



9.30 Town of Shelter Island

This section presents the jurisdictional annex for the Town of Shelter Island.

9.30.1 Hazard Mitigation Plan Point of Contact

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

Primary Point of Contact	Alternate Point of Contact
James J. Read, Police Chief EMC Box 1056- 44 North Ferry Road Shelter Island, NY 11964 (631) 749-0600 x2601 jread@shelterislandtown.us	Jennifer Zacha, Police Clerk Box 1056- 44 North Ferry Road Shelter Island, NY 11964 (631) 749-0600 jzacha@shelterislandtown.us

9.30.2 Municipal Profile

This section provides a summary of the community.

Population

According to the U.S. Census, the 2010 population for the Town of Shelter Island was 2,392.

Location

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 12 and a land area of 0.2 square miles.

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 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 of 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.



Governing Body Format

The Town’s government is comprised of a Town Supervisor and four council persons. 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, with in the Town of Shelter Island and the Village of Dering Harbor.

Growth/Development Trends

The following table summarizes major residential/commercial development and major infrastructure development that are identified for the next five (5) years in the municipality. Refer to the map in section 9.30.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.30-1. Growth and Development

Property Name	Type (Residential or Commercial)	Number of Structures	Location (address and/or block/lot)	Known Hazard Zone*	Description / Status
None identified at this time					

* Only location-specific hazard zones or vulnerabilities identified.

9.30.3 Natural Hazard Event History Specific to the Municipality

Suffolk County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 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 table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources. For details of events prior to 2008, refer to Volume I, Section 5.0 of this plan.

Table 9.30-2. Hazard Event History

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
February 8-9, 2013	Severe Winter Storm and Snowstorm	DR-4111	Yes - PA (Public Assistance)	Yes
October 27-November 8, 2012	Hurricane Sandy	DR-4085	Yes – IA (Individual Assistance) and PA	Yes
August 26 – September 5, 2011	Hurricane Irene	EM 3328 DR 4020	Yes – IA and PA	Yes
December 26-27, 2010	Severe Winter Storm and Snowstorm	DR 1957	Yes - PA	Yes
March 13-31, 2010	Severe Storms and Flooding	DR 1899	Yes - PA	Yes

EM Emergency Declaration (FEMA)
 FEMA Federal Emergency Management Agency
 DR Major Disaster Declaration (FEMA)
 IA Individual Assistance
 N/A Not applicable
 PA Public Assistance





9.30.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of Shelter Island. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for Town of Shelter Island.

Table 9.30-3. Hazard Risk/Vulnerability Risk Ranking

Hazard Ranking	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard ^{a, c, e}	Probability of Occurrence ^b	Risk Ranking Score (Probability x Impact)
6	Coastal Erosion	RCV in CEHA: \$54,664,469	Frequent	24
8	Drought	Damage estimate not available	Frequent	9
10	Earthquake	500-Year MRP: \$379,349 2,500-Year MRP: \$6,600,243	Rare	6
10	Expansive Soils	Damage estimate not available	Rare	6
5	Flood	1% Annual Chance: \$7,108,567 0.2% Annual Chance: \$14,290,911	Frequent	27
2	Groundwater Contamination (natural)	Damage estimate not available	Frequent	42
6	Hurricane	Category 1 SLOSH: \$101,158,788 Category 2 SLOSH: \$251,401,942 Category 3 SLOSH: \$492,686,788 Category 4 SLOSH: \$717,124,500	Frequent	24
4	Infestation	No measurable impact to property	Frequent	32
1	Nor'Easter	100-Year RCV: \$77,030,217 500-Year RCV: \$1,357,451	Frequent	54
3	Severe Storm	100-Year RCV: \$77,030,217 500-Year RCV: \$1,357,451	Frequent	39
2	Severe Winter Storm	1% of GBS: \$16,887,246 5% of GBS: \$84,436,231	Frequent	42
7	Shallow Groundwater Flooding	Damage estimate not available	Frequent	18
9	Wildfire	Estimated RCV in Interface/Intermix: \$2,053,072,018	Rare	6

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. The valuation of general building stock and loss estimates was based on the custom inventory developed for Suffolk County and probabilistic modeling results and exposure analysis as discussed in Section 5.
- c. The earthquake and hurricane wind hazards were evaluated by Census tract. The Census tracts do not exactly align with municipal boundaries; therefore, a total is reported for each Town inclusive of the Villages and the Tribes within the Town boundary.





- d. Frequent = Hazard event that occurs more frequently than once in 10 years; Occasional = Hazard event that occurs from once in 10 years to once in 100 years, Rare = Hazard event that occurs from once in 100 years to once in 1,000 years; None = Hazard event that occurs less frequently than once in 1,000 years
 - e. The estimated potential losses for Nor'Easter and Severe Storm are from the HAZUS-MH probabilistic hurricane wind model results. See footnote c.
- CEHA = Coastal Erosion Hazard Area
 GBS = General building stock
 MRP = Mean return period
 RCV = Replacement cost value

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the municipality.

Table 9.30-4. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)	# Policies in 500-Boundary (3)	# Policies Outside the 500-year Flood Hazard (3)
Town of Shelter Island	283	104	\$1,823,966	7	0	21	27	235

Source: FEMA Region 2, 2014

Note (1): Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of January 31, 2014. Please note the total number of repetitive loss properties excludes the severe repetitive loss properties. The number of claims represents the number of claims closed by January 31, 2014.

Note (2): Information regarding total building and content losses was gathered from the claims file provided by FEMA Region 2.

Note (3): The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1- and 0.2-percent annual chance flood events.

Table 9.30-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event			Potential Loss from 0.2% Flood Event		
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	Days to 100-Percent ⁽²⁾	Percent Structure Damage	Percent Content Damage	Days to 100-Percent ⁽²⁾
West Neck Anchorage	Ferry	A	X						
North Ferry Co., Shelter Island Ferry	Ferry	V	X						
South Ferry Terminal	Ferry	V	X						
Dering Harbor Town Dock	Ferry	V	X						
Coecles Harbor Anchorage	Ferry	A	X						
Dering Harbor Town Dock	Ferry	V	X						
Coecles Harbor	Ferry	A	X						



Name	Type	Exposure		Potential Loss from 1% Flood Event			Potential Loss from 0.2% Flood Event		
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	Days to 100-Percent ⁽²⁾	Percent Structure Damage	Percent Content Damage	Days to 100-Percent ⁽²⁾
Anchorage									
Congon's Creek Town Dock	Ferry	A	X						
West Neck Anchorage	Ferry	A	X						
North Ferry Terminal	Ferry	V	X						
Congon's Creek Town Dock	Ferry	A	X						
POD	POD		X						
POD	POD		X						
J.W. Piccozzi, Dering Harbor Heating Oil	Port	V	X						
Jack's Marina	SC Gov't Facility	V	X						
Piccozzi's Dering Harbor Marina	SC Gov't Facility	V	X						
Shelter Island Yacht Club	SC Gov't Facility	V	X				13.5	78.2	
Clark's Marine	SC Gov't Facility	A	X				8.4	60.3	
Coecles Harbor Marina	SC Gov't Facility	V	X						
Island Boat Yard	SC Gov't Facility	A	X				0.1	0.3	
Shelter Island Heights Highway Dep	SC Gov't Facility		X						

Source: HAZUS-MH 2.1

Note: x = Facility located within the 0.2-percent annual chance flood boundary.

Please note it is assumed that wells have electrical equipment and openings are three-feet above grade.

(1) HAZUS-MH 2.1 provides a general indication of the maximum restoration time for 100% operations. Clearly, a great deal of effort is needed to quickly restore essential facilities to full functionality; therefore this will be an indication of the maximum downtime (HAZUS-MH 2.1 User Manual).

(2) In some cases, a facility may be located in the DFIRM flood hazard boundary; however HAZUS did not calculate potential loss. This may be because the depth of flooding does not amount to any damages to the structure according to the depth damage function used in HAZUS for that facility type.

Other Vulnerabilities Identified by Municipality

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.



9.30.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of Mitigation Planning into Existing and Future Planning Mechanisms

Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the municipality.

Table 9.30-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Y/N)	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, date of adoption, name of plan, explanation of authority, etc.)
Building Code	Y	Local, State	Building Dpt	Town Code , Chapters 43, 45 2003 NYS Building Code- ICC/with NYS amendments
Zoning Ordinance	Y	Local	Building Dpt	Town Code , Chapter 133, date 10-1-05
Subdivision Ordinance	Y	Local	Planning Board	Town Code , Chapter 111, date 10-01-05
Special Purpose Ordinances	Y	Local	Multiple town personnel	Town Code , Chapters 50, 53, 60, 62, 63, 68, 82, 91, 113, 117, 129 - Dated 9-25-98
Growth Management	N			
Floodplain Management / Basin Plan	Y	State	Building Dpt	NYS DEC Flood Management Plan
Stormwater Management Plan/Ordinance	Y	Local	Building Dpt	Town Code , selections in Chapter 62; Date10- 1-05
Comprehensive Plan / Master Plan	Y	Local	Town Board	Shelter Island Comprehensive Plan; January 13, 1994
Capital Improvements Plan	N			
Site Plan Review Requirements	N			
Habitat Conservation Plan	N			
Economic Development Plan	N			
Emergency Response Plan	Y	Local	Police	Hurricane/Coastal Storm Emergency Response Plan; 2006
Shoreline Management Plan	Y	Local	Town Board	Near Shore Overlay Town Code 133-12 dated 3/15/07
Post Disaster Recovery Plan	N			
Post Disaster Recovery Ordinance	N			
Real Estate Disclosure req.	N			



Tool / Program (code, ordinance, plan)	Do you have this? (Y/N)	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, date of adoption, name of plan, explanation of authority, etc.)
Other (e.g. steep slope ordinance, local waterfront revitalization plan)	N			
NFIP Flood Damage Protection Ordinance	Y	Local	Building Dpt	Town Code Section 69
NFIP - Freeboard	Y	State Mandated		Town Code Section 69 State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other
NFIP - Cumulative Substantial Damages	N			
Coastal Erosion Control Districts	N			
Building Code	Y	Local, State	Building Dpt	Town Code , Chapters 43, 45 2003 NYS Building Code- ICC/with NYS amendments
Zoning Ordinance	Y	Local	Building Dpt	Town Code , Chapter 133, date 10-1-05

Administrative and Technical Capability

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

Table 9.30-6. Administrative and Technical Capabilities

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Part Time engineer hired by the Town
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Part Time engineer hired by the Town
Planners or engineers with an understanding of natural hazards	Y	Part Time engineer hired by the Town
NFIP Floodplain Administrator	Y	Town Building Inspector
Surveyor(s)	Y	Not on staff (contract as needed)
Personnel skilled or trained in “GIS” applications	Y	Police Personnel
Scientist familiar with natural hazards in the municipality.	Y	Consultants \ Local Knowledgeable specialists
Emergency Manager	Y	Chief of Police
Grant Writer(s)	Y	On staff
Staff with expertise or training in benefit/cost analysis	Y	On Staff



Fiscal Capability

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

Table 9.30-7. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community Development Block Grants (CDBG)	Y
Capital Improvements Project Funding	Y
Authority to Levy Taxes for specific purposes	Y
User fees for water, sewer, gas or electric service	N
Impact Fees for homebuyers or developers of new development/homes	N
Incur debt through general obligation bonds	Y
Incur debt through special tax bonds	Y
Incur debt through private activity bonds	N
Withhold public expenditures in hazard-prone areas	Y
Mitigation grant programs	Y
Other	Y, (Community Preservation Fund 2% Real Estate Transfer Tax) Purchase open space

Community Classifications

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

Table 9.30-8. Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	Not Participating	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	4/4	2004
Public Protection	5/9*	-
Storm Ready	Not Participating	N/A
Firewise	Not Participating	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:





- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

National Flood Insurance Program

The following section provides details on the National Flood Insurance Program (NFIP) as implemented within the municipality:

NFIP Floodplain Administrator: Bill Banks

Program and 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's Flood Damage Prevention Ordinance (FDPO), found at Chapter 68 of the local code, was last updated on July 31, 1998.

As of January 31, 2014 there are 283 policies in force, insuring \$94,695,600 of property with total annual insurance premiums of \$241,702. Since January 31, 2014, 104 claims have been paid totaling \$1,823,966. As of January 31, 2014 there are 7 Repetitive Loss and no Severe Repetitive Loss properties in the community.

The community is currently in good standing in the NFIP and has no outstanding compliance issues. The current NFIP Floodplain Administrator has no knowledge of when the last CAV was performed. The municipality sees no specific need for a CAV at this time.

Loss History and Mitigation

Since January 31, 2014, 104 claims have been paid totaling \$1,823,966. As of January 31, 2014 there are 7 Repetitive Loss and no Severe Repetitive Loss properties in the community.

Following Hurricane Sandy, no homes or structures sustained damage due to flooding. Any flooding issues were addressed through property owner's flood insurance.

Planning and Regulatory Capabilities

The community's Flood Damage Prevention Ordinance (FDPO) was last updated on July 31, 1998, and is found at Chapter 68 of the local code.

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

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.

Administrative and Technical Capabilities

The community FDPO identifies the Building Inspector as the local NFIP Floodplain Administrator, currently Bill Banks, for which floodplain administration is an auxiliary duty.

Duties and responsibilities of the NFIP Administrator are enforcing regulations and ensuring proper certifications are obtained during construction. Eric Starr of DEC assists on plan and site reviews as well as checks permits.

No homes were damaged during Hurricane Sandy nor have any claims been filed.

Bill Banks feels he is adequately supported and trained to fulfill his responsibilities as the municipal floodplain administrator. Bill Banks is not certified in floodplain management, however attends regular continuing education programs for code enforcement.

Public Education and Outreach

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

Duties and responsibilities of the NFIP Administrator are enforcing regulations and ensuring proper certifications are obtained during construction. Eric Starr of DEC assists on plan and site reviews as well as checks permits.

Actions to Strengthen the Program

Currently there are no barriers to running an effective floodplain management program in Shelter Island.

Additional information and training regarding floodplain management and Community Rating System (CRS) would be welcomed and is encouraged. Shelter Island is not currently a CRS community and is unsure of what more the community could do to reduce flooding risk.



Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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/ongoing programs and may be considered mitigation “capabilities”:

Land Use Plans – maintain Town info in the NYS DEC Flood Management Plan. Information on flood hazard areas and storm/flood impacts discussed in the HMP will be incorporated into the DEC plan.

Land Use Plans – maintain the Comprehensive Plan and shoreline management plan to minimize risk in hazard areas. Updates will include a review of the HMP to ensure that hazard areas are identified in the respective plans.

Building Code, Ordinances, and Enforcement – review planned development against the hazard areas identified in the HMP during zoning and subdivision reviews.

Building Code, Ordinances, and Enforcement – enhance the Town Code. The Town is considering new standards for bulkhead construction and minimum height for pilings

Building Code, Ordinances, and Enforcement – maintain NFIP flood damage prevention ordinance and stormwater management ordinance to minimize risk from flood and storm impacts.

Building Code, Ordinances, and Enforcement – 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

Building Code, Ordinances, and Enforcement – regulate low-density land use in high risk coastal, surface water and groundwater zones

Floodplain Management - work together with the County and others to bring CRS training/workshops into the community where appropriate community officials and staff will actively participate

Emergency Response Plan – the town developed and adopted an Emergency Response Plan in order to outline in detail the functions and responsibilities of each Town department during a large scale natural or man-made emergency, so that response to emergencies lessens the severity of a disaster on property and the population. This plan includes many pre-event actions that both mitigate disaster losses, and directly supports recovery efforts.

Emergency Response Plan - consider the development of a post –disaster action plan, including a debris management plan. This to be incorporated into existing emergency management plans. The debris management plan will incorporate estimates of debris generated by different hazards, as discussed in the risk assessment portion of the HMP.

Public Education and Outreach – 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

Public Education and Outreach – educate the public regarding tick-borne illness.



9.30.6 Mitigation Strategy and Prioritization

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

Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2008 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. 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 9.30-9. Past Mitigation Initiative Status

Description	Status	Review Comments
TSI-1: Aquifer protection – Protect the drinking water supply by installing and maintaining storm water collection systems that will minimize fresh water and contaminants from running into the bays. Additional water added to the aquifer will ease drought restrictions and salt water intrusion, while reducing flooding on town roadways.	50% Completed	This is an ongoing process to maintain and protect the drinking water and maintain the ground water, minimizing drought conditions
TSI-2: Infestation of ticks and deer - Reduce the white tailed deer herd to the recommended density. Install 4 poster feeding stations that will kill ticks, on the deer, which can carry diseases. Educate the public regarding tick born illness.	50% Completed	Initially the 4 poster stations were deployed at a level of 60 stations island wide. 2014 projects that 30 stations will be deployed due to funding restrictions. This must be an annual commitment. Deer density has been reduced as noted by the reduction in traffic accidents over a 10 year period. Reductions in deer density can reduce the tick host in turn reducing tick-based illness.
TSI-3: Raise flood prone areas such as Ram Island Drive / Road and West Neck Rd to an elevation that will not be inundated by flooding events.	35% Completed	Ram Island Road and Drive were both elevated during the reported period. Additional elevations are required along both roadways and West Neck Rd.
TSI-4: Coastal erosion - protect shoreline roads from destruction. Harden low-lying roadways from repetitive storm surge destruction.	30% Completed	A coastal erosion project was completed along Ram Island Drive (2 nd causeway) and the entrance to shell with gabion baskets.
TSI-5: Creek Capacity enhancement- increase the stream flow capacity in creeks to allow for proper flushing of the waters, which will decrease the duration of the flooding events, while protecting the natural environment.	45% Completed	Silver Beach lagoon Dredging of a creek between North Brander. Dredging needs to continue at Westmoreland Dr, Cobbett’s lane and Sheep Pasture Lane – ongoing
TSI-6: Support an initiative that will identify viable repetitive loss properties. Initiate a plan that will mitigate those losses, by purchasing or retrofitting the property to negate monetary loss.	No Progress	Very few properties could be identified as needing to be purchased or retrofitted
TSI-7: Support county-wide initiatives identified in Section 9.1 of the Suffolk County Annex.	Ongoing	A modified version of this initiative is being carried forward, identifying local participation in specific county-led mitigation programs and initiatives.
TSI-8: Consider the development of a post – disaster action plan, including a debris management plan. This to be incorporated into existing emergency management plans.	Ongoing	A modified version of this initiative is being carried forward, identifying local participation in the pending county-led debris management planning process.



Description	Status	Review Comments
TSI-9: Consider participation in incentive-based programs such as, CRS and “Storm-Ready”.	Ongoing	The Village has included an initiative to support county-led initiatives, which include programs to enhance floodplain management capabilities. The Village will attend a CRS workshop if offered locally.
TSI-10: Protect critical facility structures- such as the Emergency Operations Center, with a multi-jurisdictional building retrofit, by bringing the structures up to current building codes,	20% Completed	EOC meets some of current code requirements but could still use enhancements. Continue to review this action plan
TSI-11: Assess and formulate improvements for the PODS distribution areas.	100% Completed	PODS distribution areas and plans are in place

Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy

The Town received a \$1.5M dollar road elevation grant on Ram Island Road at the intersection of Ram Island Drive. This project raised the road approximately 2 feet to aid in maintain accessibility during severe Nor’easter and Hurricanes.

The Town recently completed an emergency \$1.5M shoreline stabilization project on the Ram Island Drive 2nd Causeway

The Town continues to complete annual drainage projects in the shoreline areas investing approximately \$30k of town funds coupled with other matching grants

The Town has submitted for an FHWA repair of the Ram Island 2nd causeway \$1.6 M for rock and sand to restore damage caused by Superstorm Sandy to include raising the current stone and dune barrier.

The town currently is awaiting approval of a grant application for emergency generators for government emergency structures for receptive power outages:

- Police Department (EOC), Town Hall, Justice Court (alternate EOC), Youth Center/American Legion secondary shelter.



Proposed Hazard Mitigation Initiatives for the Plan Update

The Town of Shelter Island identified mitigation initiatives they would like to pursue in the future. 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. Table 9.30-10 identifies the municipality's updated local mitigation strategy.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.30-11 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.30-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
TSI-1 (Sandy HMGP LOI #936)	Marsh Island Creation in Dickerson Creek.– Cornell Cooperative Extension	See Action Worksheet (TSI-1 - LOI 936 - 031414)									
TSI-2 (Sandy HMGP LOI #1300)	Shelter Island Structural Shoreline Stabilization – Cornell Cooperative Extension	See Action Worksheet (TSI-2 - LOI 1300 - 031814)									
TSI-3 (Sandy HMGP LOI #1303)	Marsh Island Creation in Gardiners Creek.	See Action Worksheet (TSI-3 - LOI 1303 - 031814)									
TSI-4 (Sandy HMGP LOI #142)	Emergency Services Interoperability Communications Project	See Action Worksheet (TSI-4 - LOI 142 - 031814)									
TSI-5 (Sandy HMGP LOI #1305)	Hay Beach Point Re-Vegetation– Cornell Cooperative Extension	See Action Worksheet (TSI-5 - LOI 1305 - 031814)									
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	New and Existing	Earthquake, Flood, Hurricane, Nor'Easter, Severe Storm, Wildfire, Winter Storm	1, 2, 3, 4, 7, 9, 13, 14, 15, 16	PSE&G			TBD	DOF	High	SIP
TSI-7	Assess and prioritize the options available to	Existing	Flood, Hurricane,	1, 2, 3, 7, 9, 13, 14, 15, 16				TBD	DOF	Medium	SIP





Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
	elevate utilities, businesses and roadway on Bridge Street.		Nor'Easter, Severe Storm, Shallow GW								
TSI-8	Assess and prioritize the options available to elevate West Neck Road between Hilo Drive and Westmoreland Drive.	Existing	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW	1, 2, 3, 9, 13, 14, 15, 16				TBD	DOF	Medium	SIP
TSI-9	Assess and prioritize the options available to elevate the entrance to Westmoreland Drive.	Existing	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW	1, 2, 3, 9, 13, 14, 15, 16				TBD	DOF	Medium	SIP
TSI-9b (Sandy HMGP LOI 762)	Raising Westmoreland Drive, Shelter Island	See Action Worksheet (TSI-9B - LOI 762 - 031814)									
TSI-10	Assess and prioritize the options available to elevate Ram Island Road between Cobbett's Lane and Sheep Pasture Road.	Existing	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW	1, 2, 3, 9, 13, 14, 15, 16				TBD	DOF	Medium	
TSI-11	Assess and prioritize the options available to elevate Ram Island Drive 1 st Causeway from center to base of Little Ram Island.	Existing	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW	1, 2, 3, 9, 13, 14, 15, 16				TBD	DOF	Medium	
TSI-12	Assess and prioritize the options available to elevate both low-lying ends of Ram Island Drive 2 nd Causeway.	Existing	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW	1, 2, 3, 9, 13, 14, 15, 16				TBD	DOF	Medium	
TSI-13	Build-up of stone and sand replenishment at Ram Island, 2nd Causeway.	See Action Worksheet (TSI-13 - AW 13 - 031814)									
TSI-14	Beach groins and stabilization at the entrance to Shell Beach.	See Action Worksheet (TSI-14 - AW 14 - 031814)									
TSI-14b	Shell Beach Groins and Bulkhead.	See Action Worksheet (TSI-14B - LOI 968 - 031814)									





Section 9.30: Town of Shelter Island

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
(Sandy LOI 968)											
TSI-15	Establish an emergency communications system to place all Emergency Management Operations on a single shared frequency.	N/A	Coastal Erosion, Earthquake, Flood, Hurricane, Infestation, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm	9, 13, 14, 15, 16				TBD	DOF	Medium	
TSI-16	Upgrade a one-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.	See Action Worksheet (TSI-16 - AW 16 - 031814)									
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.	See Action Worksheet (TSI-17 - AW 17 - 031814)									
TSI-18	Consider the installation of storm shutters at the Emergency Operations shelter.	Existing	Hurricane, Nor'Easter, Severe Storm	2, 13, 14, 15, 16				TBD	DOF	High	
TSI-19	Stabilize the public portions of the Peconic Avenue bulkhead with rock at the base of existing bulkhead.	See Action Worksheet (TSI-19 - AW 19 - 031814)									
TSI-20	Reengineer and reconstruct 30 town-maintained bulkheads.	See Action Worksheet (TSI-20 - AW 20 - 031814)									
TSI-21	Enhance the Town Code.	New and Existing	Coastal Erosion, Drought,	1, 3, 4, 6, 8, 9, 10, 13, 14, 15, 16, 17				TBD	DOF	High	LPR





Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
			Earthquake, Expansive Soils, Flood, Groundwater Contam, Hurricane, Infestation, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm								
TSI-22	Increase structural stability and drainage capacity of culverts by replacing deteriorated culverts that prevent road flooding.	See Action Worksheet (TSI-22 - AW 22 - 031814)									
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.	N/A	Earthquake, Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm	1, 3, 7, 8, 9, 10, 13, 14, 15, 16				TBD	DOF	High	
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.	New and Existing	Flood, Groundwater Contam, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Winter Storm	1, 3, 7, 8, 9, 14, 15, 17				TBD	DOF	High	EAW
TSI-25	Support/enhance building and/or flood code enforcement	New and Existing	Coastal Erosion, Drought, Earthquake,	1, 3, 4, 6, 8, 9, 10, 14, 15, 17				TBD	DOF	High	LPR





Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
	programs at the local level. The Town is seeking to increase its public education and awareness of current codes efforts.		Expansive Soils, Flood, Groundwater Contam, Hurricane, Infestation, Nor'Easter, Severe Storm, Shallow GW, Wildfire, Winter Storm								
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.	Existing	Flood, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Winter Storm	1, 2, 3, 8, 9, 14, 15, 16, 17				TBD	DOF	High	
TSI-27	Regulate low-density land use in high risk coastal, surface water and groundwater zones.	New and Existing	Coastal Erosion, Expansive Soils, Flood, Groundwater Contam, Hurricane, Nor'Easter, Severe Storm, Shallow GW, Wildfire	1, 3, 5, 6, 7, 8, 9, 14, 15, 17				TBD	DOF	High	LPR
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.	NA	Groundwater Contamination, Drought, Flood	7,8,9,11,13,15,16	DPW		Low	General Fund/ PDM	Long term	High	NRP
TSI-29	Reduce the white tailed deer herd to the recommended density.	NA	Infestation	1,10	PD/DPW		\$1.5M Medium	Private Funding, Town	Medium	Medium	NRP





Section 9.30: Town of Shelter Island

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
								General Fund, NYS Funding, PDM			
TSI-30	Install 4 poster feeding stations	See Action Worksheet (TSI-30 - AW 30 - 031814)									
TSI-31	Educate the public regarding tick-borne illness.	NA	Infestation	1,10	PD/DPW			Private Funding, Town General Fund, NYS Funding, PDM	DOF	High	
TSI-32	Raise flood prone roadways to an elevation that will not be inundated by flooding events.	See Action Worksheet (TSI-32 - AW 32 - 031814)									
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.	Existing	Hurricane, Flood, Coastal Erosion	5,8,11,13,15	DPW		\$2M	General Fund/ PDM/ Highway Fund	Short term	Medium	
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.	NA	Hurricane, Flood, Coastal Erosion	5,13, 16	SC		Medium	General fund/ PDM /Storm water abatement fund/ Highway fund	Short-Long Term DOF	Medium	NRP
TSI-35	Assess and prioritize options to acquire or retrofit repetitive loss properties, and	Existing	Hurricane, Flood, Coastal Erosion	2,7,13	Shelter Island Town		Unknown	PDM / Home Owner	Long Term DOF	High	SIP





Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
	implement as funding is made available.										
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"> Mitigation Education for Natural Disasters (natural hazard awareness and personal scale risk reduction/mitigation public education and outreach program) Build Local Floodplain Management and Disaster Recovery Capabilities (enhanced floodplain management, and post-disaster assessment and recovery capabilities) County-Wide Debris Management Plan Jurisdictional Knowledge of Mitigation Needs of Property Owners (improved understanding of damages and mitigation interest/activity of private property owners) 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) Alignment of Mitigation 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). 										
	See above	New and Existing	All Hazards	All Objectives	Suffolk County, as supported by relevant local department leads,	High (comprehensive improvements mitigation and risk-reduction capabilities)	Low-Medium (locally)	Local (staff resources)	Short	High	All types
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.	Existing	All Hazards	2, 3, 13, 14,15,16	Shelter Island Town		Low	General Fund, FEMA Hazard Mitigation Grant Funding	Short Term	High	

Notes:

*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FMA Flood Mitigation Assistance grant program
- HMA Hazard Mitigation Assistance grant program (including FMA, HMGP, PDM)
- HMGP Hazard Mitigation Grant Program
- N/A Not applicable
- NFIP National Flood Insurance Program
- NYSOEM New York State Office of Emergency Management
- PDM Pre-Disaster Mitigation grant program
- PSEG Public Service Electric and Gas (formerly LIPA)

Costs:

Where actual project costs have been reasonably estimated:

Low = < \$10,000





Medium = \$10,000 to \$100,000
High = > \$100,000

Where actual project costs cannot reasonably be established at this time:

Low = Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.

Medium = Could budget for under existing work plan, but would require a reappropriation of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.

High = Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low = < \$10,000

Medium = \$10,000 to \$100,000

High = > \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low = Long-term benefits of the project are difficult to quantify in the short term.

Medium = Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.

High = Project will have an immediate impact on the reduction of risk exposure to life and property.

Timeline:

Short = 1 to 5 years

Long Term = 5 years or greater

OG = On-going program

DOF = Depending on funding

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 (NRP)* – 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.



Table 9.30-11. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
TSI-1 (Sandy HMGP LOI #936)	Marsh Island Creation in Dickerson Creek.– Cornell Cooperative Extension	0	1	1	1	1	0	0	1	0	0	0	1	0	1	7	Medium
TSI-2 (Sandy HMGP LOI #1300)	Shelter Island Structural Shoreline Stabilization – Cornell Cooperative Extension	0	1	1	1	1	0	0	0	1	0	0	1	1	0	7	Medium
TSI-3 (Sandy HMGP LOI #1303)	Marsh Island Creation in Gardiners Creek.	0	1	1	1	1	0	0	1	1	0	0	1	0	0	7	Medium
TSI-4 (Sandy HMGP LOI #142)	Emergency Services Interoperability Communications Project	1	1	1	1	1	1	0	1	1	0	1	1	1	1	12	High
TSI-5 (Sandy HMGP LOI #1305)	Hay Beach Point Re-Vegetation– Cornell Cooperative Extension	0	1	1	1	1	0	0	1	1	0	0	1	0	0	7	Medium
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	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
TSI-7	Assess and prioritize the options available to elevate utilities, businesses and roadway on Bridge Street.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-8	Assess and prioritize the options available to elevate West Neck Road between Hilo Drive and Westmoreland Drive.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-9	Assess and prioritize the options available to elevate the entrance to Westmoreland Drive.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-9b	Raising Westmoreland Drive,	1	1	1	1	0	1	-1	0	1	1	1	1	1	0	9	Medium





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Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
(Sandy HMGP LOI 762)	Shelter Island																
TSI-10	Assess and prioritize the options available to elevate Ram Island Road between Cobbett's Lane and Sheep Pasture Road.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-11	Assess and prioritize the options available to elevate Ram Island Drive 1 st Causeway from center to base of Little Ram Island.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-12	Assess and prioritize the options available to elevate both low-lying ends of Ram Island Drive 2 nd Causeway.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-13	Build-up of stone and sand replenishment at Ram Island, 2nd Causeway.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-14	Beach groins and stabilization at the entrance to Shell Beach.	0	1	1	1	1	1	-1	1	0	1	1	1	1	1	10	High
TSI-14b (Sandy LOI 968)	Shell Beach Groins and Bulkhead.	0	0	1	1	1	1	0	1	1	1	1	1	1	1	11	High
TSI-15	Establish an emergency communications system to place all Emergency Management Operations on a single shared frequency.	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
TSI-16	Upgrade a one-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.	1	1	1	0	1	1	0	1	0	0	0	1	1	1	9	Medium
TSI-17	Stabilize Reel Point at the Coecles Harbor entrance. Constant silting is affecting the entrance to this major harbor. The project includes ongoing	0	1	1	1	1	1	0	1	1	0	1	-1	1	0	8	High





Section 9.30: Town of Shelter Island

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	maintenance and is about 80% complete.																
TSI-18	Consider the installation of storm shutters at the Emergency Operations shelter.	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High
TSI-19	Stabilize the public portions of the Peconic Avenue bulkhead with rock at the base of existing bulkhead.	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
TSI-20	Reengineer and reconstruct 30 town-maintained bulkheads.	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
TSI-21	Enhance the Town Code.	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
TSI-22	Increase structural stability and drainage capacity of culverts by replacing deteriorated culverts that prevent road flooding.	1	1	1	1	1	1	0	1	1	0	1	1	1	0	11	High
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.	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High
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.	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High
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.	1	1	1	0	1	1	0	1	1	1	1	1	0	1	11	High
TSI-26	Design or enhance existing municipal drainage systems to	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High





Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	provide increased capacity and decrease road flooding. This is an ongoing effort by the Town.																
TSI-27	Regulate low-density land use in high risk coastal, surface water and groundwater zones.	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High
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.	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High
TSI-29	Reduce the white tailed deer herd to the recommended density.	0	0	1	1	0	1	1	1	0	1	0	1	0	1	8	Medium
TSI-30	Install 4 poster feeding stations	1	0	1	1	1	1	0	1	1	0	0	1	1	0	9	High
TSI-31	Educate the public regarding tick-borne illness.																
TSI-32	Raise flood prone roadways to an elevation that will not be inundated by flooding events.	1	1	1	1	1	1	0	1	1	0	1	-1	1	1	10	High
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.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
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.	1	1	0	1	0	1	0	1	1	1	1	1	0	1	10	Medium
TSI-35	Assess and prioritize options to acquire or retrofit repetitive loss	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High





Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	properties, and implement as funding is made available.																
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).	-	-	-	-	-	-	-	-	-	-	-	-	--	-	-	Low,Medium,High
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.	1	1	1	1	1	1	0	1	1	1	1	1	0	1	12	High

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.

- = Prioritization remained the same as the 2008 HMP.



9.30.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.30.8 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 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. 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. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.30.9 Additional Comments

None at this time.



Figure 9.30-1. Town of Shelter Island Hazard Area Extent and Location Map 1

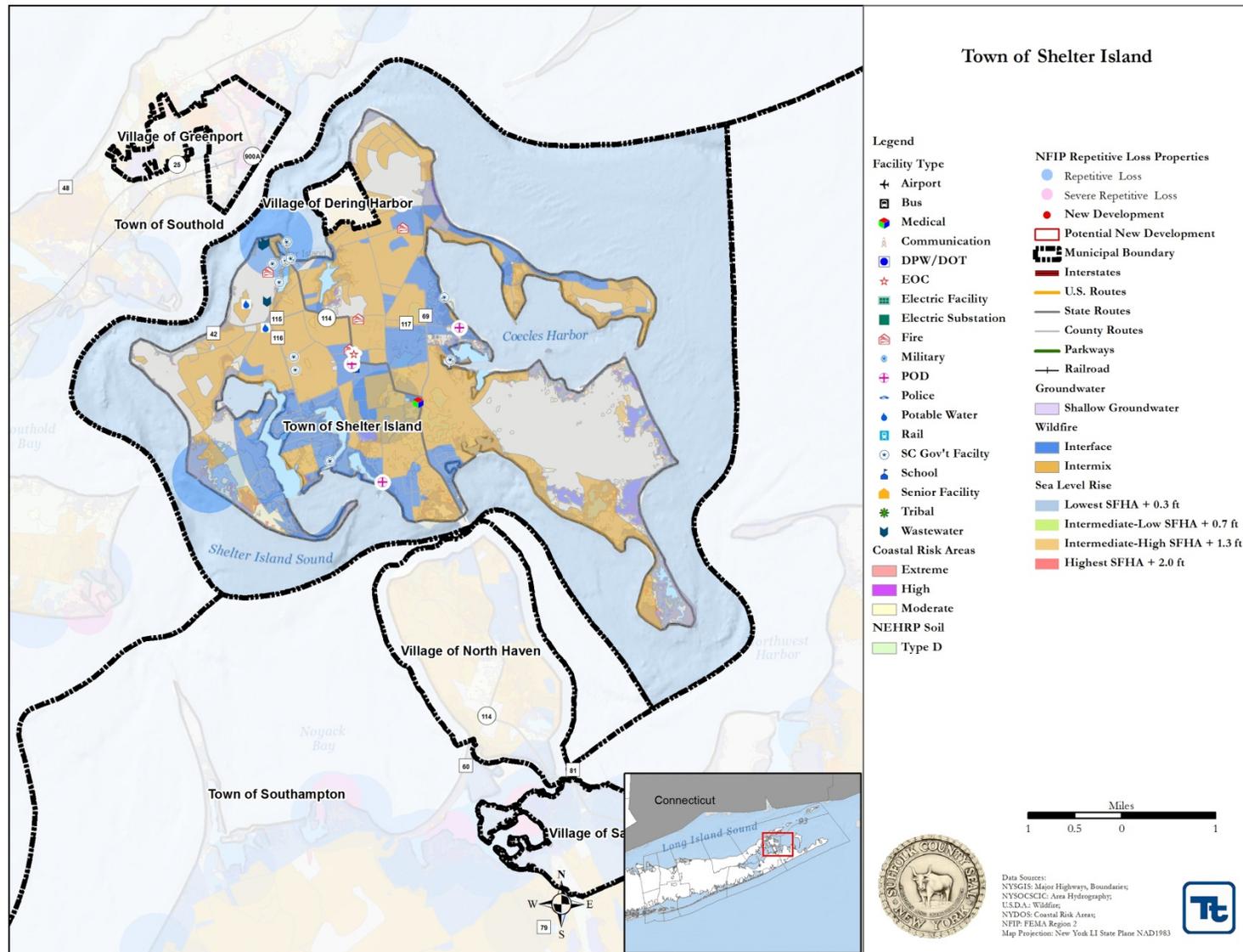
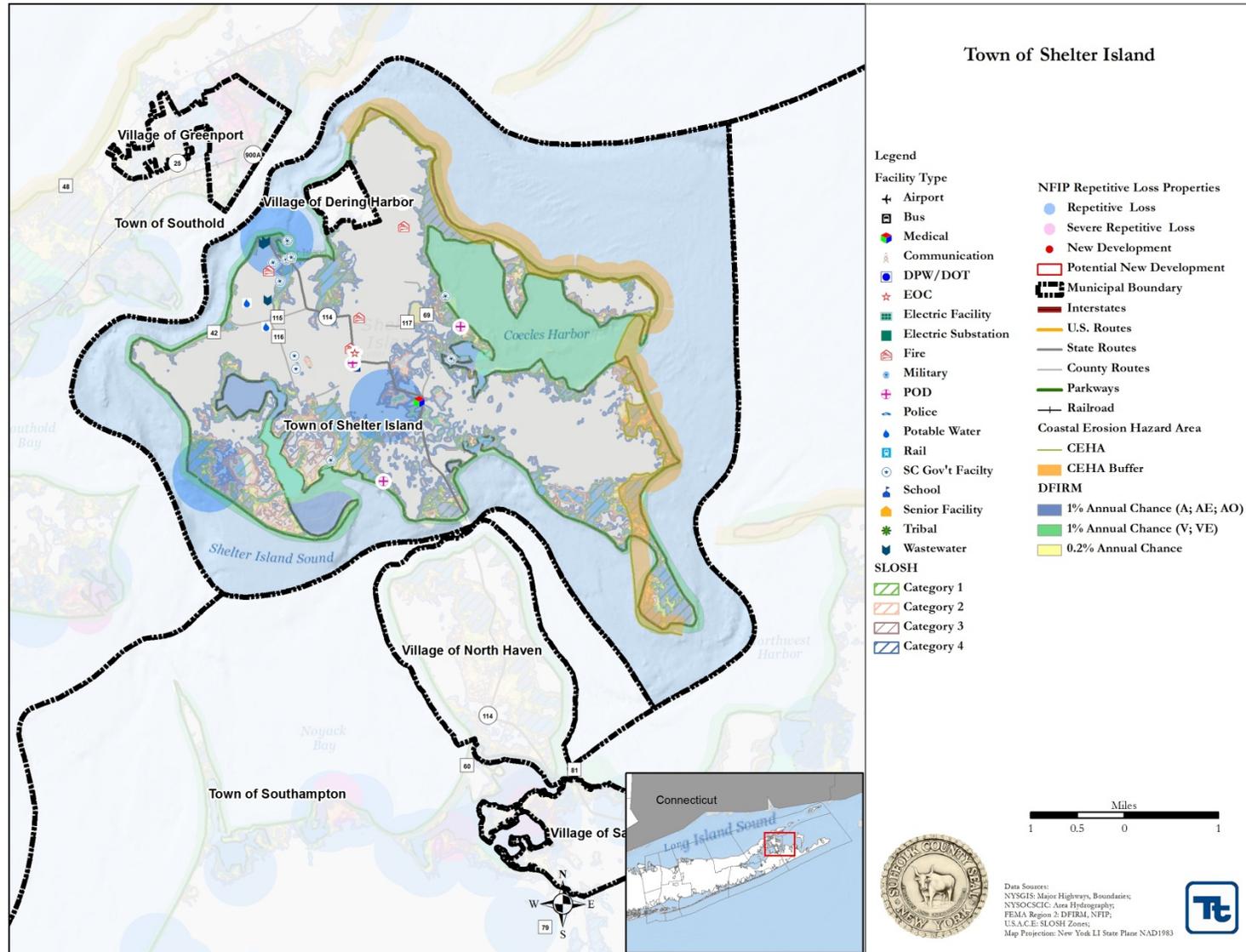




Figure 9.30-2. Town of Shelter Island Hazard Area Extent and Location Map 2





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Cornell Cooperative Extension of Suffolk County
Number: TSI-1 (Sandy HMGP LOI #: 936)
Mitigation Action/Initiative: Marsh Island Creation in Dickerson Creek

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Nor Easters, Hurricane, Severe Storms
Specific problem being mitigated:	Dickerson Creek on Shelter Island is a natural marsh area that has suffered considerable damage and losses in the recent decade. Over that time, the marsh has lost several acres of vegetated marsh islands that were helping to form a protective barrier from wind driven waves, flooding and other kinds of storm damage. Once these natural protective features were lost, the benefits they provided were also lost.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	<ol style="list-style-type: none"> 1. Hardened shoreline solutions are not the best alternative for this site 2. No action will result in continued erosion , flooding and marsh habitat loss 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	We are proposing to tie a scheduled dredging of the creek mouth with restoration of these islands through beneficial reuse of clean dredge material to create elevations suitable to support marsh grasses. Following filling the area will be planted with smooth cord grass to accelerate restoration. By re-establishing these natural marsh island features they creek will return to a previous more natural state that provides protection to the homes and town landing within the Creek. The marsh islands will not only serve as immediate wave breaks, but they will also help reduce nearby flooding.
Mitigation Action/Project Type	Natural Systems Protection
Objectives Met	1, 3, 5, 6, 8, 9, 10, 15, 17
Applies to existing structures/infrastructure, future, or not applicable	Both
Benefits (losses avoided)	Recent Damages: \$75,000
Estimated Cost	\$110,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist





Local Planning Mechanism	Town of Shelter Island
Potential Funding Sources	HMGP; grants and in-kind resources for Local Match
Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-1 (Sandy HMGP LOI #: 936)

Mitigation Action/Initiative: Marsh Island Creation in Dickerson Creek

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project would reduce flooding and erosion impacts experienced by nearby properties
Cost-Effectiveness	1	
Technical	1	CCE is highly qualified to conduct this type of work
Political	1	Initial buy in from property owners has been attained and similar marsh island creation projects have been received well by local regulatory agencies
Legal	0	
Fiscal	0	
Environmental	1	Essential fin fish, shellfish and bird habitat will be restored
Social	0	Residents will have an opportunity to assist in the re-vegetation aspect of this project through participation in CCE's Marine Meadows Program
Administrative	0	
Multi-Hazard	0	
Timeline	1	This project can be fulfilled in one year once permits are attained
Agency Champion	0	
Other Community Objectives	1	
Total	8	
Priority (High/Med/Low)	Med	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-13

Mitigation Action/Initiative: Build-up of stone and sand replenishment

Assessing the Risk	
Hazard(s) addressed:	Coastal erosion, flooding, hurricane, nor'easter, severe storm, severe winter storm
Specific problem being mitigated:	Protect road from flooding due to storm surges
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Build bridge -cost-prohibitive
	2. Bulkheading - not allowed? Cost-prohibitive
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Build-up of stone and sand replenishment at Ram Island, 2nd causeway
Mitigation Action/Project Type	SIP
Objectives Met	2, 13, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Emergency vehicle access, protected roadway Recent Damages:
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Town, DPW, FHWA, DEC, Army Corps of Engineers
Local Planning Mechanism	
Potential Funding Sources	HMGP, FHWA
Timeline for Completion	Long Term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: SI-13

Mitigation Action/Initiative: Build-up of stone and sand replenishment

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	0	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	1	
Timeline	-1	
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-14

Mitigation Action/Initiative: Beach groins and stabilization

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion
Specific problem being mitigated:	The groins have protected Shell Beach from erosion for years, but they are failing and erosion from storms is increasing.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Do nothing. Rejected as Shell Beach and the road leading to it will wash out, exposing West Neck Bay to increased wave action and erosion.
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Beach groins and stabilization at the entrance to Shell Beach
Mitigation Action/Project Type	SIP
Objectives Met	2
Applies to existing structures/infrastructure, future, or not applicable	Yes
Benefits (losses avoided)	Recent Damages: in 2009 the failure of a single groin resulted in over \$700,000 of damage to the beach and roadway. Further action must be taken to replace the remaining groins to protect the existing investment of federal, state and local funds
Estimated Cost	
Priority*	High
Plan for Implementation	
Responsible Organization	<i>Town of Shelter Island</i>
Local Planning Mechanism	
Potential Funding Sources	HMGP; Town Budget for Local Match
Timeline for Completion	
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-14

Mitigation Action/Initiative: Beach groins and stabilization

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	This will protect road to allow access emergency vehicles
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	Also promote tourism and open space
Total	10	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island
Number: TSI-14b (Sandy HMGP LOI #: 968)
Mitigation Action/Initiative: Shell Beach Groins and Bulkhead

Assessing the Risk	
Hazard(s) addressed:	
Specific problem being mitigated:	<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.</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>
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	<ol style="list-style-type: none"> 1. 2. 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	<p>The requested \$443,613.00 will go toward permitting, the removal and replacement of 4 groins in-place. The project consists of : Remove 82’ groin and replace with a new 35’ groin; Remove 265’ timber groin and replace with 305’ vinyl sheet pile groin; Remove 50 linear feet of existing bulkhead and 72’ groin; Place approximately 931 cu.yds of clean sand from an upland source landward of apparent high water as beach nourishment. The town has all permits and engineered plans to proceed with this project immediately.</p> <p>Review of the Suffolk County Hazard Mitigation Plan, adopted by Suffolk County on 9/10/2008 and by the Town of Shelter Island on 8/25/2008, makes it clear that the Town of Shelter Island can suffer serious winds and flooding as the result of a storm. Replacing the bulkhead 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>Requested \$443,613.00 Groin \$27,500</p>





	Bulkhead \$158,000 Groin # 1 \$22,500 Groin # 2 \$22,950 Groin # 3 \$23,850 Groin # 4 \$41,400 Groin # 5 \$29,700 Groin #6 \$36,450 Groin #7 \$23,400 Total \$385,750 Contingency 15% \$57,863 Requested \$443,613.00
Mitigation Action/Project Type	
Objectives Met	
Applies to existing structures/infrastructure, future, or not applicable	
Benefits (losses avoided)	Recent Damages: \$600,000
Estimated Cost	\$443,613
Priority*	
Plan for Implementation	
Responsible Organization	Town of Shelter Island: Laury Dowd, Town Attorney
Local Planning Mechanism	
Potential Funding Sources	HMGP; _____ for Local Match
Timeline for Completion	
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-14b (Sandy HMGP LOI #: 968)

Mitigation Action/Initiative: Shell Beach Groins and Bulkhead

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)		





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island
Number: TSI-16
Mitigation Action/Initiative: Upgrade a one-mile section of fencing

Assessing the Risk	
Hazard(s) addressed:	Hurricane, Nor'Easters, Severe storms
Specific problem being mitigated:	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.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Do nothing – Rejected as this will create a hazard to public safety and allow further beach erosion 2. Maintain existing fencing – Rejected. This will ultimately lead to failure of the fencing and will be very expensive and time-consuming. 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Upgrade a one-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.
Mitigation Action/Project Type	SIP
Objectives Met	2, 16
Applies to existing structures/infrastructure, future, or not applicable	Yes
Benefits (losses avoided)	Recent Damages: Damage to fencing from Hurricane Sandy was repaired at a cost of \$___ (Jay knows)
Estimated Cost	
Priority*	Medium
Plan for Implementation	
Responsible Organization	County of Suffolk and Town of Shelter Island
Local Planning Mechanism	
Potential Funding Sources	Grant funding with local cost share
Timeline for Completion	OG
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-16

Mitigation Action/Initiative: Upgrade a one-mile section of fencing

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provides protection between beach users and adjacent road
Property Protection	1	
Cost-Effectiveness	1	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	0	
Administrative	0	
Multi-Hazard	0	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	Med	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-17

Mitigation Action/Initiative: Stabilize Reel Point at the Coecles Harbor entrance

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Hurricane, Flooding, Nor'Easter, Severe Storm, Severe Winter Storm
Specific problem being mitigated:	Constant silting is affecting the entrance to this major harbor.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1.
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	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.
Mitigation Action/Project Type	SIP, NRP
Objectives Met	5, 15
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages:
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Shelter Island, DPW
Local Planning Mechanism	
Potential Funding Sources	HMGP; Town budget for Local Match
Timeline for Completion	OG
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-17

Mitigation Action/Initiative: Stabilize Reel Point at the Coecles Harbor entrance

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	1	
Timeline	-1	
Agency Champion	1	
Other Community Objectives	0	
Total	8	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-19

Mitigation Action/Initiative: Stabilize the public portions of the Peconic Avenue bulkhead

Assessing the Risk	
Hazard(s) addressed:	Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm
Specific problem being mitigated:	Prevention of shoreline erosion
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1.
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Stabilize the public portions of the Peconic Avenue bulkhead with rock at the base of existing bulkhead.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	2, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages:
Estimated Cost	Medium
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Shelter Island, DPW
Local Planning Mechanism	
Potential Funding Sources	HMGP; town budget for Local Match
Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-19

Mitigation Action/Initiative: Stabilize the public portions of the Peconic Avenue bulkhead

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	12	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Cornell Cooperative Extension of Suffolk County
Number: Sandy HMGP LOI #: 1300
Mitigation Action/Initiative: Shelter Island Structural Shoreline Stabilization

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Nor'Easters, Hurricane, Severe Storm
Specific problem being mitigated:	An 860ft long stretch of waterfront along Shelter Island's southwesterly facing shoreline has been an area plagued by erosion problems for many years. For this reason, the Town as repeatedly added sand to the beach to protect the existing public landings as well as the public and private bulkheads lining the shore. Although there has not be any property damage beyond the loss of sand, the threat of new damage and additional losses are imminent given that the bulkheading will soon be undermined by wave scour. Up until recently, there had been up to 30ft of beach in front of the bulkheads, but after the 2012 storm season all of the sand has been scoured out from this area.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1.Restore area to original beach-cannot be permitted by NYSDEC 2.No Action-bulkhead will be undermined and increased erosion will lead to property damage 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Although the Town would prefer to restore the site to the original beach, this will not be possible given that the NYSDEC will not allow this alternative. Instead, NYSDEC staff have suggested armoring the base of the bulkhead with riprap stone. This will enable the bulkhead to serve its function and protect the shoreline and residences along the waterfront in this area.
Mitigation Action/Project Type	Natural Systems Protection, Structure and Infrastructure Protection
Objectives Met	1, 3, 5, 6, 8, 9, 10, 15, 17
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: \$100,000
Estimated Cost	\$600,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist
Local Planning Mechanism	Town of Shelter Island





Potential Funding Sources	HMGP; grants and in-kind resources for Local Match
Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: Sandy HMGP LOI #: 1300

Mitigation Action/Initiative: Shelter Island Structural Shoreline Stabilization

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Property will likely be damaged if long term solution is not implemented
Cost-Effectiveness	1	
Technical	1	
Political	1	This site has been identified as a priority by the Town of Shelter Island
Legal	0	
Fiscal	0	
Environmental	0	
Social	1	
Administrative	0	
Multi-Hazard	0	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	7	
Priority (High/Med/Low)	Med	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-20

Mitigation Action/Initiative: Reengineer and reconstruct 30 town-maintained bulkheads

Assessing the Risk	
Hazard(s) addressed:	Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm
Specific problem being mitigated:	Shoreline and property preservation
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1.
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Reengineer and reconstruct 30 town-maintained bulkheads.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	2, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages:
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Shelter Island, DPW
Local Planning Mechanism	
Potential Funding Sources	HMGP; Town budget for Local Match
Timeline for Completion	Ongoing
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-20

Mitigation Action/Initiative: Reengineer and reconstruct 30 town-maintained bulkheads

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	12	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-22

Mitigation Action/Initiative: Increase structural stability and drainage capacity of culverts

Assessing the Risk	
Hazard(s) addressed:	Flooding, Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm
Specific problem being mitigated:	Roads impassable for emergency vehicles due to flooding
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Raise roads – cost-prohibitive
	2. Build bridge – cost prohibitive
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Increase structural stability and drainage capacity of culverts by replacing deteriorated culverts that prevent road flooding.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	2, 8, 13, 15, 16, 17
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Emergency vehicles will able to access these areas during storms Recent Damages:
Estimated Cost	Medium
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Shelter Island, DPW, private
Local Planning Mechanism	
Potential Funding Sources	HMGP; Town budget for Local Match, private
Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-22

Mitigation Action/Initiative: Increase structural stability and drainage capacity of culverts

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	11	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Cornell Cooperative Extension of Suffolk County
Number: TSI-3 (Sandy HMGP LOI #: 1303)
Mitigation Action/Initiative: Marsh Island Creation in Gardiners Creek

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Nor'Easters, Hurricanes, Flooding, Severe Storms
Specific problem being mitigated:	Gardiners Creek on Shelter Island is a natural marsh area that has suffered considerable damage and losses in the recent decade. Over that time, the marsh has lost several acres of vegetated marsh islands that were helping to form a protective barrier from wind drive waves, flooding and other kinds of storm damage. Once these natural protective features were lost, the benefits they provided was also lost making the shoreline more vulnerable to storm activity.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	<ol style="list-style-type: none"> 1. Hardened Shoreline solutions are not the best option at this site 2. No action will result in continued erosion, flooding and marsh habitat loss 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	We are proposing to re-establish the natural marsh island features through beneficial reuse of clean dredge material. Following filling the area will be planted with smooth cord grass to accelerate restoration. Once restored to a more a more natural state the islands will provide protection to the homes within the Creek. The marsh islands will not only serve as immediate wave breaks, but they will also help reduce nearby flooding.
Mitigation Action/Project Type	Natural Systems Protection
Objectives Met	1, 3, 5, 6, 7, 8, 9, 10, 15, 17
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: \$25,000
Estimated Cost	\$110,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist
Local Planning Mechanism	





Potential Funding Sources	HMGP; grants and in-kind resources for Local Match
Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)

Prioritization

Number: TSI-3 (Sandy HMGP LOI #: 1303)
Mitigation Action/Initiative: Marsh Island Creation in Gardiners Creek

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	0	
Fiscal	0	
Environmental	1	Habitat value will increase considerable upon completion
Social	1	
Administrative	0	
Multi-Hazard	0	
Timeline	1	
Agency Champion	0	
Other Community Objectives	0	
Total	7	
Priority (High/Med/Low)	Med	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-30

Mitigation Action/Initiative: Install 4-Poster feeding stations

Assessing the Risk	
Hazard(s) addressed:	Infestation
Specific problem being mitigated:	Reduce incidence of tick-borne diseases by reducing tick populations through the use of 4-Poster feeding stations
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Broadcast spraying of pesticides – harmful to sole-source aquifer
	2. Take no action – risk of increase in tick-borne illnesses
	3. Significantly reduce deer herd, which is key host to certain species of ticks – public opposition to culling deer
Action/Project Intended for Implementation	
Description of Selected Action/Project	Install 4-Poster feeding stations
Mitigation Action/Project Type	Natural Systems Protection
Objectives Met	10
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Reduction in tick-borne illnesses as a result of reduction in tick population Recent Damages:
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Town PD/DPW
Local Planning Mechanism	
Potential Funding Sources	Private funding, Town General Fund, NYS Funding, PDM
Timeline for Completion	OG
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-30

Mitigation Action/Initiative: Install 4-Poster feeding stations

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	0	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	0	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	9	
Priority (High/Med/Low)	High	



Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island

Number: TSI-32

Mitigation Action/Initiative: Raise flood prone roadways

Assessing the Risk	
Hazard(s) addressed:	Flooding, Hurricane, Nor'Easter, Severe Storm, Severe Winter Storm
Specific problem being mitigated:	Raise flood prone roadways to an elevation that will not be inundated by flooding events. Will allow emergency vehicles to access these areas.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Build bridge – cost prohibitive
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Raise flood prone roadways to an elevation that will not be inundated by flooding events.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	2, 13, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages:
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Town DPW
Local Planning Mechanism	
Potential Funding Sources	General fund, PDM, Stormwater abatement fund, Highway Fund
Timeline for Completion	Long-Term; DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-32

Mitigation Action/Initiative: Raise flood prone roadways

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	1	
Timeline	-1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island
Number: TSI-4 (Sandy HMGP LOI #: 142)
Mitigation Action/Initiative: Emergency Services Interoperability Communications Project

Assessing the Risk	
Hazard(s) addressed:	Delay in emergency communications
Specific problem being mitigated:	<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>
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	<ol style="list-style-type: none"> 1. Purchase portable cell tower receiver to move to high ground during electric outages was rejected as being cost prohibitive 2. Do nothing - This option leaves both public and emergency services slowed and at risk during power outages 3.
Action/Project Intended for Implementation	





Description of Selected Action/Project	<p>This grant would fund the equipment to guaranty 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, adopted by Suffolk County on 9/10/2008 and by the Town of Shelter Island on 8/25/2008, 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>
Mitigation Action/Project Type	NRP
Objectives Met	2,7,12,13,14,16
Applies to existing structures/infrastructure, future, or not applicable	Yes
Benefits (losses avoided)	Recent Damages: \$7,000
Estimated Cost	\$105,000
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Shelter Island: Laury Dowd, Town Attorney
Local Planning Mechanism	Comprehensive Emergency Management Plan
Potential Funding Sources	HMGP; Town Budget for Local Match
Timeline for Completion	
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-4 (Sandy HMGP LOI #: 142)

Mitigation Action/Initiative: Emergency Services Interoperability Communications Project

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	12	
Priority (High/Med/Low)	High	

1. Local Champion – Is there a strong advocate for the action or project among the jurisdiction’s staff, governing body, or committees that will support the action’s implementation?
2. Other Local Objectives – Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of other plans and programs?



Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Cornell Cooperative Extension of Suffolk County
Number: TSI-5 (Sandy HMGP LOI #: 1305)
Mitigation Action/Initiative: Hay Beach Point Revegetation

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Nor-Easters, Hurricanes, Severe Storms
Specific problem being mitigated:	Hay Beach Point wetland is a natural tidal wetland system that has suffered considerable losses of marsh vegetation in recent decades. These losses have lead to destabilization of the marsh matrix and as a result this threatens the private property and homes that ring the nearby shoreline. This once densely vegetated area is losing vegetation at an alarming rate and if these losses are not reversed, the wetland system could disappear leaving the nearby homes unprotected from wind driven waves and other storm damage.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Structural project designs will not produce the same beneficial results that are possible using natural mitigation solutions 2. No action will result in continued erosion, flooding and property damage following storm activities 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	We are proposing to use clean dredge material to raise elevations within areas of the marsh system to create suitable elevations for the growth of marsh grasses. Following filling the area will be planted with smooth cord grass to accelerate restoration. Successful completion of this project will use green infrastructure to protect the shoreline.
Mitigation Action/Project Type	Natural Systems Protection
Objectives Met	1, 5, 7
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: \$50,000
Estimated Cost	\$90,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Cornell Cooperative Extension of Suffolk County: Kimberly Barbour, Habitat Restoration Outreach Specialist
Local Planning Mechanism	
Potential Funding Sources	HMGP; grants and in-kind resources for Local Match





Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)

Prioritization

Number: TSI-5 (Sandy HMGP LOI #: 1305)
Mitigation Action/Initiative: Hay Beach Point Revegetation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	This long-term, natural solution will offer protections to nearby properties
Cost-Effectiveness	1	
Technical	1	CCE is highly qualified to conduct this type of restoration
Political	1	Natural solutions to storm mitigation is a widely supported option among local government and agencies
Legal	0	
Fiscal	0	
Environmental	1	The increases in functional habitat availability resulting from this project will be significant
Social	1	Residents will have an opportunity to assist in the re-vegetation aspect of this project through CCE's Marine Meadows Program
Administrative	0	
Multi-Hazard	0	
Timeline	1	Construction can be completed in a one year time frame
Agency Champion	0	
Other Community Objectives	0	
Total	7	
Priority (High/Med/Low)	Med	





Mitigation Action Worksheet

Please complete one sheet per action/project with as much detail as possible, using the guidance beginning on page 3 and examples provided by FEMA.

Name of Jurisdiction: Town of Shelter Island
Number: TSI-9b (Sandy HMGP LOI #: 762)
Mitigation Action/Initiative: Raising Westmoreland Drive, Shelter Island

Assessing the Risk	
Hazard(s) addressed:	Community isolated during storm flooding
Specific problem being mitigated:	<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. 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 \$2000.</p>
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	<ol style="list-style-type: none"> 1. Do nothing means that community of 30+ homes will be cut off and emergency access will be slowed or unavailable during storms that cause road flooding 2. Purchase a vehicle capable of going through 3+ feet of water will aid in rendering medical care but will be ineffective in getting firematic services to homes when the road is flooded 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	<p>The most effective way to deal with this issue is to physically elevate 4' of the road. The estimated cost of elevating the road, installing a culvert to deal with drainage and repaving is \$346,000.00. 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, adopted by Suffolk County on 9/10/2008 and by the Town of Shelter Island on 8/25/2008, 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>
Mitigation Action/Project Type	SIP





Objectives Met	
Applies to existing structures/infrastructure, future, or not applicable	YES
Benefits (losses avoided)	Recent Damages: \$2,000
Estimated Cost	\$345,065
Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Shelter Island: Laury Dowd, Town Attorney
Local Planning Mechanism	
Potential Funding Sources	HMGP; Grant funding with local cost share
Timeline for Completion	Short
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)





Prioritization

Number: TSI-9b (Sandy HMGP LOI #: 762)

Mitigation Action/Initiative: Raising Westmoreland Drive, Shelter Island

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	0	
Legal	1	
Fiscal	-1	
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	9	
Priority (High/Med/Low)	Med	