such as transportation to employment, shopping, medical appointments, emergency medical transport, public works, and commerce. The ferries are critical for supporting the region’s key economic engine – the seasonal tourism industry. Loss of ferry service negatively impacts all aspects of daily life and commerce.</p> <p>There is no hospital on Shelter Island. Loss of ferry service presents a threat to life safety if there is a medical emergency and an ambulance or other emergency vehicle cannot transport the patient to an off-island hospital in a timely manner.</p>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Design and implement capital improvements at both the Shelter Island and North Haven ferry terminals to elevate roadways, ferry plazas, ramps, and dock infrastructure (ramps, etc.) to reduce the incidence, frequency and severity of flood events that impede ferry operations.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	TBD based on design	<b>Estimated Benefits (losses avoided):</b>	Loss of use – lost ferry revenue, impeded emergency response, economic activity, health care access  Loss of use for connecting state/public roadways  Structural Damages/repairs  Economic dislocation/disruptions to commerce
<b>Useful Life:</b>	TBD based on design	<b>Goals Met:</b>	1,2,5,7,8
<b>Estimated Cost:</b>	TBD based on design	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project (SIP)



Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	TBD based on design	<b>Potential Funding Sources:</b>	FEMA PDM, HMGP, BRIC, Ferry, Federal/State transportation funds
<b>Responsible Organization:</b>	South Ferry Company, Town of Shelter Island	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard mitigation planning
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues and worsens due to the effects of climate change.
	Build a bridge	High	Not feasible due to cost
	Discontinue ferries	\$0	Not feasible. Shelter Island would be cut off from mainland resources including medical care, emergency services, employment centers, etc.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	South Ferry Terminal	
<b>Project Number:</b>	2020-ShelterIsland-002	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Project protects life through maintaining evacuation and emergency response route
<b>Property Protection</b>	1	Project protects ferry terminal from flood damage
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	1	
<b>Political</b>	1	
<b>Legal</b>	0	Project involves private property owner
<b>Fiscal</b>	0	Project requires funding support
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Flood
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	South Ferry Company, Town of Shelter Island
<b>Other Community Objectives</b>	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Stewardship of preserved land/community wildfire protection		
<b>Project Number:</b>	2020-Shelter Island-004		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Wildfire		
<b>Description of the Problem:</b>	The Town has preserved large tracts of land, much of it consisting of oak forest, with notable areas including Mashomack Preserve (which at 2,039 acres comprises approximately one-third of the Town's land area) and 243-acre Sylvester Manor. As time has gone on, the wildfire risk to this land has increased. Communities and infrastructure at the wildland/urban interface (WUI) are also at risk of catastrophic loss.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	<p>The Town will prepare and implement a Community Wildfire Protection Plan (CWPP), including a stewardship program for preserved land. Recommended actions will aim to reduce wildfire risk while protecting natural and historic resources of the Town. Highest priority actions will address water supply, fuel reduction, and local firefighting capacity improvements.</p> <p>Water supply improvement measures may include:</p> <ul style="list-style-type: none"> <li>• Fire lanes/landings (unpaved) at Foxen Creek Road in Mashomack Preserve and other locations to be determined, where surface waters can be drafted using firefighting equipment</li> <li>• Cisterns (\$50,000 to install 10,000 gal. capacity cistern) at Foxen Creek Road and other locations to be determined</li> <li>• Equipment/vehicle enhancements (gator with 100 gallon tank, upgrade tanks on firefighting vehicles)</li> <li>• Additional hydrants in WUI locations, if public water is available</li> <li>• Mobile drafting ponds</li> </ul> <p>Fuel reduction efforts on wildlands may include controlled burns and/or mowing/brush hog maintenance. WUI efforts will address structural ignitability concerns.</p> <p>Firefighting capacity improvements may include training, exercises, equipment purchases/upgrades.</p>		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Fire risk reduced.	<b>Estimated Benefits (losses avoided):</b>	Fire risk reduced through numerous mitigation and emergency preparedness actions
<b>Useful Life:</b>	25 years+	<b>Goals Met:</b>	1, 2, 3, 5, 6, 7
<b>Estimated Cost:</b>	TBD by CWPP	<b>Mitigation Action Type:</b>	Natural Systems Protections
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	3 years	<b>Potential Funding Sources:</b>	FEMA, Municipal budget, NYS DEC
<b>Responsible Organization:</b>	Town of Shelter Island Administration	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Local Hazard Mitigation Plan
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Purchase Tanker Truck	High	Only partially resolves water supply issue due to



			limited capacity and limited access to wooded or low-lying areas. Does not address fuel source reduction or operational planning, equipment, training needs.
	Prescribed burns for forest management	Medium	Does not address water supply issues, operational planning, equipment, or training needs. Does not address fuel reduction outside of burn area.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	Stewardship of preserved land/community wildfire protection	
<b>Project Number:</b>	2020-Shelter Island-004	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Protects life from wildfire
<b>Property Protection</b>	1	Protects property from wildfire
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	0	
<b>Political</b>	1	There is public support for the project
<b>Legal</b>	0	
<b>Fiscal</b>	1	
<b>Environmental</b>	1	Project will protect the environment from damaging wildfires
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Wildfire
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	Town of Shelter Island Administration
<b>Other Community Objectives</b>	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	





Action Worksheet			
<b>Project Name:</b>	Shell Beach Groins and Bulkhead		
<b>Project Number:</b>	2020-Shelter Island-010 (Sandy LOI 968)		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Coastal Erosion		
<b>Description of the Problem:</b>	<p>The Town of Shelter Island is a small island located at the far eastern end of Suffolk County, between the north and south forks of Long Island. It has several deep creeks and harbors, including West Neck Creek and Bay. West Neck Creek and Bay is protected from open waters by a peninsula known as Shell Beach.</p> <p>The peninsula is approximately ½ mile long and averages 50’ wide. It is protected by a bulkhead at the end and 9 groins. In 2005 the NYS DEC required the town to remove several of the groins that protected the beach and a subsequent storm resulted in severe erosion to Shell Beach. FEMA and SEMO invested approximately \$600,000 to reinforce Shell Beach with gabions. The proposed project would complete the work that those funds began, and ensure that Shell Beach can resist storms and protect the entrance to West Neck and the many homes along those waters. In recent years, the Town has been able to replace only three of these groins due to the high expense. The NYSDEC permit for this work expired in 2017 and must be renewed.</p> <p>Damages from future storms can cause loss of access to Shell Beach, possible wave action and flooding of homes along West Neck Creek and Bay that are currently protected by Shell Beach.</p>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	<p>The Town will design, secure a renewed permit, and implement removal and replacement of timber groins and bulkhead on Shell Beach as follows:</p> <ul style="list-style-type: none"> <li>• Remove 52’ timber bulkhead connected with a 247’ length timber groin and replace with 305’ vinyl sheet groin</li> <li>• Remove 82’ timber groin and replace with 35’ vinyl sheet groin</li> <li>• Remove 77’ timber groin and replace with 77’ vinyl sheet groin</li> <li>• Remove 67’ timber groin and replace with 67’ vinyl sheet groin</li> </ul> <p>Replacing the bulkhead and groins will provide for much better protection of Shell Beach, the entrance to West Neck Bay and the main portion of the island, by preventing erosion and strengthening a barrier to blunt storms and wave action.</p> <p>Review of the Suffolk County Hazard Mitigation Plan makes it clear that the Town of Shelter Island can suffer serious winds and flooding as the result of a storm. The project will mitigate the risk of storm related damages.</p> <p>Estimated budget:</p> <p>\$600/ft groin @ 484’ = \$290,400            Contingency 15% = \$43,560            Design @ 8% = \$26,716</p> <p>Total \$360,676</p>		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	100 year flood	<b>Estimated Benefits (losses avoided):</b>	Coastal erosion risk reduced Recent damages: \$600,000



<b>Useful Life:</b>	30+ years	<b>Goals Met:</b>	3, 4, 5
<b>Estimated Cost:</b>	\$360,676	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Up to 1 year	<b>Potential Funding Sources:</b>	FEMA BRIC, HMGP, Town budget
<b>Responsible Organization:</b>	Town of Shelter Island Administration	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation Plan
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Maintain existing timber groins	High	Rejected due to frequent maintenance requirements and likelihood of repetitive damages.
	Retreat from shoreline	High	No public support
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	Shell Beach Groins and Bulkhead	
<b>Project Number:</b>	2020-Shelter Island-010 (Sandy LOI 968)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protects properties from coastal erosion damages
Cost-Effectiveness	1	
Technical	1	The project is technically feasible
Political	1	
Legal	1	
Fiscal	-1	Project requires funding support
Environmental	1	
Social	0	
Administrative	0	
Multi-Hazard	0	Coastal Erosion
Timeline	1	
Agency Champion	1	Town of Shelter Island Administration
Other Community Objectives	1	
<b>Total</b>	9	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Crescent Beach Fence Stabilization		
<b>Project Number:</b>	2020-Shelter Island-011		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Coastal Erosion		
<b>Description of the Problem:</b>	Crescent Beach experiences erosion. Severe storms have undermined the integrity of the fencing along the public beach which is both an aid to public safety and a structure protecting the integrity of the beach.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	<p>Upgrade a half-mile section of the existing 2"x4"/2"x6" timber fencing along the public beach portions of Crescent Beach. This measure will include replacing the fencing with CCA fencing material, consisting of 4"x6" posts and 3"x6" railings</p> <p>296 sections 8' long to be replaced. \$111,000 labor and \$37,000 materials.</p> <p>Total project cost \$148,000</p>		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	100 year flood	<b>Estimated Benefits (losses avoided):</b>	Coastal erosion risk reduced
<b>Useful Life:</b>	20+ years	<b>Goals Met:</b>	3, 4, 5
<b>Estimated Cost:</b>	\$148,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Up to 1 year	<b>Potential Funding Sources:</b>	FEMA BRIC, HMGP, Town budget
<b>Responsible Organization:</b>	Town of Shelter Island Administration	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation Planning
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Maintain existing fencing	High	Rejected. This will ultimately lead to failure of the fencing and will be expensive and time consuming
	Retreat from beach	Low	Rejected as there is no public support for this option
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	Crescent Beach Stabilization	
<b>Project Number:</b>	2020-Shelter Island-011	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect life
Property Protection	1	Project will protect property
Cost-Effectiveness	1	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support
Environmental	1	
Social	0	
Administrative	0	
Multi-Hazard	0	Coastal Erosion
Timeline	1	
Agency Champion	1	Town of Shelter Island Administration
Other Community Objectives	1	
<b>Total</b>	9	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet	
<b>Project Name:</b>	Stabilize Reel Point at the Coecles Harbor entrance
<b>Project Number:</b>	2020-Shelter Island-013
Risk / Vulnerability	
<b>Hazard(s) of Concern:</b>	Coastal Erosion, Hurricane, Flooding, Nor'Easter, Severe Storm, Severe Winter Storm
<b>Description of the Problem:</b>	<p><b>Summary</b></p> <p>The Reel Point Preserve (RPP) is experiencing chronic erosion that is resulting in impacts to the flood and erosion protection, existing native habitat, and navigation of the region.</p> <p><b>Full Description</b></p> <p>The Reel Point Preserve (RPP) is owned by the Peconic Land Trust (PLT) and is located at the southeast end of Ram Island within the Town of Shelter Island between the north and south fork of Long Island. The subject property separates Gardiners Bay to the east and Coecles Harbor to the west. Reel Point extends approximately 2,000 feet from Ram Island, south across Coecles Harbor and is approximately 75- 200 feet in width depending on location. The eastern most point on Ram Island to the north of Reel Point is referred to as Rams Head.</p> <p>RPP is experiencing chronic erosion that is resulting in impacts to the flood and erosion protection, existing native habitat, and navigation of the region. Existing updrift (north) structures including the rubble mound at the central/northern portion of the RPP as well as the groins, bulkheads, and seawalls on the properties to the north of the RPP on Ram Island (Ram Head) have significantly reduced the littoral sediment contribution to the RPP region.</p> <p>As a result of the limited littoral sediment contribution, the littoral processes of the region (predominate sediment transport from north to south) are leading to a narrowing of Reel Point and migration of the point southwards into the existing Coecles Inlet navigation channel. The narrowing of the Reel Point is creating a situation where overwashing and the eventual incipient breach of the point are likely in the near future if no action is taken. Overwashes will destroy the established flora and wildlife habitat, and degrade the point, increasing the potential for a breach which would separate the southern portion of Reel Point from the mainland of Ram Island (north).</p> <p>This breach would create an additional channel which would lower the provided flood and erosion protection, destroy vital habitats, and potentially result in increased shoaling of the existing channel due to reduced current. Moreover, the southerly migration of the spit is infilling the navigation channel, requiring more frequent dredging to keep the channel navigable.</p>
Action or Project Intended for Implementation	
<b>Description of the Solution:</b>	<p><b>Summary</b></p> <p>Design and implement a living shoreline project to provide protection and stabilization to Reel Point, encompassing an adaptive living shoreline, inlet backpassing beach nourishment and dune restoration with planting of native vegetation as the preferred alternative to provide stabilization to the region.</p> <p><b>Description</b></p> <p>The proposed long-term adaptive living shoreline alternative consists of the screening of the material dredged from Coecles Inlet (backpassing) to separate the sand from the pebble/cobble. The sand and pebble/cobble will then be used in three main components:</p> <ol style="list-style-type: none"> <li>1. Pebble/cobble as beach nourishment – eastern shoreline of Real Point Preserve (RPP) fronting Gardiners Bay</li> <li>2. Sand as beach nourishment – western shoreline of RPP fronting Coecles Harbor</li> <li>3. Sand as dune restoration planted with beach grass – central spine portion of RPP</li> </ol>



This living shoreline alternative is intended to mimic the natural coastal processes and to mechanically sort the material to facilitate a more stable configuration with placement of the pebble/cobble beach on the eastern shoreline and a sand beach on the western.

Historically, most of the pebble/cobble/sand from the dredging of Coecles Inlet was placed on the eastern side of RPP fronting Gardiners Bay. As a result of the natural coastal processes the sand fraction of the dredge material was eroded away and the pebble/cobble would remain on the beach in a stable configuration. This erosion of the sand component of the dredge material resulted in a narrowing of Reel Point and infilling of the navigation channel as the material was carried south by the littoral system.

**Pebble/ Cobble Beach Nourishment:** Backpassing using sand from the Suffolk County Department of Public Works maintenance dredging of Coecles inlet is proposed to be screened to separate the larger cobble and pebble material from the sand. The larger cobble and pebble material is proposed to be used as beach nourishment on the eastern shoreline fronting Gardiners Bay since it is likely to better withstand the littoral currents and wave action occurring in the area and form a stable beach. Furthermore, this cobble/pebble beach will additionally become a rocky shoreline habitat.

**Sand Beach Nourishment:** A portion of the sand from the screening is proposed to be placed as beach nourishment along the backside or western side of Reel Point fronting Coecles Harbor. The placement of sand along the western shoreline of RPP will increase the width and stability of the point, resulting in a larger footprint for the dune (greater flood and erosion protection) and increased upland wildlife habitat.

Additionally, placing sand on the western shoreline of RPP is proposed to increase sand retention, and minimize loss into the navigation channel. Historically, backpassed sand from dredging was placed along the eastern facing shoreline fronting Gardiners Bay that is subject to higher wave heights, and currents when compared to the western shoreline on Coecles Harbor.

Therefore, the sand placed on the eastern side of Reel Point was quickly eroded from the shoreline and carried into the navigation channel. Placing the material on the western shoreline, is proposed to limit sand migration as littoral transport rates in this area are lower than on the eastern side, which is proposed to facilitate a large stable western shoreline. The placement of sand on the west side of RPP mimics the natural direction of spit evolution as evident by overwash during storm events and the historic shoreline migration to the west.

**Dune Restoration:** The remaining portion of the sand from the screening of the inlet backpassing material is proposed to be used as dune restoration. This will enhance the elevation and width of the dune, providing significant flood and erosion protection to the area and decreasing the threat of overwash and breach. A part of the restoration the dune will be planted with beach grass to stabilize the area. This will also create an elevated long term sustainable upland ecosystem.

The proposed stabilization of the eastern facing shoreline by placement of material with larger grain size is proposed to stabilize the area limiting the westward recession of the shoreline and migration of sand to the south infilling the navigation channel. The placement of sand as beach nourishment along the western shoreline will increase the width of Reel Point and facilitate the creation of a large dune for added flood and erosion protection and increased area for vital shoreline habitat.

**Project execution**

The Suffolk County Department of Public Works (SCDPW) has an existing permit to complete inlet backpassing. Therefore, the proposed long term living shoreline alternative could be executed according to the issued permits if the SCDPW completed it or if there was an Inter Municipal Agreement (IMA) between the County and the Town of Shelter Island to allow the Town to complete the work. Additionally, the Town of Shelter Island/ PLT could likely obtain permits to complete the work themselves if it was deemed necessary. Construction can be accomplished by publicly available bid or as a public works project utilizing Town resources and equipment.



**Rationale for selected alternative**

A comprehensive assessment of stabilization alternatives was performed as part of the Reel Point Comprehensive Shoreline Management Plan (2017). This analysis is summarized in the following table:

Alternative	Flood/Erosion Protection	Prolong Sand Retention	Maintain Navigability	Improve Flora and Wildlife Habitat	Regulatory Considerations	Environmental Impacts	Economic Impacts	Cost	Total
Living Shoreline	12	9	8	12	6	7	12	6	<b>72</b>
Do Nothing	2	2	4	2	12	2	2	12	38
Vegetation and Sand Fence	3	3	5	3	11	12	3	11	51
Dune Restoration	7	4	6	4	10	11	7	10	59
Beach nourishment	8	7	2	7	7	8	8	5	52
Inlet Sand Backpassing	5	6	3	6	9	9	5	9	52
Removal/mod of groin	1	1	1	1	4	1	1	8	18
Reinforced dune	11	5	7	5	8	10	11	7	64
Groins	9	11	10	9	2	4	9	3	57
T Groins	10	12	11	10	1	3	10	1	58
Jetties	4	8	12	8	3	5	4	4	48
Breakwaters	6	10	9	11	5	6	6	2	55

1=least desirable 12=most desirable

The adaptive living shoreline alternative was recommended as it address the stakeholders’ concerns in an executable project. When recommending an alternative for shoreline flood and erosion protection it is important to identify that the proposed project could realistically be funded and constructed according to the stakeholders’ principles (i.e. environmental preservation) in addition to the level of protection, etc. An alternative could provide the highest level of protection but if it cannot be funded and built or if it does not preserve the interested parties’ ideologies it is irrelevant.

For the RPP the alternative that likely best addressed the stakeholders concerns was a living shoreline with emergent breakwaters. However, upon review of the general cost it was determined that this alternative could not realistically be constructed given the high cost. For a living shoreline with inlet backpassing beach nourishment (pebble/cobble on eastern shoreline, sand on western shoreline), dune restoration planted with native vegetation and a series of emergent breakwaters on the eastern shoreline, the cost for the design, permitting and construction would likely be in the \$10’s of millions. A large portion of the cost of this would come from the emergent breakwaters, as the cost of materials and construction for marine structures is significant. Therefore, the recommended adaptive living shoreline alternative does not include the emergent breakwaters to reduce the cost.

Furthermore, doing nothing and less effective proposed alternatives would have little direct cost as there would be no/minimal construction, but do not address the stakeholders’ concerns (i.e. enhance habitat/flood and erosion protection, navigation, etc.). Additionally, less effective alternatives have the potential to result in significant damage costs in the future. Therefore, the adaptive living shoreline project was recommended since it is designed to provide protection to the RPP and address the stakeholders’ concerns in a cost effective and constructible project.

**Level of Protection**

The project was effectively designed around the 500 year flood scenario (.2% chance of occurrence). Here is the reasoning: BFE for Gardiners Bay east of RPP is 13 feet. Final dune elevation after project completion was planned at 15 feet. 15-13 = 2 feet, the amount typically considered to be added to a BFE to achieve 500 year protection (as advised by a representative of Tetra Tech during the hazard mitigation plan update process).

**Economic Benefits**







	<p>Economic engines on Coecles Harbor potentially affected by Reel Point that will benefit from the project are:</p> <ol style="list-style-type: none"> <li>1. Scallop/shellfish industry; Coecles Harbor is reported as the most prolific source of scallops in the Peconic Estuary (conservatively estimated at \$650,000 annually)</li> <li>2. Clark's Marina (now closed)</li> <li>3. Coecles Harbor Marina and on the same property, CH Marine Yacht Builders</li> <li>4. Congdon's Creek dock (Town owned dock home to some commercial fishermen)</li> <li>5. Kayak and stand up paddle board touring industry</li> <li>6. Moorings (both Town and commercial)</li> <li>7. Ram's Head Inn (hotel)</li> <li>8. Taylor's Island historic site (NYS has funded about \$600,000 in work at this site)</li> <li>9. Habitat potential for Reel Point itself</li> <li>10. Gross waterfront structure value inside Coecles Harbor and subject to insurance claims is \$1.53 billion</li> </ol> <p><b>Supporting documentation</b></p> <p>Comprehensive Shoreline Management Plan Reel Point Preserve Shelter Island, NY (2017). Prepared for Peconic Land Trust and Town of Shelter Island by Lockwood Kessler &amp; Bartlett, Inc. and First Coastal Consulting.</p> <p><b>Critical Facilities Affected</b></p> <p>Coecles Anchorage and Congdon's Creek Town Dock.</p>
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<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)

<b>Level of Protection:</b>	500 year storm	<b>Estimated Benefits (losses avoided):</b>	<p>Economic and/or environmental impacts to the Reel Point Preserve (RPP) and the businesses and private land owners of surrounding area. The sustainability and preservation of the RPP is vital to the economic and ecological well-being of the entire Coecles Harbor region and even the Town of Shelter Island itself.</p> <p>Losses avoided include:</p> <ul style="list-style-type: none"> <li>• Loss of human life</li> <li>• Increased channel maintenance dredging</li> <li>• Reduction or loss of protective natural beaches and dunes</li> <li>• Loss of navigability in adjacent inlets sharing the same waterbody as the breach</li> <li>• Loss of property by flooding, wave attack, and erosion</li> </ul>
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			<ul style="list-style-type: none"> <li>• Loss of access to property</li> <li>• Immediate loss of habitat</li> <li>• Exposure of the bay or estuarine environment to larger waves and stronger current, causing gradual loss of habitat and property through redistribution of sediment</li> <li>• Unwanted increased in salinity and water level</li> </ul>
<b>Useful Life:</b>	10 years	<b>Goals Met:</b>	2, 8
<b>Estimated Cost:</b>	\$3.2M - \$4.1M	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1-4 years	<b>Potential Funding Sources:</b>	FEMA HMP, DPM, BRIC, Municipal Budget, PLT
<b>Responsible Organization:</b>	Peconic Land Trust, Town of Shelter Island	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard mitigation planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	<p>Doing nothing would consist of no future human involvement on Reel Point, allowing the area to continue to be in a sand deficit due to structures to the north.</p> <p>Doing nothing would result in a significant decrease in the flood and erosion protection provided to Coecles Harbor by Reel Point. Over time this erosion on the eastern shore will likely result in the continued degradation of the spit, increased occurrence of overwash even during minor storms, and the eventual breach of the spit just to the south of the rock rubble mound. The accretion at the southern tip of Reel Point will likely result in continued southern migration of the spit, infilling the navigation channel significantly reducing ingress and egress through the inlet.</p> <p>Doing nothing is likely to have significant negative economic impacts to the</p>



			properties located within Coecles Harbor as a result of increased flood damage that would occur with the decrease in flood protection associated with no action. It would also likely result in a negative economic impact since the channel shoaling of the inlet would affect businesses, and other stakeholders (homeowners, commercial fisherman) that rely on the navigability of the inlet.
	Vegetation and Sand Fence	Relatively low compared to other stabilization alternatives	<p>Vegetation and sand fence would entail the planting of beach grass and the placement of sand fence at key points along the RPP in an attempt to capture and hold windblown sand in the region.</p> <p>Vegetation and sand fence is not likely to provide a meaningful increase in flood and erosion protection. The planting of vegetation and the installation of sand fence may enhance existing dunes or even create new dune systems, increasing the flood and erosion protection. However, the process takes a significant amount of time, on the order of years to become established and effective. Also, the creation of a dune through this alternative is directly related to the quantity and quality of material in the aeolian system (windblown).</p> <p>Therefore, in areas that are dominated by large grain material that cannot be easily carried by the wind or areas where there is a deficit in the system, this alternative can be ineffective as dune growth will be minimal. Furthermore this alternative is ineffective in areas that have chronic erosion issues and are subject to frequent inundation (such as the subject site) that will</p>



			<p>destroy the vegetation, the sand fence, and any accretion of material that has previously occurred.</p> <p>This alternative would have a minimal economic impact as the protection to it provides to the area is minimal.</p>
	T-Groins	Relatively high compared to other stabilization alternatives	<p>T-groins are generally constructed to stabilize a shoreline by trapping sand in an area so it does not migrate away with littoral currents. T-groins have the added effect of minimizing wave energy impact on the shoreline as a result of the shore parallel segment at the seaward end.</p> <p>T-groins would increase the flood and erosion protection of the area through stabilizing the shoreline and reducing wave impacts. T-groins would be likely to increase the width and elevation of the beach overtime which would also result in additional contribution of sediment to the dune system. Furthermore, they would likely reduce wave impacts from reaching the shoreline and impacting the dunes.</p> <p>T-groins are very difficult to obtain regulatory approval for as a result of the potential negative impacts associated with improper design, construction and/or maintenance. As well as the downdrift erosion that will occur. Furthermore, since they are placed below spring high water they would require regulatory approval from the USACE, NYSDES, NYSDEC and the Town of Shelter Island.</p> <p>Installation of t-groins would have a high cost as a result of the large quantity of materials needed to construct multiple t-groins, and the construction</p>



			infrastructure and labor necessary to construct them. Furthermore, t-groins would likely have high costs for obtaining permit approval (if it could be obtained) and for engineering and plan design.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	Stabilize Reel Point at the Coecles Harbor entrance	
<b>Project Number:</b>	2020-ShelterIsland-013	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect property from storm damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	There is public support for the project
Administrative	0	
Multi-Hazard	1	Coastal Erosion, Hurricane, Flooding, Nor'Easter, Severe Storm, Severe Winter Storm
Timeline	0	
Agency Champion	1	Peconic Land Trust, Town of Shelter Island
Other Community Objectives	0	
<b>Total</b>	9	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Emergency Services Interoperability Communications Project		
<b>Project Number:</b>	2020-ShelterIsland-018 (Sandy HMGP LOI #142)		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	<p>The Town of Shelter Island is a small island located at the far eastern end of Suffolk County, between the north and south forks of Long Island. Its permanent resident population of 2,392 (US Census 2010) is augmented by an influx of over 1,500 tourists daily during the summer season between Memorial Day at the end of May and Labor Day at the beginning of September. Shelter Island is bounded by Shelter Island Sound on the north, west, and south, and Gardiners Bay on the east. The Island, which has no bridges connecting it to the mainland, can only be reached by ferry shuttle services originating from Greenport in the north and North Haven in the south. These ferries run approximately every twenty minutes.</p> <p>The Town's Emergency Services include Police, Fire, Highway and EMS (ambulance). Emergency Services serve the 12 square mile area of the Shelter Island. With no bridges connecting Shelter Island to the mainland and the fact that storms can cut Shelter Island off entirely from outside assistance, it is vital that the Town operate its Emergency Services at peak efficiency to ensure the long-term safety and security of its residents and visitors. Funding these mitigation measures will protect and enhance the reliability and resilience of emergency communications through traditional mitigation measures.</p> <p>The Emergency Services cover major events, large scale emergencies or natural disasters on the island. They need to be able to communicate with each other, but they are currently operating on separate radio platforms. While the Police Department has obtained multiple monitors so they can relay messages from one radio platform to another, this only works when there is a staff person posted at the monitors. Due to the small size of this department this is only during weekday working hours and extra staff must be brought in for storms, major events or other emergencies. The gap is currently bridged by reliance on cell phone communication between the different emergency services, but this is particularly unreliable during storms or power outages.</p>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	<p>Support interoperability between the Emergency Services by purchasing equipment for a Hazard mitigation channel all Town Emergency Services can share. This will ensure direct communications between a large user group and multiple agencies, affording all better and quicker response and coordination. Since communications and communication systems are key to any event or emergency, this is an essential component of Hazard Mitigation.</p> <p>Review of the Suffolk County Hazard Mitigation Plan makes it clear that the Town of Shelter Island can suffer serious winds and flooding as the result of a storm and it is essential that the Highway Department be able to promptly notify the police department of downed wires or flooded roads (or vice versa). The Town EMS ambulance must be able to easily coordinate communications with police and fire in the event of a disaster--not hope the Police department is staffed by someone who can relay the message from one radio system to another.</p>		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Increased emergency capabilities	<b>Estimated Benefits (losses avoided):</b>	Life safety
<b>Useful Life:</b>	15+ years	<b>Goals Met:</b>	7
<b>Estimated Cost:</b>	\$105,000	<b>Mitigation Action Type:</b>	Local Plans and Regulations
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years



<b>Estimated Time Required for Project Implementation:</b>	Up to 1 year	<b>Potential Funding Sources:</b>	HMGP; Town Budget for Local Match
<b>Responsible Organization:</b>	OEM, Town of Shelter Island	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Comprehensive Emergency Management Plan
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Purchase portable cell tower receiver	High	Cost prohibitive.
	Satellite phones	High	Cost prohibitive, not as efficient
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Evaluation and Prioritization		
<b>Project Name:</b>	Emergency Services Interoperability Communications Project	
<b>Project Number:</b>	2020-ShelterIsland-018 (Sandy HMGP LOI #142)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects life
Property Protection	1	Project protects property
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	1	All Hazards
Timeline	1	Up to 1 year
Agency Champion	1	OEM, Town of Shelter Island
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Groundwater Monitoring and Modeling Study		
<b>Project Number:</b>	2020-ShelterIsland-019		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Groundwater contamination – e.g. nitrates, salt water intrusion and chemical contaminants in drinking water		
<b>Description of the Problem:</b>	All drinking water is sourced from an aquifer isolated from the mainland of Long Island. In some locations the aquifer thickness is estimated to be as little as 20 ft. Low lying areas are experiencing high chlorides from salt water intrusion, expected to worsen significantly as climate change induces increased frequency and severity of storms and global warming causes sea level rise. Nitrates close to and above drinking water standards have been seen in the Town Center area, and common chemical contaminants have also been detected. The limited monitoring and modeling performed to date is inadequate for managing aquifer quality and quantity.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Conduct an engineering/hydro-geological study to design an effective monitoring and modeling program for the Island. This would require installation of temporary monitoring wells (geoprobos) as well as permanent monitoring wells and soil cores to assess the geology at various locations on the Island. From this data, an environmental engineering consultant would characterize the condition of the aquifer, map any active plumes, develop a ground and surface water monitoring plan and develop an initial groundwater model.		
<b>Is this project related to a Critical Facility or Lifeline?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Level of Protection:</b>	Ensures drinking water meeting EPA, NYSDEC and SCDFHS standards <sup>1</sup>	<b>Estimated Benefits (losses avoided):</b>	Protects public from diseases associated with drinking water contaminants Preserves aquifer as a viable long term water supply source
<b>Useful Life:</b>	Monitoring facilities (30 years) Modeling program 50 years with periodic software updates	<b>Goals Met:</b>	1,3,5
<b>Estimated Cost:</b>	\$350,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	6-12 months
<b>Estimated Time Required for Project Implementation:</b>	Two years	<b>Potential Funding Sources:</b>	FEMA, NYS CFA Grant program
<b>Responsible Organization:</b>	Shelter Island Town Engineer	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Shelter Island Ground and Surface Water Management Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current public health risk continues
	Perform monitoring only	\$100,000	Would reduce risk minimally but not allow advanced indication of public health risk based on ability to model contaminant transport in the aquifer entire area is impacted



	Perform modeling only	\$250,000	Would allow prediction of groundwater flow but not contaminant transport. Public health risk would remain unabated.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Groundwater Monitoring and Modeling Study	
<b>Project Number:</b>	2020-ShelterIsland-019	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Contaminants in the aquifer pose a risk to public health since 100% of Shelter island's drinking water is sourced form the aquifer
<b>Property Protection</b>	1	Property values would be significantly impacted by inability to source safe drinking water by private wells
<b>Cost-Effectiveness</b>	1	Cost-effective project
<b>Technical</b>	1	Technically feasible project
<b>Political</b>	1	Project would support SC Sub-watersheds Plan objectives
<b>Legal</b>	1	The Town has the legal authority to conduct the project.
<b>Fiscal</b>	0	Project will require grant funding.
<b>Environmental</b>	1	Program would enhance ground and surface water ecosystem protection
<b>Social</b>	1	Project would remove a public health risk
<b>Administrative</b>	0	
<b>Multi-Hazard</b>	1	Contaminants in groundwater flow into surface water
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	SCDHS
<b>Other Community Objectives</b>	1	Safe Drinking water and health of the Peconic Estuary
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Elevate Westmoreland Drive, Shelter Island		
<b>Project Number:</b>	2020-Shelter Island-021 (Formerly TSI-9b; Sandy HMGP LOI 762)		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	<p>Westmoreland Drive is a road on Shelter Island serving 46 homes and a designated landing field for medical evacuations on Shelter Island. Westmoreland Drive serves as the sole entrance/exit to this residential area. The entry of Westmoreland Drive near West Neck Road, is a low point that floods during extreme high tides and during storms. Storms are the more frequent cause of flooding with some groundwater flooding as well. The depth of roadway flooding typically ranges up to 12". This problem has existed for over a decade, but has become more serious as flood levels rise. The depth of the water can be several feet and renders the road impassible to most vehicles.</p> <p>Measures taken to pump off the water standing on the road is ineffective, since ground water continues to backfill it, so over the course of three days the road is closed again. This leaves residents stranded for an indefinite period of time.</p> <p>Damage to lives and properties that are left stranded during storm tides cannot be measured. In terms of ongoing maintenance, the town must block the road, the fire department tries to pump down the water levels, and the area must be cleaned after water levels sink. This happens three to four times per year at an estimated cost of \$2,000.</p>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	<p>The most effective way to deal with this issue is to physically elevate an approximately 600' segment of Westmoreland Drive by approximately 16"-24". The estimated cost of design and elevation of the road, installing a culvert to deal with drainage and repaving is \$346,000. This will ensure continuity of critical services by reducing the risk of damage or loss of function to the residences that would otherwise have been stranded by high water levels.</p> <p>Review of the Suffolk County Hazard Mitigation Plan makes it clear that the Town of Shelter Island can suffer serious winds and flooding as the result of a storm and it is essential that Emergency Services, including police, ambulance and fire, be able to provide services despite flooded roads.</p>		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	100 year flood	<b>Estimated Benefits (losses avoided):</b>	Medical evacuation access Access/egress by residents and emergency services Avoided damages to roadway
<b>Useful Life:</b>	20+ years	<b>Goals Met:</b>	1, 2, 3, 5, 7
<b>Estimated Cost:</b>	\$346,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Up to 1 year	<b>Potential Funding Sources:</b>	FEMA BRIC, PDM, HMGP



<b>Responsible Organization:</b>	Town of Shelter Island Administration	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation Plan
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Purchase a vehicle capable of going through 3+ feet of water	Lower than selected alternative	Would be ineffective in getting firematic services to homes when road is flooded.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Evaluation and Prioritization		
<b>Project Name:</b>	Raising Westmoreland Drive, Shelter Island	
<b>Project Number:</b>	2020-Shelter Island-021 (Formerly TSI-9b; Sandy HMGP LOI 762)	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Protects emergency access route
Property Protection	1	Protects roadway from flooding damages
Cost-Effectiveness	1	
Technical	1	
Political	0	
Legal	1	
Fiscal	-1	Project requires funding support
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	1	Up to 1 year
Agency Champion	1	Town of Shelter Island Administration
Other Community Objectives	0	
<b>Total</b>	9	
<b>Priority (High/Med/Low)</b>	High	