9.6 Town of Brookhaven

This section presents the jurisdictional annex for the Town of Brookhaven.

9.6.1 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
Dan Sicilian One Independence Hill, Farmingville, NY 11738 (631) 451-2363 dsicilian@brookhaven.org	Frank Tassone One Independence Hill, Farmingville, NY 11738 ftassone@brookhaven.org

9.6.2 Municipal Profile

This section provides a summary of the community.

Population

According to the U.S. Census, the 2010 population for the Town of Brookhaven was 486,040.

Location

The Town of Brookhaven is located in central Suffolk County, New York and extends from the Long Island Sound along the North Shore to Fire Island, a barrier island located off of the South Shore. The Towns of Smithtown and Islip border the Town to the west and Riverhead and Southampton to the east. Brookhaven is located approximately fifty miles from New York City and is part of and influenced by the New York Metropolitan Area.

As designated by the U.S. Census Bureau, Brookhaven is part of the New York-Northern New Jersey-Long Island (NY-NJ-CT-PA) Consolidated Metropolitan Statistical Area (CMSA), the largest MSA in the country. According to the 2000 US Census, Brookhaven has a total area of 531.52 square miles, which is composed of 272.23 square miles of water and 259.69 square miles of land, making it the largest town in the State of New York. However this figure varies depending on the source.

Brief History

The history of Brookhaven, and subsequently, its pattern of growth and development from a land use, transportation, economic, environmental and cultural perspective, goes back to the founding of the United States. In the 17th century, both the Dutch and the English began settling on Long Island. A 1654 peace agreement between the two countries resulted in a north-south boundary transecting Long Island from the westernmost part of Oyster Bay, with the west end belonging to the Dutch and the east end to the English.

After six men, John Scudder, John Swesie, Jonathan Porter, Thomas Mabbs, Roger Cheston and Thomas Charles, purchased approximately 30 square miles from the first known inhabitants, Algonquian-speaking Native Americans of the Setauket and Unkechaug tribes, in April 1655, Brookhaven became the fifth English town to be settled on Long Island following Southampton, Southold, Huntington, and East Hampton. The purchased area, which constitutes the north shore of today's Brookhaven, running east to Mount Sinai, was purchased for various commercial goods including 10 coats, 100 needles, 6 kettles, and 1 pair of child stockings. At the time the Town was known as Cromwell's Bay and as part of the purchase agreement, the Native Americans and colonists agreed to live in peace with one another and to warn one another of any threats.

The town continued to grow with people "seeking land, the wealth of that century, and freedom from oppression in their home life and choice of their church." As evident today, Cromwell's Bay was a desirable place to settle with its great soil and trees, abundance of marine life and game animals, access to fresh, potable water, and ease of travel through the many harbors and bays. Early settlement patterns, which follow the geography of the land, are still evident in these early north shore neighborhoods, in areas such as East Setauket.

In July 1657, a second, major tract of land was purchased from the Native Americans. Located on the south shore, encompassing Brookhaven to Smith Point, this land met the boundaries of the first purchase along Middle Country Road. With other additional, smaller purchases, the Town of Brookhaven was composed of approximately 323 square miles, including 20 miles of shore on the Long Island Sound and 30 miles of Atlantic coast by the end of the 1660's.

In the thirty years proceeding it's founding, Cromwell's Bay began developing a more organized form of government. On August 6, 1659 Cromwell's Bay petitioned to be part of the Colony of Hartford, under the Confederation of Colonies, in order to receive the protection of their armies. Hartford accepted, while changing the Town's name to Setauket and the Bay's name to Conscience Bay for political reasons. Attendance at Town meetings was very important, and consequentially a fine for being late or absent was established at the first recorded town meeting on December 1, 1659. Setauket residents also started paying taxes to the Colony on May 16, 1661 based on their individual wealth, which was determined by the number of cattle they owned.

In 1663 Setauket's name was temporarily changed to Ashford after the English birthplace of Brookhaven's new magistrate, John Scott; however after being arrested in 1665 under a number of various charges, the Town reverted back to the name Setauket. The Town's name changed one last time when Governor Richard Nicolls approved the Town's patent on March 7, 1667 giving the "Town of

Brookhaven" the right and title to all the lands within their current boundaries. In 1686, a second patent was issued by Governor Thomas Dongan serving as the foundation for Brookhaven Town government, by establishing an early representative form of government, with a board of trustees and annual elections. The Dongan Patent also granted the Town public lands, the rights to all waterways, the power to raise tax and sell or dispose of Town lands, and established the town seal. This historic, legal document is still used today to address many issues regarding the Town's natural resources and use of its waterways.

Due to its strategic location and valuable views of the harbors of the Long Island Sound and the Atlantic Ocean, the British forcibly occupied the Town of Brookhaven during the Revolutionary War. The Redcoats used Setauket Presbyterian Church, which still stands today as both a place of worship and of historic significance, as a fort to house their supplies and horses, placing guns in the upper windows of church, and upending graves to build a protective berm around the church. Some residents fled to safety in Connecticut or Westchester County as soldiers lived in the residents' homes and took their food, blankets and animals.

Despite British occupation, the Town assisted with the Patriot's ultimate victory. Residents served as spies for the Patriots and under General George Washington's orders Benjamin Tallmadge and the Patriots attacked, burned and destroyed the British fort, St. George's Manor, in Mastic on November 23, 1780 killing or wounding seven British and capturing fifty-three others. The Patriot army then rode on to Coram and burned 300 tons of hay, the entire winter supply of food for the British's horses. A boulder and plaque memorialize the victorious spot at the corner of Middle Country Road and Route 112, and Tallmadge trail tracks the route the Patriot's took from Mt. Sinai to Mastic to Coram. Additionally, the first Purple Heart recipient, Sergeant Elijah Churchill, fought at Fort. St. George.

Throughout the 1600's Long Island towns separately established highways to suit their individual needs, resulting in poor connections and a difficult time traversing the Island. Legislation passed in 1704 required collaboration in laying out a direct route from Brooklyn to East Hampton. By 1714, three parallel roads, which are still important transportation routes in Brookhaven today, were established on Long Island - North Country Road (Route 25a), Middle Country Road (Route 25) and South Country Road (Sunrise Highway/ Route 27). These roads were often constructed out of logs or clamshells and gravel, and travelers paid tolls at some locations.

Advances in transportation made it possible for Brookhaven to move beyond its agrarian roots. In addition to the developing road network, the Long Island Rail Road opened on April 18, 1836, running from South Ferry in Brooklyn to Jamaica, Queens, extending out to western portion of Long Island by 1837 and finally to Port Jefferson in 1872. The railroad was instrumental in transitioning parts of the Town, including Lake Ronkonkoma, Bellport, Rocky Point and the Moriches, into popular summer vacation destinations for many New York City residents.

Travel by ship and railroad allowed manufacturing, including gravel farming and rubber manufacturing to successfully take root in the Town through the last few decades of the 19th century. By the early 1900's Brookhaven was becoming a haven for inventors and technological research. Nikola Tesla, a famous inventor, researched wireless transmission from his lab in Shoreham and held patents for alternating current motors and electric power transmission. The RCA Corporation, built in the Rocky Point Pine Barrens during the 1920's, was the largest radio facility in the world and was credited with many radio and television innovations until it closed in 1961.

To support the United States' entry into World War I, 19,000 acres of woodlands were cleared from the Town from 1917 through 1918, to create Camp Upton. The military base was an important source of economic growth for both Brookhaven and Suffolk County, and resulted in a doubling of the County's population. After the war, Camp Upton was decommissioned, but was reactivated with the threat of WW

II and later converted to a hospital for injured soldiers. Once the facility was decommissioned at the end of the second war, nine major universities including Harvard, Cornell, MIT and Yale, established a nonprofit corporation in 1946 to study nuclear science at the Camp. The facility was transferred to the US Atomic Energy Commission in 1947, as the Brookhaven National Lab, a place to research peaceful uses of the atom, and is still in operation today.

On March 27, 1954, Governor Thomas E. Dewey approved plans for a 70-mile-long, six-lane highway between Manhattan and the east end of Long Island, in order to alleviate current and future traffic problems. Furthermore, officials feared economic impacts, due to the loss of business and industry, if this speedier and more direct means of transportation for Long Islanders was not built. The LIE did not reach Brookhaven's borders until 1970, but its arrival was an important catalyst in the fast-paced growth of Brookhaven throughout the 70's 80's, 90's and today.

Since the post-war boom of the 1950's, Brookhaven's landscape has rapidly changed. New farming techniques meant less land was needed to yield greater amount of crops, while returning soldiers sought affordable homes for their new families. Agricultural land was subdivided, and the Town began to transition from a rural to suburban community. The increased affordability of the private automobile and the beginning of commercial air travel, meant vacation seekers could easily travel to destinations further away, and consequentially the tourism industry slowed down and many summer homes were converted to year round homes.

Although many valued natural resources still exist, much of the diversity has been lost due to habitat destruction. Wetlands along the Peconic River were altered to serve as cranberry bogs, large portions of woodlands were clear-cut for the profitable cordwood industry, and at times the government offered bounties for each wolf and fox killed. Over picking, pollution and uncontrolled hunting resulted in a loss of certain plant, marine and animal species. Suburban sprawl led to, and continues to lead to, habitat destruction, the loss of sense of place and a dependency on automobiles resulting in air and water quality issues. However it is important to note that not all of these losses were due to negligence, but a very different value system relevant to land and natural resources in the past. Land was thought to be purely for human cultivation and exploitation, as an 1888 Brookhaven history book noted that the Town has "more waste land" than other Long Island towns as the "greater part of the best farming land of this town is yet unreclaimed and almost worthless woodland." At the time there was little value, economically, aesthetically, ecologically, and culturally, in conserving the area's natural character, flora and fauna.

As this historical review has discussed, the mixture of abundant natural resources, historic colonial villages, late 19th-century vacation communities, post-WWII suburban developments, and the expansion of the Long Island Expressway into Brookhaven, has resulted in a very unique and diverse Town, with a colorful past. Now, in the early part of the 21st century, as we reflect on Brookhaven's remarkable social and cultural past in relation to its fragile, yet vital environmental context, we will continue to make history together.

Governing Body Format

The Town of Brookhaven has 10 elected officials including the Supervisor, six Town Council members, a Town Clerk, Superintendent of Highways, and Receiver of Taxes. The Town Board Members are voted in by a council district system. The Supervisor and Town Council are elected to two-year terms. The Town Clerk is elected for a four-year term, the Superintendent of Highways is elected for a 2-year term, and the Receiver of Taxes is elected for a four-year term.

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 9.6.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.6-1. Growth and Development

Property Name	Type (Residential or Commercial)	Number of Structures	Parcel ID(s)	Known Hazard Zone*	Description / Status
None identified at this time					

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

9.6.3 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 9.6-2. Hazard Event History

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
October 27-November 8, 2012	Hurricane Sandy	DR-4085	Yes – IA (Individual Assistance) and PA	Approximately 60 properties were formally declared Substantially Damaged. Property owners are seeking financial assistance for elevations, to support the NFIP and ICC. An average elevation in the Town is estimated at $80K.
August 26 – September 5, 2011	Hurricane Irene	EM 3328 DR 4020	Yes – IA and PA	1 property SDE.

9.6.4 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 Brookhaven. 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 Brookhaven.

Table 9.6-3. 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)
4	Coastal Erosion	RCV in CEHA: $735,424,292	Frequent	24
7	Drought	Damage estimate not available	Frequent	16
9	Earthquake	500-Year MRP: $128,618,913 2,500-Year MRP: $2,065,631,997	Rare	8
9	Expansive Soils	Damage estimate not available	Rare	6
4	Flood	1% Annual Chance: $375,288,602 0.2% Annual Chance: $610,697,112	Frequent	24
6	Groundwater Contamination (natural)	Damage estimate not available	Frequent	18
3	Hurricane	Category 1 SLOSH: $1,679,838,274 Category 2 SLOSH: $5,558,038,946 Category 3 SLOSH: $9,627,425,019 Category 4 SLOSH: $12,858,404,693	Occasional	36
6	Infestation	No measurable impact to property	Frequent	18
1	Nor'Easter	100-Year RCV: $1,725,996,479 500-Year RCV: $1,596,906,895	Frequent	54
2	Severe Storm	100-Year RCV: $1,725,996,479 500-Year RCV: $1,596,906,895	Frequent	48
1	Severe Winter Storm	1% of GBS: $1,185,297,556 5% of GBS: $5,926,487,778	Frequent	54
5	Shallow Groundwater Flooding	Damage estimate not available	Frequent	21
8	Wildfire	Estimated RCV in Interface/Intermix: $53,381,250,672	Occasional	12

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.

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the municipality.

Table 9.6-4. 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)	# Polices in 500-Boundary (3)	# Policies Outside the 500-year Flood Hazard (3)
Town of Brookhaven	6,370	4,492	$114,549,216	325	47	2,681	211	3,478

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 9.6-5. 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]
WALK 1370	Communication	A	X						
WALK 1370	Communication	A	X						
Shoreham-8z	Electric Power Substation	A	X						
Point O Woods Fire Department	Fire	A	X	18.0	83.5	630	24.7	98.8	720
Cherry Grove Fire Department	Fire	A	X	12.9	59.3	630	17.4	82.0	630
Davis Park Fire Department	Fire	A	X	11.9	52.5	480	16.8	80.0	630
Fire Island	Fire	A	X	16.0	75.4	630	21.5	93.6	630

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)
Pines Fire Department									
Moriches Coast Guard Station	Military	A	X						
Potable Water Facility	Potable Water	V	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						
Potable Water Facility	Potable Water	A	X						

Source: HAZUS-MH 2.1
Note: T = Town; V = Village.
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

None at this time.

9.6.5 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 9.6-6. 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			Chapter 16, Building Construction Administration, Adopted 6/16/1987
Zoning Ordinance	Y	Local and County (1)		Chapter 85, Zoning, Adopted 4/3/1990
Subdivision Ordinance	Y	Local and County (1) (2)		Chapter SR, Subdivision Regulations, Adopted 4/3/1990
Growth Management	Y			Chapter 20, Departments and Bureaus, Adopted 6/16/87
Stormwater Management Plan/Ordinance	Y		Env. Protection Dept.	Chapter 86, Stormwater Management & Erosion Control, Adopted 1/22/2008 Town is an MS4 community
Comprehensive Plan / Master Plan	Y	Local	Planning Dept.	Several Hamlet plans (Ronkonkoma, Mastic, Shirley) Chapter SR, Subdivision Regulations, Adopted 4/3/1990
Capital Improvements Plan	Y	Local	Finance Dept. (Sue Sullivan)	Chapter 18, Capital Budget System, Adopted 6/16/1987
Site Plan Review Requirements	Y	Local	Planning Dept.	Chapter 85, Zoning, Adopted 4/3/1990
Habitat Conservation Plan	Y			Chapter 77, Nature Preserves, Adopted 10/15/1991
Economic Development Plan	Y	Local	Econ. Dev. Division of Planning	Chapter 20, Departments and Bureaus, Adopted 6/16/87 Chapter 25, Economic Development Zone, Adopted 2/15/1994
Emergency Response Plan	Y	Local		Chapter 20, Departments and Bureaus, Adopted 6/16/87 Chapter 30, Fire Prevention, Adopted 6/16/1987
Shoreline Management Plan	Y			Chapter 76, Coastal Erosion Hazard Areas, Adopted 4/3/2001 – Town needs to update the language in the code
Coastal Erosion Control Districts	Y	Local		All seven hamlets on Fire Island are organized as erosion control districts to fund beach maintenance and nourishment projects – five are

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.)
				"engineered beaches" (Seaview, Ocean Bay Pines, Fire Island Pines, Davis, Point of Woods)
Post Disaster Recovery Plan	N			Certain hamlets/areas in NY Rising program
Post Disaster Recovery Ordinance	N			
Real Estate Disclosure req.	Y			Chapter 28, Code of Ethics and Disclosure, Adopted 12-20-2005 Also State Mandated
NFIP Flood Damage Protection Ordinance	Y			Chapter 33, updated and re-adopted in 2009
NFIP - Freeboard	Y			NYS BFE+2 for residential
NFIP – LiMWA Standard	Y			The Town adopted and enforces the LiMWA standard, applying V-zone construction standards in these coastal A-zone areas. Adopted when maps were update (2009).
NFIP - Cumulative Substantial Damages	N			

Administrative and Technical Capability

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

Table 9.6-7. 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	Town of Brookhaven (TOB) Department of Planning, Environment, and Land Management; Engineering Division
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	TOB Department of Building and Fire Prevention; Department of Planning, Environment, and Land Management
Planners or engineers with an understanding of natural hazards	Y	TOB Department of Planning, Environment, and Land Management
Floodplain Administrator	Y	Chief Building Inspector (currently Arthur Gerhauser)
Surveyor(s)	N	Contract Surveyors
Personnel skilled or trained in "GIS" applications	Y	TOB Division of Information Technology
Scientist familiar with natural hazards in the Town of Brookhaven.	Y	TOB Department of Planning, Environment, and Land Management
Emergency Manager		Town of Brookhaven Department of Building and Fire Prevention
Grant Writer(s)	Y	Multiple Departments and Divisions and by contract
Staff with expertise or training in benefit/cost analysis	Y	TOB Division of Audit and Control
Other – Pine Barrens Wildfire Task Force	Y	Town Supervisor is on this Task Force
Professionals trained in conducting damage assessments		

Fiscal Capability

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

Table 9.6-8. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community Development Block Grants (CDBG)	Yes, often have applications in process
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	No
Impact Fees for homebuyers or developers of new development/homes	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Don't know
Mitigation grant programs	Yes
Other	Yes

Community Classifications

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

Table 9.6-9. Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	NP	N/A
Public Protection	NP	N/A
Storm Ready	NP	N/A
Firewise	NP	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: Arthur Gerhauser, Building Inspector

Program and Compliance History

The Town of Brookhaven joined the NFIP on August 31, 1972, 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 33 of the local code, was last updated on June 23, 2009.

As of January 31, 2014 there are 6,370 policies in force, insuring $1,766,005,500 of property with total annual insurance premiums of $7,118,317. Since January 31, 2014, 4,492 claims have been paid totaling $114,549,216. As of January 31, 2014 there are 325 Repetitive Loss and 47 Severe Repetitive Loss properties in the community.

The community is currently in good standing in the NFIP and has no outstanding compliance issues. Brookhaven has completed Community Assistance Visits (CAV), with the most recent visit completed in 2009.

Loss History and Mitigation

Since January 31, 2014, 4,492 claims have been paid totaling $114,549,216. As of January 31, 2014 there are 325 Repetitive Loss and 47 Severe Repetitive Loss properties in the community.

Damage was sustained to approximately 2,400 structures following Hurricane Sandy in 2012. Substantial Damage determinations were issued for 66 of the 67 properties assessed. The Town of Brookhaven Building Division performed the Substantial Damage Estimates. Of those properties receiving Substantial Damage determinations, 64 expressed an interest in mitigation and 36 are in the process of elevating. Four sources have been identified to fund mitigation for those Substantial Damage properties: Federal flood insurance ICC, private flood insurance, NY Rising, and personal resources.

Planning and Regulatory Capabilities

The communities Flood Damage Prevention Ordinance (FDPO) was last updated on June 23, 2009, and is found at Chapter 33 of the local code. The Town of Brookhaven adopted a More Restrictive Local Standard, as approved by the NYS Dept. of State Codes Council, in that we require V zone construction standards for buildings constructed in the Limit of Moderate Wave Action (LiMWA). Local Law #14-2009. The Planning Department has jurisdiction on sites other than one- and two-family dwellings. Planning Department staff factors in their review of proposed development if a property and building(s)

are situated in a flood zone and require compliance with regulations. The Planning staff also administers the New York State Coastal Erosion Hazard Area program at the local level. This program affects a series of properties located along the Atlantic Ocean side of Fire Island within the Town of Brookhaven. This plan provides another source of regulation that may be in accordance with the aims of the NFIP.

Administrative and Technical Capabilities

The community FDPO identifies the Chief Building Inspector as the local NFIP Floodplain Administrator, currently Arthur Gerhauser, for which floodplain administration is an auxiliary duty. The Floodplain Administrator is supported by a staff of 3 building plans examiners and 15 Building Inspectors. NFIP administration services to the community include: building plan review, permit application review, damage assessments, respond to property owner inquiries for flood zone designation determination, maintain record of permits, inspections, maintaining the FIRM as overlays on our GIS maps; and maintaining the flood zone status in our permit issuing software, and certificates. Information has also been provided during a limited number community meetings. The Town of Brookhaven has also adopted a More Restrictive Local Standard and has NYS DOS approval for adoption of LiMWA standards.

A very general list of properties that have been flood damaged is kept. Brookhaven found that the flooded properties very closely followed the flood areas as designated on the FIRMs and the Category One and some Category Two areas of the SLOSH maps. Lists of properties were generated in these zones. Additionally, specific communities, the Fire Island communities, had a building by building Rapid Assessment performed following Hurricane Sandy. The buildings designated as damaged are maintained in a database.

Substantial Damage determinations were issued for 66 of the 67 properties assessed following Hurricane Sandy. The Town of Brookhaven Building Division performed the Substantial Damage Estimates.

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

Public Education and Outreach

Town of Brookhaven has the following educational and/or outreach activities related to the NFIP by the Building Division: information on flood zone construction requirements to all who contact the Building Division seeking flood zone construction information.

Actions to Strengthen the Program

A major barrier to running an effective floodplain management program in Brookhaven is many of those who own property in the Fire Island communities do not reside there and are in the community for only the summer season. This restricts outreach and connecting with property owners.

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/on-going programs and may be considered mitigation "capabilities":

- **Emergency Response Plan-** Update and enhance the Town of Brookhaven's existing Emergency Management Plan
- **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 including this Hazard Mitigation Plan at the next available comprehensive update to the SCHMP.
- **Emergency Response Plan/Continuity of Operations (COOP) Plan-** Construct an Emergency Operations Center within one of the existing Town facilities.
- **Continuity of Operations (COOP) Plan-** Update emergency communications systems and capability town wide.
- **Infrastructure Protection:** Re-design and re-enforce dams/spillways supporting manmade lakes out of freshwater streams and tidal tributaries to reduce risk of failure, increase storm water retention, and reduce upstream flooding, and protect critical evacuation and response routes.
- **Land Use Plans-** Consider low-density land use in high-risk coastal, surface water and groundwater zones.
- **Public Education and Outreach-** Educate the public on ways to protect their property before and during natural events, and what they can acquire to install appropriate property protection measures.
- **Public Education and Outreach-** Implement public education programs that inform the public of local coastal erosion hazard area ordinances (TOB Code Chapter 76).

9.6.6 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 9.6-10. Past Mitigation Initiative Status

Description	Status	Review Comments
TOB-1: Continue to support the implementation, monitoring, maintenance and updating of this Plan, as defined in Section 7.0	Ongoing	This initiative is being removed from the updated mitigation strategy as it refers to activities that are an ongoing and normal part of Village operations. The Village has fully participated in the 2014 update to this plan.
TOB-2: Update and enhance the Town of Brookhaven's existing Emergency Management Plan	Complete	
TOB-3: Consider the development of a post-disaster action plan, including a debris management plan. This to be incorporated into existing emergency management plans including this Hazard Mitigation Plan at the next available comprehensive update to the SCHMP.	In progress (10%)	A modified version of this initiative is being carried forward, identifying local participation in the pending county-led debris management planning process.
TOB-4: Construct an Emergency Operations Center within one of the existing Town facilities.	No progress (lack of funding and resources)	Working to identify a suitable facility, then to secure funding to outfit as a proper EOC
TOB-5: Update emergency communications systems and capability town wide.	In progress (20%)	Discontinue in favor of an amended version of TOB-6. Highway Department has identified a 700 mHz system that will be interoperable with other municipalities; submitted under Sandy HMGP (see Sandy LOIs)
TOB-6: Continue to develop, enhance and implement existing emergency response plans to utilize new and developing technology / information as it becomes available.	Continuous/ongoing	Update initiative to identify: • 700 mHz communications • Web-based EM program • Highway web-based asset management system
TOB-7: Incorporate continuity of operations planning principals into existing plans that address post disaster operations.	In progress (50%)	I.T. working on a COOP/COG (Sandy HMGP).
TOB-8: Obtain Federal, State training in benefit/cost analysis	No progress (lack of resources)	The Town has included an initiative to support county-led initiatives, which include programs to enhance floodplain management capabilities.
TOB-9: Relocate identified critical evacuation routes out of flood hazard areas for the probable impacts of flood, hurricane and Nor'easter.	Discontinue	Infeasible. Defer to TOB-10.
TOB-10: Retrofit flood-prone roadways that are considered to be critical infrastructure	In progress (10% - lack of resources)	This general initiative has been replaced with specific projects. Town is currently seeking funding to elevate sections of Pipe State Hollow, Row Avenue

Description	Status	Review Comments
TOB-11: Increase structural stability and drainage capacity of culverts spanning tidal tributaries and supporting critical evacuation and response routes.	Ongoing	This general initiative has been replaced with specific projects, as applicable.
TOB-12: Elevate roads that are vital/critical to evacuation and local community operations.	Discontinue	Redundant - This initiative could be folded into TOB-10
TOB-13: Re-design and re-enforce dams/spillways supporting manmade lakes out of freshwater streams and tidal tributaries to reduce risk of failure, increase storm water retention, and reduce upstream flooding, and protect critical evacuation and response routes.	Ongoing	This general initiative has been replaced with specific projects, as applicable.
TOB-14: Support/enhance Building and/or Flood code enforcement programs at the local level. Promote public education and awareness of current codes.	Ongoing	This initiative is being removed from the updated mitigation strategy, and identified as a mitigation capability as it refers to activities that are an ongoing and normal part of Village operations.
TOB-15: Consider participation in incentive based programs such as CRS, BCEGS, "Public Protection", "Storm Ready", and "Firewise."	In progress (25% - lack of resources; staffing and funding)	This initiative has been modified to identify that the Town of Brookhaven will join the CRS, and will host a CRS workshop to promote participation in the County. Town already sits on the Central Pine Barrens Wildfire Task Force.
TOB-16: Dredging of mouths of tidal tributaries, and established navigational channels such as Moriches Inlet.	Discontinue	Dredging activities are at the County, State and Federal level
TOB-17: Stabilize vulnerable bluffs by introducing natural vegetation and through the use of hardened structures.	In progress (10%)	10 North Shore bluff projects have applied for funding; eight have been through engineering, two have gone to bid
TOB-18: Encourage Federal and State agencies to identify new reliable and consistent sources of sand for beach nourishment programs, building on recommendations of existing feasibility studies concerning coastal sand budgets.	No progress	Federal and state agencies have not been able to identify suitable sources to date.
TOB-19: Implement tree management programs and augment existing programs, including containment of the Asian Beetle, and measures to improve post-disaster debris management.	Discontinue	This is addressed by TOB-3
TOB-20: Adopt a program to increase public participation in maintenance of municipal drainage by reducing roadway and recharge basin litter, dumping yard and household waste into streets, identification of neighborhood inlets, and notifying DPW of drainage problems.	Discontinue	This is already addressed through the Town's MS4 program
TOB-21: Institute a recharge basin reconstruction program, possibly by partnering with local businesses, to restore & increase drainage capacity by reducing invasive species, trash, excess sediment, etc.	Ongoing	Carry forward.
TOB-22: Institute a stream-clearing program to restore habitats of tidal tributaries and freshwater rivers by reducing invasive species, trash, excess sediment, etc. to increase natural and municipal drainage capabilities.	Ongoing	This initiative is being removed from the updated mitigation strategy, and identified as a mitigation capability as it refers to activities that are an ongoing and normal part of Village operations; specifically through the existing MS4 program.
TOB-23: Design or enhance existing municipal drainage systems to provide increased capacity of the drainage system.	Ongoing	This general initiative has been replaced with specific projects, as applicable.
TOB-24: Seek opportunities to install emergency generators at critical facilities	Ongoing	This general initiative has been replaced with specific projects. See Sandy HMPG LOIs (4);

Description	Status	Review Comments
during the course of retrofitting vulnerable critical facilities.		most critical are Town Hall and Highways
TOB-25: Participate in homeowner partnership program to elevate vulnerable properties in high-risk areas impacted by coastal storms, surface flooding, and/or shallow groundwater. High-risk areas include: those properties identified as "repetitive loss" by FEMA and those areas of concern identified by the Town of Brookhaven.	Ongoing	Carry forward.
TOB-26: Consider low-density land use in high-risk coastal, surface water and groundwater zones.	Ongoing	Carry forward.
TOB-27: Acquire property at feasible points in critical watersheds to establish storm water detention/retention facilities for storm water management.	Ongoing	This general initiative has been replaced with specific projects within the updated strategy.
TOB-28: Promote the purchase of Flood Insurance.	Ongoing	This initiative is being removed from the updated mitigation strategy, and identified as a mitigation capability as it refers to activities that are an ongoing and normal part of Village operations, specifically through the NFIP program as previously discussed.
TOB-29: Educate the public on ways to protect their property before and during natural events, and what they can acquire to install appropriate property protection measures.	Ongoing	To be combined into updated, enhanced public education and outreach initiative
TOB-30: Implement public education programs that inform the public of local coastal erosion hazard area ordinances (TOB Code Chapter 76).	Ongoing	This initiative is being removed from the updated mitigation strategy, and identified as a mitigation capability as it refers to activities that are an ongoing and normal part of Village operations.
TOB – 31: Encourage NYS and FEMA to document erosion rates by taking standardized aerial photographs of our shorelines on a yearly basis, and when necessary after severe storms.	Ongoing	Carry forward.

Proposed Hazard Mitigation Initiatives for the Plan Update

The Town of Brookhaven 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 9.6-12 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 9.6-13 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.

Table 9.6-11. 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
TOB-1	Mt. Sinai Harbor Jetty Rehabilitation	See Action Worksheet (TOB-1 -Mt Sinai Harbor Jetty - 032614)									
TOB-2	Port Jefferson Pier Rehabilitation	See Action Worksheet (TOB-2- Port Jefferson Pier – 032714)									
TOB-3	Sandspit Marina East Bulkhead. (Sandy HMGP LOI #196)	See Action Worksheet (TOB-3 - LOI 196 – 032614)									
TOB-4	Davis Park Marina - Harbor Master Tower. (Sandy HMGP LOI #197)	See Action Worksheet (TOB-4 - LOI 197 – 032614)									
TOB-5	Davis Park Marina - Ferry Dock Structure (Sandy HMGP LOI #198)	See Action Worksheet (TOB-5 - LOI 198 – 032614)									
TOB-6	Davis Park Marina - Water Break (Sandy HMGP LOI #199)	See Action Worksheet (TOB-6 - LOI 199 – 032614)									
TOB-7	Davis Park Marina - Landing Craft Receiving Area (Sandy HMGP LOI #201)	See Action Worksheet (TOB-7 - LOI 201 – 032614)									
TOB-8	Pipe Stave Hollow Road Raising (Sandy HMGP LOI #204)	See Action Worksheet (TOB-8 - LOI 204 – 032614)									
TOB-9	Clearview Place - Drainage & Stormwater Mitigation (Sandy HMGP LOI #206)	See Action Worksheet (TOB-9 - LOI 206 – 032614)									
TOB-10	Gully Landing Road - Hazard Mitigation. (Sandy HMGP LOI #207)	See Action Worksheet (TOB-10 - LOI 207 - 032614)									
TOB-11	Broadway - Hazard Mitigation. (Sandy HMGP LOI #208)	See Action Worksheet (TOB-11 - LOI 208 - 032614)									
TOB-12	Friendship Drive - Hazard Mitigation. (Sandy HMGP LOI #209)	See Action Worksheet (TOB-12 - LOI 209 - 032614)									
TOB-13	Fire Island Concrete Walkways & Aprons - Rehabilitation & Mitigation. (Sandy	See Action Worksheet (TOB-13 - LOI 210 - 032614)									

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
	HMGP LOI #210)										
TOB-14	Hagerman Landing - Hazard Mitigation. (Sandy HGMP LOI #211)	See Action Worksheet (TOB-14 - LOI 211 - 032614)									
TOB-15	Cedar Beach Marina Shoreline Restoration and Mitigation. (Sandy HMGP LOI #290)	See Action Worksheet (TOB-15 - LOI 290 - 032614)									
TOB-16	Amagansett Drive, Sound Beach, New York Drainage Improvements. (Sandy HMGP LOI #328)	See Action Worksheet (TOB-16 - LOI 328 – 032614)									
TOB-17	Roe Avenue Mitigation, East Patchogue, NY. (Sandy HMGP LOI #368)	See Action Worksheet (TOB-17 - LOI 368 – 032614)									
TOB-18	Elevation of the Gamecock Cottage at West Meadow Beach Historic District. (Sandy HMGP LOI #369)	See Action Worksheet (TOB-18 - LOI 369 - 032614)									
TOB-19	Flood & Damage Prevention at Webby's Beach, East Moriches, NY. (Sandy HMGP LOI #425)	See Action Worksheet (TOB-19 - LOI 425 - 032614)									
TOB-20	Hazard Mitigation Disaster Recovery and Business Continuity for the Town of Brookhaven. (Sandy HMGP LOI #450)	See Action Worksheet (TOB-20 - LOI 450 - 032614)									
TOB-21	Sills Gully Road Outfall, Sound Beach, NY (Sandy HMGP LOI #467)	See Action Worksheet (TOB-21 - LOI 467 - 032614)									
TOB-22	Hallock Landing Road Outfall, Rocky Point, NY (Sandy HMGP LOI #469)	See Action Worksheet (TOB-22 - LOI 469 - 032614)									
TOB-23	Riverhead Drive, Sound Beach, New York (Sandy HMGP LOI #470)	See Action Worksheet (TOB-23 - LOI 470 - 032614)									
TOB-24	Brookhaven North Shore Properties - Hazard Mitigation. (Sandy HMGP LOI #476)	See Action Worksheet (TOB-24 - LOI 476 - 032614)									

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
TOB-25	Purchase of a Generator for Town Parks Administration Building. (Sandy HMGP LOI #1747)	See Action Worksheet (TOB-25 - LOI 1747 - 032614)									
TOB-26	Construction of Emergency Operations Center in Coram with Backup Power Generation. (Sandy HMGP LOI #1748)	See Action Worksheet (TOB-26 - LOI 1748 - - 032614)									
TOB-27	Purchase of Interoperable 700MHz Communication System. (Sandy HMGP LOI #1752)	See Action Worksheet (TOB-27 - LOI 1752 - 032614)									
TOB-28	Generator Replacement at Brookhaven Town Hall. (Sandy HMGP LOI #1755)	See Action Worksheet (TOB-28 - LOI 1755 - 032614)									
TOB-29	Dedicated Emergency Operations Center and Purchase of Back-Up Generators (Cassel Building) (Sandy HMGP LOI #1792)	See Action Worksheet (TOB-29 - LOI 1792 - 032614)									
TOB-30	Woodhull Landing Shoreline Revetment	See Action Worksheet (TOB-30 - Woodhull Landing Shoreline Revetment)									
TOB-31	Brookhaven -56' Landing Craft Vessel	See Action Worksheet (TOB-31 -56' Landing Craft Vessel)									
TOB-32	Bay Avenue – Bulkhead & Stormwater Improvements	See Action Worksheet (TOB-32-Bay Avenue - Bulkhead & Stormwater Improvements)									
TOB-33	Cranberry Drive - Fishing Pier	See Action Worksheet (TOB-33-Cranberry Drive - Fishing Pier)									
TOB-34	Donald Court East - Bulkhead & Stormwater Improvements	See Action Worksheet (TOB-34-Donald Court East - Bulkhead & Stormwater Improvements)									
TOB-35	Great Gun Marina - Coastal Protection Features	See Action Worksheet (TOB-35-Great Gun Marina - Coastal Protection Features)									
TOB-36	Montauk Avenue - Stormwater Runoff & Tidal Mitigation	See Action Worksheet (TOB-36-Montauk Avenue - Stormwater Runoff & Tidal Mitigation)									
TOB-37	Roberts Street - Roadway	See Action Worksheet									

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
	Development	(TOB-37-Roberts Street - Roadway Development)									
TOB-38	Roe Avenue - Stormwater Runoff & Tidal Mitigation	See Action Worksheet (TOB-38-Roe Avenue - Stormwater Runoff & Tidal Mitigation)									
TOB-39	Sandspit Marina - Bathroom Rehabilitation & Mitigation	See Action Worksheet (TOB-39-Sandspit Marina - Bathroom Rehabilitation & Mitigation)									
TOB-40	Scott Beach Hazard Mitigation Project. (Sandy HMGP LOI #1106)	See Action Worksheet (TOB-40-Scott's Beach Community - Hazard Mitigation)									
TOB-41	Underwater Investigations – Hazard Mitigation	See Action Worksheet (TOB-41-Underwater Investigations – Hazard Mitigation)									
TOB-42	Compile Comprehensive Emergency Management Plan	See Action Worksheet (TOB-42-Compile Comprehensive Emergency Management Plan)									
TOB-43	Cornell Cooperative Extension - Cedar Beach Facility Storm Surge Mitigation. (Sandy HMGP LOI #1331)	See Action Worksheet (TOB-43- LOI 1331- 040114)									
TOB-44	Back-Up Power Plan for the Gordon Heights Fire District. (Sandy HMGP LOI #1920)	Action Worksheet pending (TOB-44-									
TOB-45	Generator for Critical Fire Protection Facility – Holtsville Fire District (Sandy HMGP LOI #1952)	Action Worksheet pending (TOB-45-									
TOB-46	Maintain Operability of Point O'Woods Volunteer Fire Department; a premiere first responder team on Fire Island. (Sandy HMGP LOI #698)	Action Worksheet pending (TOB-46-									
TOB-47	Emergency Backup Power for the Village Central School District. (Sandy HMGP LOI #2165)	Action Worksheet pending (TOB-47-									
TOB-48 (former TOB-3)	Support and participate in county led initiatives intended to build local and regional mitigation and risk-reduction capabilities (see Section 9.1), specifically: • 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)										

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
	• 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). *The Town has indicated that it will host relevant workshops for countywide participation, and will be joining the NFIP Community Rating System.										
	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.
TOB-49 (former TOB-4)	Construct an Emergency Operations Center within one of the existing Town facilities. The Town is working to identify a suitable facility, then to secure funding to outfit as a proper EOC.	New and Existing	All Hazards	2,13, 14, 16	TOB	Medium	Medium	Town Budget, Bonding, DHS and EMPG funding	Short Term DOF	Medium	N/A
TOB-50 (former TOB-6	Continue to develop, enhance and implement existing emergency response plans to utilize new and developing technology / information as it becomes available. Specifically, the Town is working on the following relevant projects: • 700 mHz communications • Web-based EM program • Highway web-based asset management system	NA	All Hazards	1, 3, 7, 12, 13, 14, 15, 16	TOB Public Safety	Low	Low	Town Budget	Short Term OG	High	EAP
TOB-51 (former TOB-7)	Incorporate continuity of operations planning principals into existing plans that address post disaster operations. I.T. is	NA	All Hazards	2, 3, 7, 12, 14, 16	TOB Town Council	Medium	High	NYSDOS, Town Budget	Long Term	Medium	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
	currently working to secure funding to develop a COOP/COG plan (see previous Sandy HMGP initiatives).										
TOB-52 (former TOB-17)	Stabilize vulnerable bluffs by introducing natural vegetation and through the use of hardened structures. 10 North Shore bluff projects have applied for funding; eight have been through engineering, two have gone to bid	Existing	Coastal Erosion	5,8,15	TOB	High	High	Town Budget, Bonding, Property Owner funding	Short Term DOF	Medium	SIP
TOB-53 (former TOB-18)	Encourage Federal and State agencies to identify new reliable and consistent sources of sand for beach nourishment programs, building on recommendations of existing feasibility studies concerning coastal sand budgets.	NA	Nor'Easters, Coastal Erosion, Hurricane, Flooding	2, 3, 5, 7, 9, 14, 15, 16	Army Corps, NYSDOS	High	Medium	Army Corps, NYSDOS	Short Term DOF	Medium	SIP
TOB-54 (former TOB-21)	Institute a recharge basin reconstruction program, possibly by partnering with local businesses, to restore & increase drainage capacity by reducing invasive species, trash, excess sediment, etc.	New and Existing	Nor'Easters, Coastal Erosion, Hurricane, Flooding, Severe Storms, Shallow Groundwater	2, 7, 8, 10, 11, 13, 15, 16	TOB, NYSDEC	Medium	Medium	Town Budget, Community Volunteers, Federal/State Phase II Clean Water Act, possible PDM application FEMA Hazard Mitigation Grant Funding	Short Term, DOF	Medium	LPR, SIP
TOB-55 (former TOB-25)	Participate in homeowner partnership program to elevate vulnerable properties in high-risk areas impacted by coastal storms, surface flooding, and/or shallow groundwater. High-risk areas include: those	Existing	Nor'Easters, Coastal Erosion, Severe Storms, Hurricane, Flooding, Shallow Groundwater	1, 2, 3, 4, 7, 9	FEMA	Medium	High	Town Budget, possible PDM application FEMA Hazard Mitigation Grant Funding, Homeowner Cost Share	Long Term	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
	properties identified as "repetitive loss" by FEMA and those areas of concern identified by the Town of Brookhaven.										
TOB-56 (former TOB-26)	Consider low-density land use in high-risk coastal, surface water and groundwater zones.	New and Existing	Nor'Easters, Coastal Erosion, Hurricane, Flooding, Shallow Groundwater	6, 7	TOB Town Council	Low	Low	Town Budget	Long Term	Low	LPR
TOB-57 (former TOB-31)	Encourage NYS and FEMA to document erosion rates by taking standardized aerial photographs of our shorelines on a yearly basis, and when necessary after severe storms.	NA	Nor'Easters, Coastal Erosion, Hurricane, Flooding	1,3 5, 6, 7, 9, 14, 15, 16	NYSDOS, NYSDEC, NYSCSIC, NYSEMO, FEMA, and all other agencies currently producing aerial photography	Medium	High	Suffolk County, NYSDOS, NYSDEC, NYSCSIC, NYSEMO, FEMA, and all other agencies currently producing aerial photography	Long Term	Medium	EAP
TBO-58 (Sandy HMGP LOI 928)	Water Island Wells (Fire Island), NY	See Action Worksheet (TOB-58 - LOI 928 - 032614)									

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 reapportionment 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 9.6-12. 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	Total	High / Medium / Low
TOB-1	Mt. Sinai Harbor Jetty Rehabilitation	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
TOB-2	Port Jefferson Pier Rehabilitation	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	Medium
TOB-3	Sandspit Marina East Bulkhead. (Sandy HMGP LOI #196)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
TOB-4	Davis Park Marina - Harbor Master Tower. (Sandy HMGP LOI #197)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-5	Davis Park Marina - Ferry Dock Structure (Sandy HMGP LOI #198)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-6	Davis Park Marina - Water Break (Sandy HMGP LOI #199)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-7	Davis Park Marina - Landing Craft Receiving Area (Sandy HMGP LOI #201)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-8	Pipe Stave Hollow Road Raising (Sandy HMGP LOI #204)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-9	Clearview Place - Drainage & Stormwater Mitigation (Sandy HMGP LOI #206)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	Medium
TOB-10	Gully Landing Road - Hazard Mitigation. (Sandy HMGP LOI #207)	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	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	Total	High / Medium / Low
TOB-11	Broadway - Hazard Mitigation. (Sandy HMGP LOI #208)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-12	Friendship Drive - Hazard Mitigation. (Sandy HMGP LOI #209)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-13	Fire Island Concrete Walkways & Aprons - Rehabilitation & Mitigation. (Sandy HMGP LOI #210)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-14	Hagerman Landing - Hazard Mitigation. (Sandy HGMP LOI #211)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-15	Cedar Beach Marina Shoreline Restoration and Mitigation. (Sandy HMGP LOI #290)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-16	Amagansett Drive, Sound Beach, New York Drainage Improvements. (Sandy HMGP LOI #328)	0	1	1	1	0	1	0	1	0	1	1	1	0	0	8	Medium
TOB-17	Roe Avenue Mitigation, East Patchogue, NY. (Sandy HMGP LOI #368)	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	Medium
TOB-18	Elevation of the Gamecock Cottage at West Meadow Beach Historic District. (Sandy HMGP LOI #369)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
TOB-19	Flood & Damage Prevention at Webby's	0	1	1	1	0	1	0	1	0	1	1	1	0	0	8	Medium

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	Total	High / Medium / Low
	Beach, East Moriches, NY. (Sandy HMGP LOI #425)																
TOB-20	Hazard Mitigation Disaster Recovery and Business Continuity for the Town of Brookhaven. (Sandy HMGP LOI #450)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-21	Sills Gully Road Outfall, Sound Beach, NY (Sandy HMGP LOI #467)	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	Medium
TOB-22	Hallock Landing Road Outfall, Rocky Point, NY (Sandy HMGP LOI #469)	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	Medium
TOB-23	Riverhead Drive, Sound Beach, New York (Sandy HMGP LOI #470)	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	Medium
TOB-24	Brookhaven North Shore Properties - Hazard Mitigation. (Sandy HMGP LOI #476)	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
TOB-25	Purchase of a Generator for Town Parks Administration Building. (Sandy HMGP LOI #1747)	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
TOB-26	Construction of Emergency Operations Center in Coram with Backup Power Generation. (Sandy HMGP LOI #1748)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	Medium
TOB-27	Purchase of	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	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	Total	High / Medium / Low
	Interoperable 700MHz Communication System. (Sandy HMGP LOI #1752)																
TOB-28	Generator Replacement at Brookhaven Town Hall. (Sandy HMGP LOI #1755)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-29	Dedicated Emergency Operations Center and Purchase of Back-Up Generators (Cassel Building) (Sandy HMGP LOI #1792)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOB-30	Woodhull Landing Shoreline Revetment	1	1	1	1	1	1	0	1	1	1	0	1	1	1	12	Medium
TOB-31	Brookhaven -56' Landing Craft Vessel	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	Medium
TOB-32	Bay Avenue – Bulkhead & Stormwater Improvements	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	Medium
TOB-33	Cranberry Drive - Fishing Pier	0	0	1	1	1	1	1	0	0	1	1	1	0	0	8	Medium
TOB-34	Donald Court East - Bulkhead & Stormwater Improvements	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	Medium
TOB-35	Great Gun Marina - Coastal Protection Features	0	1	1	1	1	1	0	1	1	1	1	1	1	1	12	Medium
TOB-36	Montauk Avenue - Stormwater Runoff & Tidal Mitigation	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	Medium
TOB-37	Roberts Street - Roadway Development	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	Medium
TOB-38	Roe Avenue -	0	1	1	1	1	1	0	1	1	1	0	1	1	1	12	Medium

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	Total	High / Medium / Low
	Stormwater Runoff & Tidal Mitigation																
TOB-39	Sandspit Marina - Bathroom Rehabilitation & Mitigation	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	Medium
TOB-40	Scott Beach Hazard Mitigation Project. (Sandy HMGP LOI #1106)	0	1	0	0	0	1	0	1	0	1	1	0	1	1	7	Medium
TOB-41	Underwater Investigations – Hazard Mitigation	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	Medium
TOB-42	Compile Comprehensive Emergency Management Plan	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	Medium
TOB-43	Cornell Cooperative Extension - Cedar Beach Facility Storm Surge Mitigation. (Sandy HMGP LOI #1331)	0	1	1	1	1	0	1	1	1	0	0	1	1	1	10	High
TOB-44	Back-Up Power Plan for the Gordon Heights Fire District. (Sandy HMGP LOI #1920)	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
TOB-45	Generator for Critical Fire Protection Facility – Holtsville Fire District (Sandy HMGP LOI #1952)	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
TOB-46	Maintain Operability of Point O'Woods Volunteer Fire Department; a premiere first responder team on	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	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	Total	High / Medium / Low
	Fire Island. (Sandy HMGP LOI #698)																
TOB-47	Emergency Backup Power for the Village Central School District. (Sandy HMGP LOI #2165)	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
TOB-48 (former TOB-3)	Support and participate in county led initiatives intended to build local and regional mitigation and risk-reduction capabilities (see Section 9.1)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	High
TOB-49 (former TOB-4)	Construct an Emergency Operations Center within one of the existing Town facilities. The Town is working to identify a suitable facility, then to secure funding to outfit as a proper EOC.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Medium
TOB-50 (former TOB-6	Continue to develop, enhance and implement existing emergency response plans to utilize new and developing technology / information as it becomes available. Specifically, the Town is working on the following relevant projects: • 700 mHz communicatio ns	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	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	Total	High / Medium / Low
	• Web-based EM program • Highway web-based asset management system																
TOB-51 (former TOB-7)	Incorporate continuity of operations planning principals into existing plans that address post disaster operations. I.T. is currently working to secure funding to develop a COOP/COG plan (see previous Sandy HMGP initiatives).	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Medium
TOB-52 (former TOB-17)	Stabilize vulnerable bluffs by introducing natural vegetation and through the use of hardened structures. 10 North Shore bluff projects have applied for funding; eight have been through engineering, two have gone to bid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
TOB-53 (former TOB-18)	Encourage Federal and State agencies to identify new reliable and consistent sources of sand for beach nourishment programs, building on recommendations of existing feasibility	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Medium

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	Total	High / Medium / Low
	studies concerning coastal sand budgets.																
TOB-54 (former TOB-21)	Institute a recharge basin reconstruction program, possibly by partnering with local businesses, to restore & increase drainage capacity by reducing invasive species, trash, excess sediment, etc.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Medium
TOB-55 (former TOB-25)	Participate in homeowner partnership program to elevate vulnerable properties in high-risk areas impacted by coastal storms, surface flooding, and/or shallow groundwater. High-risk areas include: those properties identified as "repetitive loss" by FEMA and those areas of concern identified by the Town of Brookhaven.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Medium
TOB-56 (former TOB-26)	Consider low-density land use in high-risk coastal, surface water and groundwater zones.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Low
TOB-57 (former TOB-31)	Encourage NYS and FEMA to document erosion rates by taking standardized aerial photographs of our shorelines on a yearly basis, and when	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Medium

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	Total	High / Medium / Low
	necessary after severe storms.																
TBO-58 (Sandy HMGP LOI 928)	Water Island Wells (Fire Island), NY	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High

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

9.6.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.6.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Town of Brookhaven 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 Brookhaven has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.6.9 Additional Comments

None at this time.

Figure 9.6-1. Town of Brookhaven Hazard Area Extent and Location Map 1

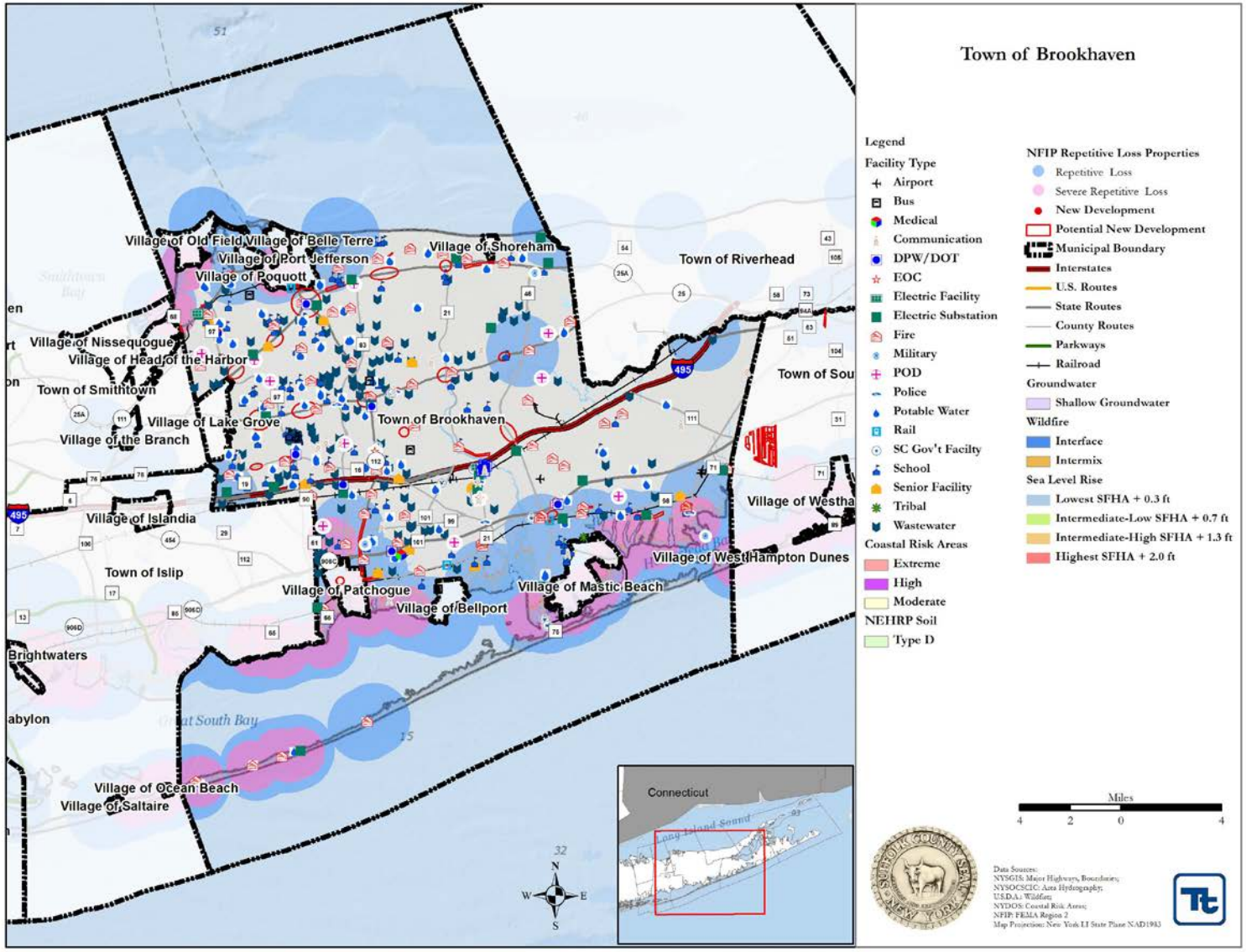
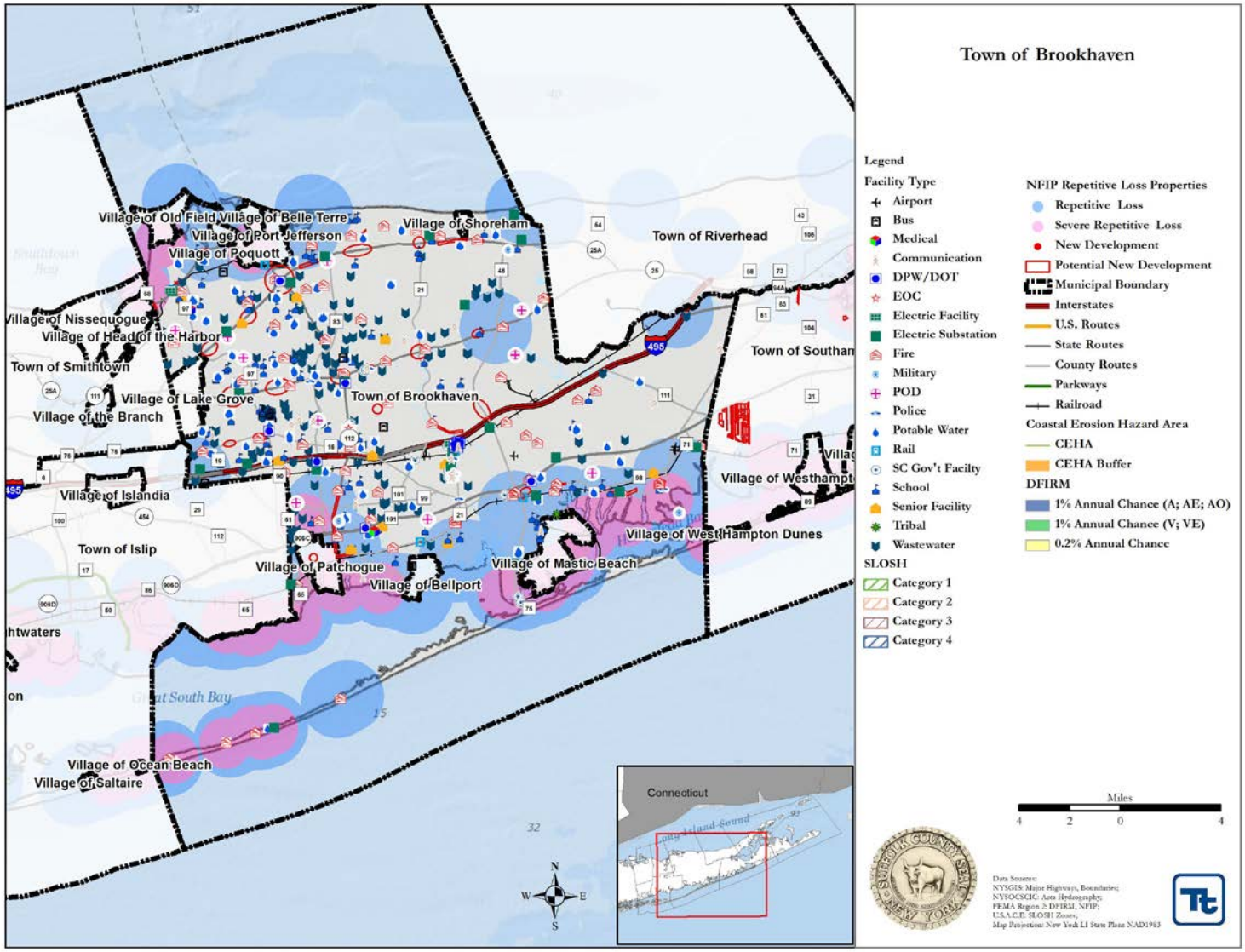


Figure 9.6-2. Town of Brookhaven Hazard Area Extent and Location Map 2



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: Town of Brookhaven
Number: Sandy HMGP LOI - NA
Mitigation Action/Initiative: Mt. Sinai Harbor Jetty Rehabilitation

Assessing the Risk	
Hazard(s) addressed:	
Specific problem being mitigated:	In 2011, the USACE completed a Mt. Sinai Harbor Jetty Rehabilitation Study (see attached), which outlined the rehabilitation of the east and west jetties for the purposes of protecting the harbor from natural disasters. The report details all of the existing conditions, history, alternatives and costs. During previous storm events, the eastern jetty has become separated from the mainland. This has allowed additional sand to accumulate on the eastern shoal. The removal of the fillet and the extension of the eastern jetty using old jetty rock will provide a barrier to prevent this overwash in the future. Numerous storm events have taken a cumulative impact upon the jetty. The protective armor stones have been undermined, been dislodged causing the base of the jetty to spread. This caused parts of the jetty to settle. Storm erosion has continued to lower the adjacent beach and scarp. At this time, during high tides and some storm events, the western jetty is almost completely underwater. It is during these periods that the jetty is a hazard to navigation and can pose a significant danger to boaters unaware of its presence or to those who miscalculate its location. The east jetty head has unraveled and is now completely underwater. The base of the jetty is no longer tight and sand now passes through and around the jetty in the amount of 9,000 cubic yards per year. An additional 3,000 cubic yards passes through and around the west jetty. To prevent this constant shoaling the Town will need to repair the existing jetties and establish a maintenance program to remove the sand accumulation (the fillet) on the east side of the eastern jetty. As the effectiveness of the jetties continue to diminish, the amount of sand that enters the harbor mouth will increase. This will make the harbor entrance more dangerous as the east and west shoals increase in size choking the harbor entrance with sand. Once navigation is significantly impaired within the harbor, larger vessels would be the first forced to leave the safe berthing and mooring that this harbor affords. This will have a significant impact to the economic viability to the private companies, Ralph's Fishing Station, the Mount Sinai Yacht Club, and Old Man's Boat Yard; all of who derive significant income from tending to the larger vessels within the Harbor.
Evaluation of Potential Actions/Projects	

Actions/Projects Considered (name of project and reason for not selecting):	1. The greatest danger in a "no-action" scenario is the continued undermining of the western jetty, increasing the time that the jetty is completely submerged during the tidal cycle. Vessels unaware of the submerged jetty may strike the jetty as they attempt to enter the harbor. This would definitely result in a loss of property and a potential loss of life. There are significant shellfish resources within Mount Sinai Harbor. In 2010, the Division of Environmental Protection estimated that 245 bushels of hard clams, 3,950 bushels of soft clams, and 1,850 bushels of oysters were removed from Mount Sinai Harbor. These counts do not include the recreational take, which is not reported, and could be 10 – 50% above the commercial take. The reduction of water flow into the Harbor, resulting from continued sand deposition, will decrease the flushing time of the harbor. This will increase the resident time of indicator bacteria and will result in the future closings of the Harbor to shellfishing. It is difficult to determine the number of residents which use the Cedar Beach complex for access to the waterway. If the average number of people per vessel is four, then with 604 total slips and 524 moorings, a minimum of 4,512 residents of Brookhaven rely on the navigation access provided by Mount Sinai for the recreational enjoyment of their vessels. With parking for 80 trailers, a conservative estimate of 420 boat launches per week, would add an additional 1,680 residents using this facility weekly during the season. Since not every resident uses their boat once per week, and boaters from outside of the Town and from other locations within the Town can avail themselves of the launch ramp, it is a reasonable estimate that the ramp probably provides access to over 5,000 residents and non-residents per season. Both the Mount Sinai and Miller Place Fire Departments keep their fire and rescue vessels in Mount Sinai Harbors. These are vessels that would respond to an emergency on the Long Island Sound involving private and commercial vessels and would also respond to assist the Bridgeport-Port Jefferson Ferry in an emergency. The narrowing of the harbor entrance will increase the residence time of the bacteria that enters the harbor from road runoff, septic intrusion, and local waterfowl and animals. Based upon the 2010 landings data, the Division of Environmental Protection estimated that the value of the shellfish harvested from Mount Sinai has an approximate value of $403,000. Each of these boats employs local fishermen whose families depend on their income. Assuming a three times multiplier for economic value, the overall ad The Mt Sinai Marina is home to approximately 600 boat slips and between 375 and 500 moorings, which bring in over $1.2 million worth of dock, slip, mooring and transient fees to the Mt Sinai Yacht Club, two local boat yards (Old Man's Boatyard and Ralph's Fishing Station) and the Town of Brookhaven Marina. In addition to revenue brought in through boat slips and moorings, the Marina and the Town and businesses located there employ over 40 individuals with an annual payroll of almost $1.5 million. The businesses at the Marina also spend over $1.2 million annually at local businesses, which supply everything from food and liquor to fuel and auto parts. The businesses located at the Marina lease from the Town of Brookhaven. These leases

	represent approximately $80,000 in annual fees that the Town depends on. There are also transient slips available, which are usually used by boaters from out-of-state. These transient slips bring visitors who usually visit the local shops and restaurants, which results in an influx of out-of-state cash into the community. In addition to these economic impacts, the significant recreation activities at the Marina will be curtailed, as well as, the revenue that these activities bring the area businesses (i.e. purchase of fishing poles, bait, lunches, etc.)
	2. Sediment Management. The initial reduction of east sediment fillet, reduction of south shoal, and improvement of the west shore berm elevation as described below: • Reduction of east sediment fillet approximately 100 to 150 feet mean high water retreat along 500 feet shoreline, approximately 18,300 cubic yards removal quantity; • Reduction of south shoal – approximately 100 to 300 feet retreat of +6 ft NAVD elevation, approximately 16,500 cubic yards removal quantity; • Removal of storm overwash and reduction of berm elevation to +6 ft NAVD, approximately 3,100 cubic yards; Removed sand will be bypassed to west shore to raise general berm elevation to +6 ft NAVD in the low area landward of the west jetty and to improve the eroded dune and bluff toe In addition to the initial bypassing and west shore restoration, periodic sand bypassing and channel maintenance will be necessary. This alternative will incur high dredging costs and be more costly over a longer time period.
	3. Partial east and west jetty rehabilitation. A partial rehabilitation of the jetty will be less costly; however, higher future costs for the increased dredging cost as greater sedimentation will occur than in the preferred alternative.
Action/Project Intended for Implementation	
Description of Selected Action/Project	This project calls for the excavation of the sand fillet and bypass east of the eastern jetty. The sand will be used as beach nourishment to the east. Both jetties will be removed and replaced with new jetties. The existing stone above approximately elevation -4.0 to -5.0 ft. NAVD along the footprint of the jetty will be excavated and re-used to extend landward the eastern and jetties. Rehabilitated jetty sections will consist of three stone layers – bedding, underlayer or core, and armor. Both the head and trunk sections will have a 15-ft crest width at elevation +7.0 NAVD. The centerline of the new east jetty will be offset 10 ft. to the east of the existing centerline to avoid encroachment of the new toe into the existing channel. The new jetty will have a 500 ft. long crest, including 350 ft. trunk, 100 ft. head, and 50 ft. transition sections. The new jetty will be 50 feet shorter than the existing footprint. The jetty will have 1 layer of 6 ton median armor at the head and 2 layers of 0.5 ton median armor along the trunk, designed for a 100 year return period storm. Removed stone would be sorted with stone less than 3 tons placed as core

	material and stone greater than 3 tons placed in an outer armor layer. An additional 15-ft wide stone berm breakwater section of unsorted stone will be abutted to the cross-section on the water side to increase its sand retention capability. The use of filter fabric for underlayment should be used for the stone jetty extensions. A new west jetty will be installed with the centerline offset 15 ft. west of the existing centerline to avoid encroachment of the structure toe into the channel. The west jetty will have a 400 ft. long crest, including 150 ft. trunk, 200 ft. head, and 50 ft. transition sections, with a 100 ft. seaward head reduction and 50 ft. landward trunk extension. The excavated rock will be used to extend the jetty landward. The overwash at west shore will be further reduced by the addition of dredged sand.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 7, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $30,000,000 potential loss of revenues to harbor businesses and recreation uses.
Estimated Cost	$ 10,669,087
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Minor, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP; FMA, PDMC, Repetitive Loss Grant Program, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	30 months
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: NA
Mitigation Action/Initiative: Mt. Sinai Harbor Jetty Rehabilitation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	This will serve to reinforce and harden structure at this location
Cost-Effectiveness	1	Yes
Technical	1	Provides long term stability and protection to Mt. Sinai Harbor
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will lessen damage to this site and the surrounding environment, and the Town will comply with all regulations
Social	1	This will limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Protects property, tourism and commercial fishing fleet
Timeline	1	Can be Completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This is a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses, as well a vital recreation area
Total	13	
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 Brookhaven
Number: Sandy HMGP
Mitigation Action/Initiative: Port Jefferson Pier Rehabilitation

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storm
Specific problem being mitigated:	The Town of Brookhaven owns and operates a 120 slip public marina located on Broadway (NY-25A) in the Village of Port Jefferson. The marina is situated on Port Jefferson Harbor where there is a major car, truck and passenger ferry connection to and from Bridgeport Connecticut via a private ferry service, located adjacent to and east of the marina. A pier extending in an east-west direction located north of and parallel to the bulkhead had suffered extensive deterioration over the years due to heavy wave action and storm surges in the harbor. The deterioration of the pier included a timber wave screen to mitigate storm wave activity impacting the boats docked in the marina. In the summer of 2011 the Town initiated and completed a pier rehabilitation project. As part of that project, the timber wave screen on the north face of the pier was replaced. Unfortunately, funds were not available to replace wave screening on the south face. During Tropical Storm Irene, this south face wave screen was further damaged with sheets and lower wales left in a precarious condition, no longer serving its intended function and creating an unsafe condition.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. In the case of the no action alternative, the pier will further deteriorate and wave action will damage the boats docked in the marina and other structures.
	2. One alternate considered for the project is to install a new steel sheetpile bulkhead in lieu of a timber wave screen. This alternate would include installation of new steel sheet piling adjacent to the existing pier, and installing a new steel wale and connecting the new sheet piling to the pier. This alternative is not preferred, however because of the cost as compared to a timber screen wall. In addition, wave action within the marina may be increased. A project budget cost for this alternate is $400,000.
	3. A second alternate considered a floating wave attenuator that would be installed on the harbor side of the existing pier. The wave attenuator would be moored by anchors strategically set in the harbor to dissipate wave energy prior to the waves reaching the marina from the harbor side. This alternate is not preferred because it may be an obstruction to the commercial and private vessels in the harbor. In addition, permitting issues for the installation of the device may preclude its use. A project budget cost for this alternate is $450,000.
Action/Project Intended for Implementation	

Description of Selected Action/Project	The Town is proposing to mitigate wave damage to floating docks and commercial and private vessels in the marina by reconstructing the wave screen on the south side of the north pier. The wave screen consists of 3"x8" timbers mounted vertically to timber wales that bridge the pier's support pilings. The wave screen is intermittent – installed between alternating pile bents. This configuration, coupled with the new wave screen installed on the north side of the pier will effectively dissipate wave energy within the marina. The Project will commence with Engineering design and permitting through the New York State Department of Environmental Conservation. Once permitted, a Contractor will be retained through the Town's purchasing department. Construction activities will be staged from a barge mobilized within the marina. Material lead times are anticipated to be minimal, and the work is anticipated to be completed within about 4 weeks from the start of actual construction.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 15, 16,
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages:
Estimated Cost	$10,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP; FMA, PDM, Town Capital Budget for Local Match
Timeline for Completion	12 months
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 - NA
Mitigation Action/Initiative: Port Jefferson Pier Rehabilatation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to this facility
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will lessen damage to this site and the surrounding environment, and the Town will comply with all regulations
Social	1	This project will limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Protect local tourism, recreational fishing fleet and properties
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate local economy by employing contractors and helping small area businesses, as well as tourism since the Port Jefferson community attracts a host of visitors
Total	13	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 196
Mitigation Action/Initiative: Sandspit Marina East Bulkhead

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricane, Severe Storms*
Specific problem being mitigated:	The Sandspit Marina situated in Patchogue NY has functioned as a marina (100 slips), fishing pier, recreational facility (playground) and has the Sandspit Ferry Terminal situated along the west side of the facility. The site is dominated by parking stalls (regulated) for transportation to and from the Davis Park community on Fire Island. When T.S. Irene struck in 2011, the facility's south/east end was damaged heavily by the tidal surge of the Great South Bay. The surge caused asphalt to buckle, concrete curbs and walkways to become dislodged, soil erosion and damage to the marina's utility infrastructure. As a result of the storm the Town reinstalled deep concrete cut-off curbs poured with a haunch to protect the sea-ward side of the parking lot. The feature was installed behind the existing bulkhead structure and provided protection to the rehabilitated asphalt parking lot during Super Storm Sandy. The last 400' section (narrow beach area) of the site does not contain any coastal protection and is vulnerable to further damage.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action (would leave the channel susceptible to further soil erosion)
	2. Restoration of Jetty & installing stone gabion baskets (Not as strong as a vinyl bulkhead and maintenance of the gabion baskets would be required.)
	3. Restoration of Jetty & installing vinyl bulkhead (chosen action)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town of Brookhaven submitted permit plans to extend the existing timber bulkhead eastward 152 linear feet to the existing fishing pier's west side bulkhead. This measure would provide complete protection of the parking facility from future tidal surges along the facility's south (seaward) side. The cost to replace sections of the parking lot, cleanout drainage structures, remove/replace soil , rehabilitate bulkhead systems and replace damaged marina power/water posts exceeds the cost to install the bulkhead extension with the concrete curb (below grade cutoff wall). The combination of the timber bulkhead with the concrete curb (below grade with haunch) will protect the southern edge of the parking lot area from uplift and heave during future tidal surge events.
Mitigation Action/Project Type	**Structure and infrastructure project**
Objectives Met	**16**

Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructures**
Benefits (losses avoided)	Recent Damages: $180,000
Estimated Cost	$873,852.10
Priority*	*High*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 196
Mitigation Action/Initiative: Sandspit Marina East Bulkhead

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	This will serve to reinforce and harden structures at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the overwhelming support of the Supervisor and Town Board
Legal	1	Yes, the Town works hand-in-hand with NYS agencies and our state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and surrounding environment, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Yes, to both recreational and commercial uses
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project will not only serve as a critical capital improvement, but will also stimulate the local economy by employing contractors and helping small area business, as well as local tourism that utilizes this marina for access to several Fire Island communities
Total	13	
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 Brookhaven
Number: Sandy HMGP LOI #: 197
Mitigation Action/Initiative: Davis Park Marina - Harbor Master Tower

Assessing the Risk	
Hazard(s) addressed:	*Hurricane, Severe Storms*
Specific problem being mitigated:	The Harbormaster Tower two-story structure situated at the Davis Park Marina Facility on Fire Island has been slowly "sinking" due to strong tidal surges during tropical storms, nor'easters and hurricanes. The problem has existed since Tropical Storm Irene (2011) and has accelerated even more after Super Storm Sandy. The pile-supported tower is starting to recede below the surrounding boardwalk pier structure. The Town has performed routine maintenance on the boardwalk pier and strengthened the building's moisture protection by re-siding/re-roofing the tower in late 2011.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action (building would be uninhabitable)
	2. Demolish existing tower and build new (Cost would be too high)
	3. Rebuild Pier & Reset Tower (Cost would be too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to shore up the loose or unearthed piles supporting the tower structure, the Town has proposed installing new larger piles driven to a greater depth to mitigate the building's recession into the marina. The new piles would be connected to the existing piles so as to not disturb the building's existing connection to its foundation. By connecting the new piles to the existing piles the town would avoid having to replace the entire harbormaster tower once the 1st floor recedes below the mean high water elevation of the marina. The Town uses the Tower at Davis Park for communications between Fire Island and Long Island and is a vital feature to protect from future storm damage.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing structures/infrastructure**
Benefits (losses avoided)	Recent Damages: $150,000
Estimated Cost	$156,758.00
Priority*	*High*
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 197
Mitigation Action/Initiative: Davis Park Marina - Harbor Master Tower

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provides location of L/E personnel to monitor
Property Protection	1	This will serve to reinforce and harden structures at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Supervisor and Town Board
Legal	1	Yes, the Town works hand-in-hand with various NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized the funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have adverse effect locally
Administrative	1	Yes
Multi-Hazard	1	Yes, to both recreational and commercial uses
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses, as well as tourism since this facility provides critical access to several Fire Island communities
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 198
Mitigation Action/Initiative: Davis Park Marina - Ferry Dock Structure

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricane, Severe Storms*
Specific problem being mitigated:	The ferry dock (twin docks extending from the north end of Trustees Dock) situated at the Davis Park Marina Facility on Fire Island has been entirely unearthed by recent storms in 2011 and 2012. The piles that were driven to support the ferry dock have become loose and unsecure. The structure has an 8' wide by 44' long finger dock and a main platform that is 20' by 44' long that is used most of the time. The dock structure rises when to the height of the tidal surge during strong storms. In 2007 the Town prepared permit drawings to receive approval to construct a wave guard that would minimize the negative effects of the tidal surge. The Davis Park Ferry Company (private company) out of the Town's Sandspit Marina Facility in Patchogue transports hundreds of occupants to the Davis Park Community each day. The dock is used to transport goods and commodities needed in the barrier island community. Maintaining the integrity of the landing structure for the Town authorized Ferry Company is a vital component to the community.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action (structure will be at risk for complete destruction)
	2. Replace with new vinyl bulkhead (cost is too high)
	3. Replace with concrete pile dock structure (cost is too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The proposed mitigation measures proposed by the Town to strengthen and rehabilitate the ferry dock would be to install new larger piles driven to a greater depth to mitigate the dock structure's unsafe tidal movement. The decking is constantly under repair due to the unsecure nature of the pile foundation. The cost of replacing the entire ferry dock structure and the constant maintenance of the decking and substructure would be avoided by replacing the dock's pile supported substructure (including piles) to FEMA standards.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing structures/infrastructure**
Benefits (losses avoided)	Recent Damages: $225,000

Estimated Cost	$679,032.00
Priority*	*Medium*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 198
Mitigation Action/Initiative: Davis Park Marina - Ferry Dock Structure

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Location provides landing point for emergency personnel and supplies
Property Protection	1	This will serve to reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Supervisor and Town Board
Legal	1	Yes, the Town works closely with various NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized the funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would adversely affect local communities
Administrative	1	Yes
Multi-Hazard	1	Emergency services, commodities and tourism
Timeline	1	Can be completed within 5 years
Agency Champion	1	Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses, as well as tourism since this facility transports a host of visitors to and from communities on Fire Island
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 199
Mitigation Action/Initiative: Davis Park Marina - Water Break

Assessing the Risk	
Hazard(s) addressed:	*Hurricane, Severe Storms*
Specific problem being mitigated:	The Davis Park Marina on Fire Island is protected on all four sides of the marina by boardwalks supported by piles and earth. The four boardwalks provide some protection of the 270 slip marina. A 60' long steel water break was installed along the north end of the west boardwalk and extends into the Great South Bay to protect the marina from west wind storms. The north and east sides of the marina have a more substantial level of protection. Unfortunately the storms that come from the west side of marina cause significant damage to the boardwalks, piers, mooring piles and some features landward of the marina. In 2007 the Town hired L.K. McLean Associates to prepare permit drawings for a 150' extension to the existing 60' long breakwater and a wave guard to protect the ferry dock
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action. (would leave existing features at risk of being destroyed)
	2. Replace Water Break with new Vinyl Bulkhead Structure (Cost would be too high)
	3. Replace Water Break with Stone Jetty. (mobilization of heavy armor stones are not cost effective)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town would like to extend the existing steel water break by 150' to close the opening of the marina and provide further protection to the marina and its infrastructure. The existing 60' long water break has helped the marina during storm events but has not protected some of the northerly features situated within the marina. The cost to replace these features combined with the constant costs associated with dredging the marina would far exceed the cost of the 150 foot long steel water break.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructure**
Benefits (losses avoided)	Recent Damages: $0
Estimated Cost	$251,590.00
Priority*	*Medium*
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 199
Mitigation Action/Initiative: Davis Park Marina - Water Break

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will reduce tidal surge to affected areas
Property Protection	1	This will serve to reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized the funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Reduces damage to marina, thereby helping emergency services and local tourism
Timeline	1	Can be completed within 5 years
Agency Champion	1	Town Supervisor, Town Board and Town department with local jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses, as well as tourism since this marina transports a host of visitors to and from communities on Fire Island
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 201
Mitigation Action/Initiative: Davis Park Marina - Landing Craft Receiving Area

Assessing the Risk	
Hazard(s) addressed:	*Hurricane, Severe Storms*
Specific problem being mitigated:	The Highway Department transports heavy equipment, aggregates and other bulk commodities on a Landing Craft Mechanized (LCM) vessel that lands along the west end of the north boardwalk (or east side of marina inlet). In 2006 the Town spent some of their capital budget on fortifying the north beach area and LCM receiving area. The recent storms have compromised the features that protect the landing area for the Towns' vessel. Before, during and after significant storms the landing craft is used to provide protection, relief and recovery to the Davis Park Community and other neighboring communities.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action (The landing craft area would be unusable over time due to the soil erosion.)
	2. Relocate Landing Craft Area (Cost would be too high)
	3. Purchase New Landing Craft (Cost would be too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town would propose the use of heavier, more durable materials to protect the structures that comprise and surround the landing craft receiving area. The cost to rehabilitate the west section of the north boardwalk area to meet FEMA building standards would minimize having to constantly rebuild sections of the area and maintain important access for the Town's vessel before, during and after a disaster.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructure**
Benefits (losses avoided)	Recent Damages: $125,000
Estimated Cost	$497,750.00
Priority*	*High*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets

Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 201
Mitigation Action/Initiative: Davis Park Marina - Landing Craft Receiving Area

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Movement of supplies and personnel
Property Protection	1	This will serve to reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works hand-in-hand with pertinent NYS agencies and local state legislative representatives
Fiscal	1	The Town has already authorized the funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Allows for maintenance and post storm recovery operations
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will stimulate local economy by employing contractors and helping small area businesses, as well as tourism since this facility transports a host of visitors to and from communities on Fire Island
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 204
Mitigation Action/Initiative: Pipe Stave Hollow Road Raising

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricane, Severe Storms*
Specific problem being mitigated:	This low-lying section of Town roadway experiences routine flooding due to tidal waters (Mt. Sinai Harbor) and the height of the roadway. The Town has installed stormwater runoff basins up-gradient to intercept the volume of runoff during rain events. Most of the flooding is attributed to high tides and tidal surges that occur when a severe storm occurs. When the road is flooded it prohibits safe access by emergency vehicles in a residential area.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action (Flooding will continue to impede access for residents and emergency vehicles.)
	2. Installing a bulkhead retaining wall along the shore lines as well as raising the road. (Cost would be too high and would impact the environmentally sensitive wetland area adjacent to the roadway)
	3. Raising the road an additional foot. (This would protect against most storms, but not a substantial one.)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Highway Department proposes to raise the roadway 6" to 12" and install shallow drainage structures that will provide additional storage for both stormwater runoff and tidal waters. A stormwater treatment structure is included in the plan to treat the stormwater runoff prior to discharge into Mount Sinai Harbor. The road-raising project will provide safe access for residents and emergency vehicles during and after severe storm events. The new roadway will decrease the amount of maintenance required along the roadway relative to buckled asphalt, debris-filled drainage structures and vehicles driving on private property beyond the limits of the Town right-of-way.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructure**
Benefits (losses avoided)	Recent Damages: $100,000
Estimated Cost	$1,505,266.12
Priority*	*Medium*
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 204
Mitigation Action/Initiative: Pipe Stave Hollow Road Raising

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Reduces limited access to emergency vehicles
Property Protection	1	This will serve to reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works hand-in-hand with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized the funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will limit potential impacts that would adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Allows for better emergency response and recovery
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 206
Mitigation Action/Initiative: Clearview Place - Drainage & Stormwater Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricane, Severe Storms*
Specific problem being mitigated:	Clearview Place in Blue Point is a 480 linear foot long residential roadway that experiences flooding during significant storm events. There are fifteen (15) residences that occupy the low-lying street that contains sidewalks on each side (east and west). There is limited drainage along the west side of the street which often fills up with water from the Great South Bay.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action. (Road will continue to flood) 2. Raise the road one foot to project it from flooding. (Cost is too high) 3. Raise the road one foot and install drainage structures. (Cost is too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate the flooding associated when a storm occurs or when historic tidal surges happen, the Town is proposing additional shallow drainage installations and tide gates (flapper valves) to control tidal intrusion which results in flooding of Clearview Place. The cost of additional drainage structures and controls will reduce future maintenance costs and property damage.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/ Infrastructure**
Benefits (losses avoided)	Recent Damages: $50,000
Estimated Cost	$140,000
Priority*	*Medium*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 206
Mitigation Action/Initiative: Cleaview Place - Drainage & Stormwater Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	This will serve to reinforce and harden structures at this facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Provides for less surge, reducing the property damage and better area access
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	13	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 207
Mitigation Action/Initiative: Gully Landing Road - Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricane, Severe Storms*
Specific problem being mitigated:	The northern road ending of Gully Landing Road is located on the Long Island Sound in Miller Place, NY. This site provides waterfront access to the local community and has a drainage outfall that handles stormwater from the upland residential roadways. Over the last several years storms including Tropical Storm Irene and "Superstorm" Sandy have caused damage to the existing gabion revetment walls providing protection to the elevated upland Town owned area landward of the wall. On the west half of the gabion revetment system, severe erosion behind the gabions from wave action has scoured an 86 foot section of bluff located directly behind the gabion revetment. Additionally, the gabion baskets have torn in several locations from the storm forces and have begun to lose their shape and stone filling. Destruction of the eastern timber access ramp from the end of Gully Landing Road to the beach has occurred eliminating handicap accessibility to the waterfront.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action. (Would allow additional coastal erosion. This would cause further damage to the existing infrastructure, eventually cutting off safe public access to the beach.)
	2. Repair Damages in-kind. (This would be a temporary fix. Over time, the same damage will occur and this type of repair would be needed again. Also, part of the bluff west of the existing gabion wall would remain unprotected.)
	3. Remove the existing gabion baskets and replace with 2 ton armor stones. Areas above the heavy armor stone would be stabilized with geotextile enkamat and native plantings. (Steel sheeting will provide a much higher level of protection.)
Action/Project Intended for Implementation	
Description of Selected Action/Project	A major concern at this area is the magnitude of erosion that has occurred above the gabion walls and at the unprotected bluff area west of the road ending. West of the gabion revetment system, bluff erosion has been occurring between the west end of the gabions and the privately owned bulkhead located 210 feet to the west. This is significant because any further erosion of the bluff in this area could damage the access road and the drainage system located in the Gully Landing roadway right-of-way. The drainage system handles stormwater from the upland Town roadways and outfalls at the shoreline between the west stairway and east pedestrian ramp. It is estimated that the north side of the roadway is less than 10 feet from the top of the eroded bluff at the worst location. It is estimated that approximately 3,000 cy of soil was eroded at this location and

	approximately 2,000 sf of vegetation is estimated to have been lost at the top of bluff. To mitigate the existing deteriorating condition, the Town would like to armor the unprotected 210 feet of bluff west of the existing gabion wall with a heavy stone revetment. Additionally, erosion control and slope stability measures on the bluff landward of the heavy stone revetment should include native vegetative plantings, geotextile "jute mesh" coverings and geogrid slope reinforcement solutions. Since the existing gabion walls have begun to fall at the end of Gully Landing Road, the Town would like to replace the gabion walls with a shoreline protection design that includes epoxy coated steel sheet bulkhead for toe of slope stability and an armor stone revetment located behind the sheeting that will protect the area landward of the bulkhead from high storm surges combined with wave forces. The purpose of the sheeting will be to protect the toe of slope from undermining and the stone revetment will be designed and constructed to resist storm surges up to the FEMA floodplain elevation and maximum potential wave forces. Wave run-up calculations will be made to determine the elevation of the top of the proposed shoreline protection system and the area above the proposed stone revetment will be re-established with native plantings suitable to the site.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing structures/infrastructure**
Benefits (losses avoided)	Recent Damages: $387,625
Estimated Cost	$1,698,545.12
Priority*	*High*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 207
Mitigation Action/Initiative: Gully Landing Road - Hazard Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide emergency access
Property Protection	1	This will serve to reinforce and harden structure at this location
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	The Town Supervisor and Town Board support this project
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen further damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement fir the Town, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	13	
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 Brookhaven
Number: Sandy HMGP LOI #: 208
Mitigation Action/Initiative: Broadway - Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Coastal Erosion*
Specific problem being mitigated:	The northern road ending of Broadway is located on the Long Island Sound in Rocky Point, NY. This site provides waterfront access to the local community. Over the last several years storms including Tropical Storm Irene and "Superstorm" Sandy have caused damage to the existing gabion revetment walls providing protection to the elevated upland Town owned roadway. Additionally, the extent of the bluff erosion adjacent to the site has cut around the existing gabion walls leaving the road ending susceptible to damage from future storms. It is estimated at approximately 1,872 cf of gabion baskets were damaged at the site. Much of the damage was observed to occur as a result of the gabions being undermined or broken from wave forces. Other notable damage at the site includes destruction of the timber stairway to the beach (360 sf), and damage to the concrete stairway/ramp located in the middle of the site. The broken concrete stairway is a hazard to pedestrians and impedes beach access at high tide.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action. (More soil erosion will occur which will put a portion of the road at risk to being lost.)
	2. Removing the existing gabion baskets and replace them with 2 ton heavy armor stone. (This would leave the bluff open to future erosion)
	3. Replace the existing gabion system with a stepped steel sheeting bulkhead. (Cost is too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town proposed to replace the falling gabion revetment wall with a design that includes epoxy coated steel sheet bulkhead for toe of slope stability and an armor stone revetment located behind the sheeting that will protect the area landward of the bulkhead from high storm surges combined with wave forces. The purpose of the sheeting will be to protect the toe of slope from undermining and the stone revetment will be designed and constructed to resist storm surges up to the FEMA floodplain elevation and maximum potential wave forces. Wave run-up calculations will be made to determine the elevation of the top of the proposed shoreline protection system and the area above the proposed stone revetment will be re-established with native plantings suitable to the site. At the east and west sides of the site, the Town proposed to restore a quantity of the soil lost and armor the toe of this area with a heavy stone revetment. Sloped areas above the stone revetment will be re-established with native plantings suitable to the site and erosion control measures such as jute mesh will be installed to provide erosion control during the establishment

	period of the new vegetation. Where slope stability is a concern on the re-established slopes geogrid slope reinforcement products will be incorporated into the design. It is anticipated that part of this project will be to remove the existing concrete ramp/stairway as it is a hazard.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructures**
Benefits (losses avoided)	Recent Damages: $242,190
Estimated Cost	$1,284,195.65
Priority*	*High*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 208
Mitigation Action/Initiative: Broadway - Hazard Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide emergency access
Property Protection	1	This will serve to reinforce and harden structure at this location
Cost-Effectiveness	1	Yes
Technical	1	Will help provide long term stability and protection of this roadway
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding property, and the Town will comply with all regulations
Social	1	This project will help limit impacts that would have adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	
Timeline	1	Can be completed within 5 years
Agency Champion	1	Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement to the Town, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 209
Mitigation Action/Initiative: Friendship Drive - Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Coastal Erosion*
Specific problem being mitigated:	The northern road ending of Friendship Drive is located on the Long Island Sound in Rocky Point, NY. This site provides waterfront access to the local community and has a 42" drainage outfall that handles stormwater from the upland roadways. Over the last several years storms including Tropical Storm Irene and "Superstorm" Sandy have caused damage to the existing gabion revetment walls providing protection to the elevated upland Town owned area landward of the wall. Most recently, the existing 42" drainage outfall pipe was crushed during Superstorm Sandy. This resulted in complete failure of the gabion walls located above and surrounding the pipe area in additional to severe soil loss behind the gabions. Other failures of the gabion wall system were observed to be as a result of undermining. It is estimated that approximately 9,126 cf of gabions have been damaged by the recent storms in the last three years. Other notable damage includes destruction of the timber beach access stairway (340sf), damage to 120 lf of chain link fencing, and significant soil and vegetation loss behind the gabions and adjacent to the west end of site.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action. (This would result in further erosion of the land behind the existing gabion revetment system and a dangerous site condition. Additionally, the Town drainage system will eventually be completely lost.)
	2. Repair in-kind. (This would be a temporary fix, and over time it will be in the same condition it is in now.)
	3. Using a combination of steel sheeting, heavy armor stone, and gabion baskets. (Does not fix any problems with the existing drainage system)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town proposed to replace the falling gabion revetment wall with a design that includes epoxy coated steel sheet bulkhead for toe of slope stability and an armor stone revetment located behind the sheeting that will protect the area landward of the bulkhead from high storm surges combined with wave forces. The purpose of the sheeting will be to protect the toe of slope from undermining and the stone revetment will be designed and constructed to resist storm surges up to the FEMA floodplain elevation and maximum potential wave forces. Wave run-up calculations will be made to determine the elevation of the top of the proposed shoreline protection system and the area above the proposed stone revetment will be re-established with native plantings suitable to the site. At the west side of the site, the Town proposed to restore a portion of the soil lost and armor the toe of this area with a heavy stone revetment. Sloped areas above the

	stone revetment will be re-established with native plantings suitable to the site and erosion control measures such as jute mesh will be installed to provide erosion control during the establishment period of the new vegetation. Where slope stability is a concern on the re-established slopes geogrid slope reinforcement products will be incorporated into the design. It is anticipated that part of this project will be to remove the existing concrete ramp/stairway as it is a hazard.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructures**
Benefits (losses avoided)	Recent Damages: $537,500
Estimated Cost	$1,253,649.66
Priority*	*High*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; _____ 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 #: 209
Mitigation Action/Initiative: Friendship Drive - Hazard Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide emergency access
Property Protection	1	This will serve to reinforce and harden structure at this site
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to this roadway
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding environment, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have adversely effected the local environment
Administrative	1	Yes
Multi-Hazard		
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 210
Mitigation Action/Initiative: Fire Island Concrete Walkways & Aprons - Rehabilitation & Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricane, Severe Storm*
Specific problem being mitigated:	As a result of Super Storm Sandy various sections of concrete walkways and aprons (crossovers for vehicles) were severely damaged by the tidal surge and beach erosion. The damages varied from complete dislodgment to areas where the concrete slabs were cracked, undermined (collapse) or heaved upward. The concrete walkways have survived many storms over decades of time, this historic storm affected Fire Island's upland areas like no other storm in the past.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action. (More damage will occur, effecting evacuation routes and emergency access to the various residential communities across Fire Island. 2. Construction of a timber bridge crossings with driven pile foundations. (Cost is too high) 3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to replace the 4,700 square feet of concrete walkways, which accommodate pedestrian (foot traffic) and small light-weight vehicles (buggies), the Town is proposing to replace the walkways as per FEMA building standards so when future storms occur the damage will be minimized and maintain the eligibility requirements under FEMA guidelines. The main difference is the engineered fill material (200 cubic yards) below the slabs and thickness (8"). The difference in cost to replace the walkways/aprons as per current FEMA standards versus the existing construction is exceeded when the next historic storm occurs on Fire Island.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructure**
Benefits (losses avoided)	Recent Damages: $150,000
Estimated Cost	$412,050.00
Priority*	*Medium*
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 210

Mitigation Action/Initiative: Fire Island Concrete Walkways & Aprons - Rehabilitation & Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide increased access for emergency services
Property Protection	1	This will serve to reinforce and harden structures at this facility
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to this location
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding,, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Increased access for emergency services and municipal maintenance
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement, and will also stimulate the local economy by employing contractors and helping small area businesses, as well as tourism since Fire Island communities attracts thousands of visitors
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 211
Mitigation Action/Initiative: Hagerman Landing - Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Coastal Erosion*
Specific problem being mitigated:	The northern road ending of Hagerman Landing Road is located on the Long Island Sound in Rocky Point, NY. This site provides waterfront access to the local community. Over the last several years storms including Tropical Storm Irene and "Superstorm" Sandy have caused failure of a privately owned bulkhead and thus erosion on the east side of the existing gabion revetment. Soil loss from this erosion if allowed to continue has the potential of undermining the existing gabion wall which will result in a loss of Town owned land.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action. (Would allow additional coastal erosion and additional damages)
	2. Repair Damages in-kind. (This would be a temporary fix. Over time the same damage will occur and this type of repair would be need again.)
	3. Install a combination of steel sheeting, heavy armor stone and gabion baskets. (Cost is too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town proposes to install a natural stone revetment on the east side of the existing gabion system (approximately 25 feet long) to prevent further erosion in that area. Additionally, the Town owned area landward of the gabion revetment should be equipped with erosion control measures such as native plantings and ground cover (i.e. stone) that will resist scour from stormwater and wave action. In order to prevent scour on the access path to the waterfront stormwater control measures upland of the shoreline should be included to capture stormwater.
Mitigation Action/Project Type	**Structure and Infrastructure Project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructure**
Benefits (losses avoided)	Recent Damages: $100,000
Estimated Cost	$150,000
Priority*	*Medium*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations

Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 211
Mitigation Action/Initiative: Hagerman Landing - Hazard Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provides emergency access
Property Protection	1	This will serve to reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection of this roadway
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding environment, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have adverse effect on local environment
Administrative	1	Yes
Multi-Hazard		
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 290
Mitigation Action/Initiative: Cedar Beach Marina Shoreline Restoration and Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Coastal Erosion, Hurricanes, Severe Storms*
Specific problem being mitigated:	The Town of Brookhaven owns and operates a 70 acre active waterfront park known as Cedar Beach. The park is located in Mount Sinai, New York and borders Long Island Sound to the north and Mount Sinai Harbor to the south. The park contains a marina, boat launch, fishing pier, nature center, walking trails, picnic area, and a bathing beach. There are 375 public boat slips and 500 moorings. The area of the park where the mitigation project is proposed is located on the southern side where the marina and boat launch are located. There are two large adjacent parking lots that separate the bathing beach to the north on Long Island Sound and the Marina located on Mount Sinai Harbor. The Bay Constable building and bathrooms are located at the southern end of the parking lot nearest the harbor. Due to the impacts of Hurricane Irene and Superstorm Sandy, among other declared disasters over the years, much erosion and deterioration of the shoreline that protects the aforementioned park facilities has occurred. There is an existing 265' bulkhead located on the harbor side; however, significant erosion of the shoreline adjacent to the bulkhead has lead to the undermining and wash-out of material upland of the existing limits of the bulkhead. There was also significant erosion of the natural sloped shoreline that extends approximately 1,500 feet along the marina parking lot. The erosion of approximately 500 cubic yards of sand threatens to undermine and wash out the parking lot, 11 fixed piers, the boat launch, a 250 sf bathhouse, and a Dock Master's building.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Without taking any mitigation action, additional disasters or surges in the bay will further deteriorate the project site and result in additional damage and expenses in repairing the parking lot.
	2. An alternative to the bulkhead is installing a gabion revetment, however, in order to achieve the height necessary to protect the parking lot, the revetment would extend substantially into the waterway. This alternative would not likely be permitted by the NYS Department of Environmental Conservation. In addition, the revetment would have a shorter service life than the vinyl sheetpile bulkhead.
	3. An alternative project would be to fill the eroded areas with sand and install plantings. This action is not preferred because of continued maintenance of the plants, and the potential requirement to re-establish the planted slope should it becomes eroded during future storms.
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate potential for damage to the parking lot and structures, an approximately 40 foot extension of the existing bulkhead, and stabilization and vegetation of the natural shoreline is required. The

	stabilization of the shoreline would include placement and grading of approximately 500 cubic yards of sand, and planting of approximately one half acre of native tidal and upland grasses and shrubs. This is a common mitigation technique for local shorelines that is an approved and preferred option by the New York State Department of Environmental Conservation and has been successfully completed in other Long Island shoreline communities. The damages reflected below resulted from Superstorm Sandy
Mitigation Action/Project Type	Structure and Infrastructure Project. Natural Systems Protection.
Objectives Met	1, 2, 5, 10, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $35,000
Estimated Cost	$10,785,247.00
Priority*	*Medium*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 290
Mitigation Action/Initiative: Cedar Beach Marina Shoreline Restoration and Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Boat ramp is used by emergency services for launching vessels
Property Protection	1	This will serve to reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to this marina and park area
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding environment, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have an adverse effect on the local environment
Administrative	1	Yes
Multi-Hazard	1	Protection for facilities, emergency services tourism, commercial fishing fleet
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will also stimulate the local economy by employing contractors and helping small area businesses, and serves as a recreation area for residents and visitors alike
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 328
Mitigation Action/Initiative: Amagansett Drive, Sound Beach, New York Drainage Improvements

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storm
Specific problem being mitigated:	In the Sound Beach stormwater drainage area at Amagansett Drive and Shore Drive, the drainage outfall pipe extending from a large bluff and emptying into the Long Island Sound was severely damaged during Superstorm Sandy. When the pipe was compromised, drainage flowed directly onto and destabilized the bluff. The central and lower portions of the existing bluff were in an unstable state and will continue to erode. Any further erosion of the bluff threatens the health and safety of the land which lies entirely landward of mean high water and threatens property damage to the houses located at the top of bluff. Rather than repair the drainage pipe to pre-storm conditions, the Town's consulting engineers have prepared an alternative approach that will mitigate the problem and prevent any further destabilization to the bluff and any further repairs to the outfall pipe in future storms.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. With the no action alternative, the erosion of the bluff will continue and cause further instability which will threaten the private properties and public road near the top of the bluff.
	2. This alternative would be based on not relocating the drainage pipe to the newly constructed Town owned recharge basin. The components would include: A) Leave outfall pipe in current location and do not make positive drainage to the recharge basin, B) Fill in the slope along the bluff, C) Stabilize the bluff, D) Construct stone revetment and steel bulkhead, E) Repair Amagansett road end, F) repair drainage structures. This lower cost alternative is only a short term solution to the problem and would not solve the erosion problem that is being caused by the outfall pipe extending from the bluff.
	3. Another alternative would be to take the following actions, A) Leave outfall pipe in current location and do not make positive drainage to the recharge basin, B) Fill in the slope along the bluff, C) Stabilize the bluff. This alternative would not solve the erosion problem that is being caused by the outfall pipe extending from the bluff.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town intends to remove the existing outfall pipe at Amagansett Drive/Shore Drive and redirect the stormwater to a proposed constructed recharge basin on a Town of Brookhaven owned parcel. A positive stormwater drainage system will be installed on Shore Road, Amagansett Drive and adjoining streets to convey the stormwater to the proposed recharge basin which will require access through private property west of the existing outfall to 240 feet east.

	Engineers have completed a topographic survey and investigatied the feasibility of the project and found: • that a recharge basin with sufficient capacity that allows for the contributing tributary area can be built within the confines of the Town owned property, and • that the elevations and proposed slopes from the low point on Shore Drive to the new recharge basin location will work hydraulically The second phase of the project will be the stabilization of the bluff in order to protect the homes located upland. Shoreline stabilization options are being investigated and designed to prevent any further destabilization to the bluff. The engineers will consider two alternatives that include: 1) construct a bulk head with toe armor, 2) construct a stone revetment.
Mitigation Action/Project Type	Structure and Infrastructure Project.
Objectives Met	1, 2, 5, 11, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing and new
Benefits (losses avoided)	Recent Damages: $509,314
Estimated Cost	$2, 100,000
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, FMA, PDM, Repetitive Loss, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	20 months
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 #: 328
Mitigation Action/Initiative: Amagansett Drive, Sound Beach, New York Drainage Improvements

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 Brookhaven
Number: Sandy HMGP LOI #: 368
Mitigation Action/Initiative: Roe Avenue Mitigation, East Patchogue, NY

Assessing the Risk	
Hazard(s) addressed:	Coastal erosion, flooding, hurricane, Nor'Easters, Severe Storms, Severe Winter Storm
Specific problem being mitigated:	Roe Avenue is a residential roadway in East Patchogue that is orientated north-south. The south terminus of the roadway ends at Patchogue Bay. The end of Roe Avenue has experienced coastal erosion and damage from tidal surges during storm events. The last 50' of asphalt roadway is buckled, sections of guide are dislodged and beach erosion has occurred in the area between the road and Bay. There is limited stormwater runoff structures installed on the west side of the street which often experiences water from Patchogue Bay during significant storms.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. With no action stormwater will continue to damage the roadway. Without stabilization to the beach, coastal storms will continue to erode the beach and the area to the south.
	2. One alternative considered is to construct additional catch basins upstream of the road end and construct a positive drainage system along Roe Ave. to discharge through an outfall pipe directly to Patchogue Bay. Approximately 100 linear feet of bulkhead would need to be constructed to protect the road end from future damage. While this alternative conceptually would achieve the same goal bio-retention area, it doesn't improve storm water quality discharge and there will difficulties with the means and methods of construction due to high water table as well as difficulties with permitting prohibit this alternative from being a viable option. A conceptual cost budget for this alternative is $450,000.
	3. Another alternative considered is to reconstruct the road end and construct gabions to the shoreline to act as an energy dissipater for the storm water entering Patchogue Bay. While this alternative conceptually would achieve the same goal bio-retention area, it doesn't improve stormwater quality discharge and this alternative would result in additional annual maintenance to the gabions. A conceptual cost budget for this alternative is $200,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate the flooding associated when a storm occurs or when historic tidal surges happen; the Town is proposing to remove a portion of the road end and perform drainage improvements within the Town's Right-of-Way. The drainage improvements include new leaching pools to collect runoff flowing south to the water way, and a new bio-retention drainage basin at the southern terminus of the road. The bio-retention area will naturally control runoff and detain storm / tidal surge. In addition to drainage improvements, limited revetment is proposed along the shore to stabilize the transition between the bio-retention area and the shore.

Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 5, 15,16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures
Benefits (losses avoided)	Recent Damages: $33,900
Estimated Cost	$143,300
Priority*	*Medium*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; FMA, PDM, Repetitive Loss Grant Program, Town capital Budget for Local Match
Timeline for Completion	20 months
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 #: 368
Mitigation Action/Initiative: Roe Avenue Mitigation, East Patchogue, NY

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	This will serve to reinforce and harden structure at this location
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to this roadway
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required un HMGP
Environmental	1	This project will help lessen damage to this site and the surrounding environment, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have an adverse effect on the local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and also stimulate the local economy by employing contractors and helping small area businesses
Total	12	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 369
Mitigation Action/Initiative: Elevation of the Gamecock Cottage at West Meadow Beach Historic District

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storms
Specific problem being mitigated:	The Gamecock Cottage is located in Stony Brook in a Town Park at the southernmost end of the West Meadow Beach peninsula. Specifically, the cottage is located at Shipman's Point between Smithtown Bay and West Meadow Creek. Shipman's Point as well as the Gamecock Cottage is owned and maintained by the Town of Brookhaven. The entire peninsula was added to the National Register of Historic Places on October 28, 2004. Although owned by the Town, the cottage is operated under a stewardship agreement with the non-profit community organization known as the Three Village Community Trust. The site is used for ecological and historical educational programs. After the restoration/elevation project, the Town and the Three Village Community Trust will enter into an agreement so that the Trust can operate Town-wide programs from the building. The cottage is a historic structure and placed on the National Register of Historic Places in 2007. The cottage was built in 1876 for William Shipman and was one of four structures located at the point built for the Shipman family over the years. Supported by locust wood posts, the building weathered 130 years of storms, high tides and hurricanes and is the lone survivor of the four structures situated on the peninsula. Fashioned in the Gothic Revival style, the cottage is rectangular, one and one-half story building with a front gabled roof and a four-sided wooden cupola located in the center of the ridge line. The building is approximately twenty feet five inches long, and twenty five feet, five inches wide. Mitigation at the structure will provide a future level of protection for this cultural and historic resource. The cottage is situated in a tidal flood plain. Its first floor elevation is below the current FEMA flood plain elevation requirements. As such, the first floor is subject to periodic flooding due to storm related tidal surges causing minor damage, such as to the floorboards. There is also concern that continued storm surges may ultimately destabilize the entire structure.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action: Without elevating the structure, the building will be prone to additional flooding in future disasters. Eventually, the building will be lost and a historic and cultural resource for the community will be lost.
	2. Relocating the structure out of the floodplain to some other area of the

	Town may be a practical alternative. However, the building is part of the Tree Village Historic District and it may be impractical to find a new location with the district.
	3. Flood proofing the building would not be practical at its current low elevation. It would not prevent future damages to the building and the alterations required may not be consistent with the U.S. Department of Interior's Standards for Historic Preservation.
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate the aforementioned problem, the Town is proposing to elevate the structure on a pile supported foundation that meets or exceeds the current FEMA Flood Plain Elevation. The increase in elevation will help to mitigate further damage that may be caused by future severe storms. The elevation costs which include the construction of a new foundation, raising the building, reconnecting previously installed water and sewage systems by the Town, and providing associated site improvements, including ADA accessibility, will be less than the cost to replace the possible loss of the entire structure, especially considering its historical value.
Mitigation Action/Project Type	Structure and Infrastructure Project (SIP)
Objectives Met	1, 2, 3, 15 & 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $40,000
Estimated Cost	$588,250
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County All-Hazard Mitigation Plan
Potential Funding Sources	HMGP; FMA, PDM, Severe Repetitive Loss. Town Capital Budget for Local Match
Timeline for Completion	18 months
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 #: 369

Mitigation Action/Initiative: Elevation of the Gamecock Cottage at West Meadow Beach Historic District

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 Brookhaven
Number: Sandy HMGP LOI #: 425
Mitigation Action/Initiative: Flood & Damage Prevention at Webby's Beach, East Moriches, NY

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Nor'easters, Hurricanes, Severe Storms, Severe Winter Storm
Specific problem being mitigated:	Webby's Beach is located adjacent to the Moriches Bay in East Moriches, New York and is owned and maintained by the Town of Brookhaven. The property is located in a residential area and bordered by Lara Lee Drive to the north and to the east by Belleview Drive. The park property consists of beach frontage along the Bay and a vegetated sand dune along its northerly boundary adjacent to Lara Lee Drive. A playground is located at its eastern extremity. The dune provides the necessary shoreline stabilization that protects the beach from erosion and prevents the flooding of Lara Lee Drive and the adjoining residences. In addition, the flooding of this area limits vehicular access to the residential area to the west. Storm events causing the erosion of the beach, breach of the dune and the associated flooding had been occurring for many years prior to Hurricane Irene. In order to address this situation, the Town, with support from the US Army Corps of Engineers (USACOE), initiated a short-term shoreline stabilization project in the winter/spring of 2011, rebuilding the beach and constructing a vegetated dune. The USACOE made available 5,600 c.y. of dredged material from their project at Cupsogue Beach. Unfortunately, the project area was once again breached during Hurricane Irene and subsequently rebuilt only to be destabilized by Hurricane Sandy. As a result, property owners who have suffered from flood damages may have received reimbursements under the National Flood Insurance Program (NFIP) both for property damage and contents of the dwellings. This will be investigated on an on-going basis. The major storms such as Tropical Storm Irene (DR 4020) beginning on 8/26/11, and Superstorm Sandy (EM 3351) beginning on October 27, 2012 created excessive damage to the beach and the private properties. Due to the low-lying nature of the area, there are limited drainage options that can reduce flooding and provide protection to the beach and the upland private properties. There are also limited shoreline stabilization options given the presence of existing wetlands on-site and the desire to maintain the long-term use of the site as a beach, and prevent the flooding of the adjacent road and properties.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action – This alternative will allow for continued damages to the beach, Laura Lee Drive, and flooding to some of the private properties located north of the road. The town forces would have to rebuild the dune after most disasters.

	2. Install Wave Attenuation Devices. The devices cause waves to break in open water instead of at the beach. There are no such devices used on long Island at this time. This alternative is more costly and would require an extensive environmental review.
	3. Construct a low sill bulkhead aong the western half of the beach shoreline which would provide some wave attenuation. Alone with beach planting and dune stabilization, the alternative may not prevent scouring to the area east of the proposed low sill bulkhead and would restrict the usable sandy beach on the eastern portion as well. The costs for the low sill bulkhead are estimated to be $410,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town had previously retained an engineering and environmental planning firm who investigated the exiting site conditions, the extent and quality of vegetated wetlands, vegetated uplands, apparent high and low water locations, adjacent bulkheads, scour areas, shoreline topography, current bathymetry, and the historic shoreline locations. The existing elevations at the site are below the Base Flood Elevation for the area and, therefore, there are limited drainage options. Short-term solutions have not proven to be effective. A long-term stabilization plan being considered to address the flooding and subject of a HMGP application is the replacement of the current vegetated sand dune with one that incorporates Geotube technology. Geotube technology has been successful in protecting shorelines from erosion and has been used successfully to mitigate erosion and property damage. The process includes the following: a large tube made of specially engineered textile filled with sand and used as the core of a constructed sand dune. When heavy surges in the bay occur, the tube will hold the sand in place preventing beach erosion and a dune breach that would flood Lara Lee Drive. This alternative may require periodic beach nourishment depending on storm events. The project would also provide for the re-nourishment of the beach and the re-establishment of a vegetated sand dune. It is anticipated that periodic beach/dune maintenance would be minimal due to a reduction in shoreline erosion and flooding.
Mitigation Action/Project Type	Natural Systems Protection (NRP) and to some degree Structure and Infrastructure Project (SIP) regarding the installation of the Geo-Tube.
Objectives Met	1, 5, 15,16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $280,938
Estimated Cost	$318,300
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan

Potential Funding Sources	HMGP; FMA, PDM, Repetitive Loss Grant Program. Town of Brookhaven Capital Budget funding for Local Match
Timeline for Completion	20 months
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 #: 425
Mitigation Action/Initiative: Flood & Damage Prevention at Webby's Beach, East Moriches, NY

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 Brookhaven
Number: Sandy HMGP LOI #: 450
Mitigation Action/Initiative: Hazard Mitigation, Disaster Recovery and Business Continuity Plan for the Town of Brookhaven

Assessing the Risk	
Hazard(s) addressed:	This project will improve the Town's ability to mitigate risks and potential damage from and respond to the following hazards: • Coastal Erosion • Drought • Flooding (riverine, flash, coastal, and urban flooding) • Groundwater Contamination (natural) • Hurricane (tropical cyclones, including tropical storms and tropical depressions) • Infestation (Asian Longhorn Beetle, Lyme Disease and West Nile Virus) • Nor'Easters (extra-tropical cyclones, including severe winter low-pressure systems) • Severe Storms (windstorms, thunderstorms, hail, lightning and tornados) • Severe Winter Storm (heavy snow, blizzards, ice storms) • Shallow Groundwater • Wildfire • Expansive Soils • Other
Specific problem being mitigated:	The Town of Brookhaven is seeking $350,000 in grant funds in order to hire a qualified consulting firm to compile a hazard mitigation, disaster recovery and business continuity plan for each of the following: • The 451-Town Call Center, which is the primary interface for constituents to contact the Town • The disaster-related operations of the Town's Highway Department including snow plowing, removal of ice hazards and downed trees and unblocking clogged storm drainage infrastructure • The highest priority/essential operations of and services provided by the Town's Division of Information Technology The recent hurricanes Irene, Lee and Sandy and Superstorm Nemo all had an adverse impact on Town operations. Many of the Town's operations were shut-down and the impact on the health and safety of constituents was significant, especially during Sandy and Nemo, when the Town suffered both extended power and network outages. With this grant application the Town is moving to proactively assess, analyze and plan for the implementation of solutions to ensure that the Town's highest priority operations can function in the event of a disaster or other unforeseen

	interruption to normal business operations.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action - If the Town's technology and supporting power infrastructure is left as is it can be expected that the electric power, network, and internet outages that have caused loss and/or damage in the recent past will continue to occur. This will prevent Town government from being able to effectively and proactively prepare for, effectively respond to and efficiently recover from any disaster or other unexpected interruption of service. The Town does not want to experience the negative impacts of known hazards again.
	2. The first feasible alternative considered was to broaden the scope of the project to include all of Town government. Specifically, this scope will cover all of the following entities in technology-centric hazard mitigation disaster recovery and business continuity planning effort: • Office of the Supervisor: - 451 Call Center - Information Technology - Personnel - Purchasing - Public Information - Office of Management and Budget - Board of Ethics - Central Reproduction & Mailing - Economic Development - Supervisor's Office • Highway Department - Highway Snow Removal - Traffic Safety - Highway Machinery - General Highway Repairs - Highway Administration - Permanent Highway Repairs - Ecology Center • Department of Public Safety • Department of Building and Fire Prevention • Department of Finance (includes the Comptroller) • Department of Waste Management • Department of Housing and Human Services • Department of Planning, Environment and Land Management • Department of Law • Department of Parks and Recreation • Office of the Receiver of Taxes • Office of the Town Clerk • Department of Parks, Recreation & Sports and Cultural Resources • Department of the Assessor • Board of Zoning Appeals • Office of the Town Council The project activities specified for the primary project being applied for would all be performed if this alternative was chosen. Likewise, all of the work products specified for the primary project would be generated and delivered.

	The cost to complete this scope of work is estimated at $730,000.
	3. The second feasible alternative considered was to use the original scope of the project envisioned when the LOI was submitted. This scope is focused on performing a technology-centric hazard mitigation disaster recovery and business continuity planning effort for only the following Town entities: • Office of the Supervisor: - 451 Call Center - Information Technology • Highway Department: - Highway Snow Removal - Traffic Safety - Highway Machinery - General Highway Repairs The project activities specified for the primary project being applied for would all be performed if this alternative was chosen. Likewise, all of the work products specified for the primary project would be generated and delivered. The cost to complete this scope of work would be $200,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The project will involve the following activities: This project will create a Technology-centric Hazard Mitigation, Disaster Recovery (DR) and Business Continuity (BC) Plan document for the specified Town departments. The plan will include the following components: Section 1 – Disaster-Related Needs and Risk Assessment - Documentation of departmental roles, responsibilities, operations, functions, services provided and resources - Inventory and assessment of existing technology infrastructure - Risk assessment by function - Determination of recovery time objectives (RTOs) and recovery point objectives (RPOs) by function Section 2 – Priorities, Recovery Strategies and BC/DR Solutions Design - Business continuity and disaster recovery priorities by function - Recovery strategies by function - Design of solutions to enable the function-specific RTOs and RPOs to be met - Resource gap analysis to define what additional infrastructure and work is needed - Hazard mitigation recommendations Section 3 - Phased Hazard Mitigation and Implementation Plan, DR procedures and BC Plan - Phased work plan and schedule to perform hazard mitigation action items and implement the recovery solutions - Specification of items to be procured and the associated costs - Disaster recovery procedures by function - Business continuity plan by function

	Section 4 - Tests and Exercising - Test scripts and load tests by function - Plan for conducting tests and exercises The technology-centric approach to this effort means that the Project Team will ensure that the network, computer hardware, software, data and communications needs of each business function will be provided for in accordance with the Town's priorities and the current and expected future availability of resources. Note: standby power for Town Hall and other Town government locations are being addressed in other HMGP grant applications that are being submitted in parallel with this one. It is expected that, if both grants are awarded, the projects will need to be coordinated so that the Plan developed for this project accurately reflects and factors in the availability of electric power during and after a disaster strikes. The project would be focused on the following Town Departments that the Supervisor's Office has found historically need to be up and running either during or shortly after a disaster strikes: • Office of the Supervisor: - 451 Call Center - Information Technology - Personnel - Purchasing - Supervisor's Office • Highway Department - Highway Snow Removal - Traffic Safety - Highway Machinery - General Highway Repairs - Highway Administration - Permanent Highway Repairs • Department of Public Safety • Department of Building and Fire Prevention • Department of Finance (includes the Comptroller) • Department of Waste Management • Department of Housing and Human Services • Department of Law • Department of Parks and Recreation
Mitigation Action/Project Type	Local Plans and Regulations (LPR)
Objectives Met	12. Develop or improve early warning emergency response systems and evacuation procedures. 14. Seek to integrate/coordinate all phases of Emergency Management within the planning area.
Applies to existing structures/infrastructure, future, or not applicable	Not applicable
Benefits (losses avoided)	Recent Damages: $1,841,076
Estimated Cost	$350,000
Priority*	

Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	
Potential Funding Sources	HMGP; _____ for Local Match
Timeline for Completion	44 weeks
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 #: 450

Mitigation Action/Initiative: Hazard Mitigation, Disaster Recovery and Business Continuity Plan for the Town of Brookhaven

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide improved ability for Town resources to respond to any disaster which should thereby enable the Town to better protect lives and reduce injuries
Property Protection	1	This project will improve pre-event planning and optimize Town's ability to respond and thereby reduce the potential for damage to structures and infrastructure
Cost-Effectiveness	1	Yes
Technical	1	This will provide long term ability for the Town to better respond to disasters
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	None, not applicable
Social	1	No, no
Administrative	1	Yes
Multi-Hazard	1	The project will provide a plan that will improve the Town's ability to mitigate, respond to and recover from multiple hazards
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a significant capital improvement to the Town, and will also stimulate the local economy by employing workers and helping small area businesses
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 467
Mitigation Action/Initiative: Sills Gully Road Outfall, Sound Beach, NY

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storms
Specific problem being mitigated:	The Sills Gully Road outfall in Sound Beach, New York is located at the northern end of Sills Gully Road, off Briarcliff Road. The cul-de-sac has a beach access with a parking lot allowing public access to the beach area. The outfall consists of two pipes which discharge through a stone-filled gabion wall onto the Long Island Sound beachfront. The gabion walls, which provide slope stabilization and energy dissipation, and extend across the width of the Town of Brookhaven's right of way where the outfall is located. The area is surrounded by bluffs on both sides of the gabion wall. Access to the beach is provided by a wooden deck and stairs. The various damages to the outfall and the site are noted below. These items need to be replaced in order to protect the outfall structure from further damage and to ensure that the Long Island Sound Estuary is protected from harm. 1. At the northeast end of the outfall, there is a significant erosion and loss of vegetation of a bluff. Additionally there is a lot of debris that accumulated near the bluff during the storm. 2. Gabions on the northeast side of the outfall have shifted and no longer offer the necessary protection that they are designed to provide. 3. Cracking of concrete and asphalt pavement has been observed as well as an erosion of the sub-base by the Superstorm Sandy storm surge. 4. There is a significant amount of erosion of the bluff on the northwest end of the outfall, exposing the wooden deck and stairs that provide access to the beach. Debris accumulation is also evident at this location. 5. There is an evident shifting of the gabions on the northwest side of the site. The gabions have been dislocated and disfigured which compromise the erosion protection of the area. 6. In multiple locations, the gabion baskets have been damaged. There is significant debris accumulation throughout the length of the gabions and evident blockage of the outfall pipes is observed.

	Specifically the following quantities of materials were lost: Hurricane Sandy damaged the existing bluff and structures at Sills Gully Road. The damaged areas where significant erosion occurred were below the deck and access stairs, in front of the deck, and access stairs, and both the northeast and northwest ends of the outfall site. The sand which was washed away under the deck measures approximately 25' x 25' x 12' or 7,500 cubic feet. The sand which was washed away in front of the deck measures approximately 6' x 6'x12' for a total of 900 cubic feet. The total amount of sand which was washed for both the northeast and northwest end of the outfall measures approximately 10' x 20' x 12' for a total of 2,400 cubic feet. Therefore, the total damage due to erosion is approximately 450 cubic yards. The two side slopes of the northeast and northwest of the outfall were vegetated with beach grass for an approximated area of 10' x 20' for a total of 200 square feet of missing beach grass. The existing gabions were also damaged and measured approximately 3' x 3' x 3'. The baskets were PVC coated wire mesh and filled with stone. Throughout the entire gabion system there were damages and shifted gabions. The average height of the gabions was approximately at 6' and the area was approximately 36' x 36'. Each gabion basket is 3' in width which results in 12 rows of gabions. Therefore, 12 rows of gabions each 36' in length were damaged for an approximated total of 475 linear feet. The damaged concrete slab measured approximately 20' x 10' x 1'. Therefore, the approximate damaged quantity is 10 cubic yards of concrete. The approximate area of damaged asphalt is 75' x 45' which results in approximately 100 tons of damaged asphalt. In addition, the outfall pipes have been clogged due to sediment and debris from the hurricane. The approximate length required to fully clean the pipe is estimated to be 200 linear feet.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. In the no action alternative, the roadway end will continue to destabilize. The bluff will continue to deteriorate, and the outfall pipe will become further damaged and the gabion walls will not be effective.
	2. One alternative considered is the construction of a recharge basin in the upland areas of Sills Gully Road. This alternative would include clearing of approximately 1.5 acres of wooded land, construction of a recharge basin, and a new stormwater collection and piping system to direct stormwater to the recharge basin. The slope stabilization efforts of the preferred project would be incorporated into this alternative as well. This is not the preferred alternative due to the cost of the project. The conceptual cost budget estimate for this alternative is $2,500,000.
	3. An alternative considered for this site is to construct an underground stormwater leaching system to handle a 100 year storm. The leaching

	system would be constructed beneath the existing public parking lot. This project would include removal of existing paving, construction of new leaching pools and piping, backfill, and paving. The slope stabilization efforts of the preferred project would be incorporated into this alternative as well. This is not the preferred alternative because of the project cost. The conceptual cost budget estimate for this alternative is $1,500,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The selected mitigation plan that will reduce risk for future storms will be the construction for a steel bulkhead. This is the most logical investment for the Town in regards to long term protection. Although, the initial cost to construct a bulkhead will be higher than replacing and repairing gabions, the bulkhead will serve as the foundation for this community's long term strategy to break the cycle of disaster damage. The bulkhead will not only have a longer life span, but it will better protect property from future disasters. In addition to fortifying this site, stormwater improvements will also be implemented as part of the project. This is due to comply with Tidal Wetlands and Clean Water Act permits. The project will completely remove the ineffective gabion walls and replace them with approximately 120 feet of steel bulkhead with stone toe protection to protect against scour. The bulkhead will protect the areas of the bluff which have experienced dangerous levels of erosion. The existing deck has been exposed and is no longer structurally sound. The proposed bulkhead will provide better protection to the bluffs and existing structures. In addition, the bulkhead will match the existing adjacent steel bulkhead and not protrude further than the existing gabion wall. The project includes upgrades to the existing stormwater system in order to prevent direct runoff into the long Island Sound. Currently, during large storm events, polluted stormwater runs directly through the site and onto the beachfront. There will be a new bio-retention area constructed where stormwater naturally collects. In addition, a rip-rap lined swale will be constructed along the length of the parking lot to collect the remaining runoff. These upgrades will ensure that stormwater that may carry various pollutants is not directly entering Long Island Sound.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 5, 11, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $268,199
Estimated Cost	$828,200
Priority*	
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional All-Hazard Mitigation Plan
Potential Funding Sources	HMGP, FMA, PDM, Repetitive Loss Grant Program, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	22 months
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 #: 467
Mitigation Action/Initiative: Sills Gully Road Outfall, Sound Beach, NY

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 Brookhaven
Number: Sandy HMGP LOI #: 469
Mitigation Action/Initiative: Hallock Landing Road Outfall, Rocky Point, NY

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter storm
Specific problem being mitigated:	The Hallock Landing Road outfall in Rocky Point, New York is located at the northern end of Hallock Landing Road in the Town of Brookhaven. There are three 30-inch diameter outfall pipes which discharge through a stone-filled gabion wall onto the Long Island Sound beachfront. The gabion walls, which provide slope stabilization and energy dissipation, extend across the width of the Town's right-of-way. Access to the beach is provided via a concrete ramp to the western side of the gabions or via a path around the eastern side of the gabions. The gabion wall is fenced on the east side alongside a bluff. The entrance ramp to the site is restricted by bollards to prevent traffic from damaging the gabion wall and the outfalls. On the west side of the outfall, there is a stone retaining wall and a bulkhead. The damage assessment is as follows: • The stone retaining wall is missing blocks as a result of a storm surge. There is a significant debris accumulation of stone from the retaining wall, as well as other storm debris that needs to be removed. • There is significant erosion behind the stone retaining wall as a result of Sandy storm surge. This condition may compromise the structural stability of the retaining wall. • On the east end of the retaining wall, there is significant erosion damage to the bluff with soil washouts and loss of vegetation. There is also debris accumulation in the area and damage to the chain link fence along the bluff. • Near the entrance to the site's ramp, protective bollards have shifted and cracks and potholes in the asphalt have been recently observed due to storm events. • The concrete ramp on the south side of the retaining wall, has significant cracks caused by Superstorm Sandy and the washout of soil underneath the concrete ramp during the storm. • The gabion wall has been significantly destroyed in multiple locations; Gabion baskets are disintegrated, disfigured or ripped apart. Near the bluff on the east end of the gabion wall, the gabions have collapsed. • There is extensive debris accumulation on the gabion wall system which blocks the outfall pipes. The debris is a result of an accumulation of storm surge wreck as well as pieces of destroyed gabion baskets in the area. Additionally the headwall for the outfall pipes has washed away causing outfall pipe destabilization.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of	1. The no action alternative will allow storm surges to further damage the shoreline and the public beach. The gabion wall system will be

project and reason for not selecting):	compromised and further erosion of the bluff and the stairwell will be damaged. The road end will remain in disrepair and prevent safe access to the beach.
	2. An alternative considered is to acquire approximately five private residential lots for the purpose of creating a stormwater recharge basin and eliminating the outfall pipes to the Long Island Sound. This alternative would include acquisition of private land, demolition of houses and accessory structures, construction of a new stormwater collection system along Hallock Landing Road, and creating a stormwater recharge basin. The alternative would also include demolition of the existing outfall pipes and restoration of the shoreline. This alternative is not preferred because of the cost, time, and potential litigation associated with private land acquisition. A conceptual cost budget for this alternative is $3,000,000.
	3. Another alternative considered is to install approximately 100 linear feet of steel sheetpile bulkhead in lieu of a stone revetment. This alternative would serve a similar purpose to the stone revetment, however it is not the preferred alternative due to potential permitting issues associated with construction of the bulkhead. All other aspects of the preferred project would remain in this alternative design. A conceptual cost budget for this alternative is $900,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The proposed mitigation improvements are as follows: Engineers have evaluated the site and have determined the most cost-effective solution for risk reduction and to improve the durability and effectiveness of the site and reduce disaster losses in the future. The key aspect of the mitigation project will be to construct a stone revetment, along the bluff. Although the initial cost to construct a stone revetment will be higher than replacing and repairing gabions, the stone revetment will have a longer life span and better protect property from future disasters. In addition, stormwater improvements will also be implemented as part of the project. This is due to the necessity of complying with Tidal Wetlands and Clean Water permits. The project will completely remove the ineffective gabion walls and replace them with approximately 100 feet of stone revetment. The stone revetment will protect the areas of the bluff which have experienced significant erosion. Furthermore, the stone revetment will be constructed further landward than the existing gabions and concrete ramp. In addition, the concrete ramp will be removed and a new concrete ramp will be constructed further east away from the proposed outfall and further landward than the existing ramp. A new walkway for pedestrians utilizing permeable pavement will also be constructed. The mitigation project includes upgrades to the existing stormwater system in order to prevent direct runoff into the Long Island Sound. The system will have its capacity increased to prevent storm surges. Currently, during larger storm events, the system is unable to handle the flow. Consequently, stormwater surge will occur through the manholes and flow into Long Island Sound. In addition to improving the current systems capability, a rip-

	rap lined swale will be constructed as further protection during major storm events. These upgrades will ensure that polluted stormwater is not directly entering the Long Island Sound.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 5, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $289,386
Estimated Cost	$843,300
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, PDM, FMA, Repetitive Loss Grant Program, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	22 Months
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 #: 469
Mitigation Action/Initiative: Hallock Landing Road Outfall, Rocky Point, NY

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 Brookhaven
Number: Sandy HMGP LOI #: 470
Mitigation Action/Initiative: Riverhead Drive, Sound Beach, New York

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storm
Specific problem being mitigated:	The Riverhead Drive outfall in Sound Beach, New York is located at the northern end of Riverhead Drive between Shore Drive and Thomas Road in the Town of Brookhaven. The outfall is structurally integrated with the bulkhead along a 40 ft. high and approximately 25 ft long bluff. There are gabion walls which provide slope stabilization and extend across the width of the right-of-way. There is one 30-inch diameter HDPE pipe which discharges through a vinyl-sheeting bulkhead onto a stone revetment and onto the Long Island Sound beachfront. The outfall is used for discharge of the stormwater from nearby communities and is characterized by high volume and high flow due to the geography and surface features of the area. The bluff contains beach grass but remains susceptible to erosion due to steep slope and proximity to high storm surge. After Super Storm Sandy, the beach has been closed to the public, and the safety of the walking area along the bulkhead has been limited. The damages to the site are as follows: 1. Wooden planks are missing throughout the 350 ft. length of the bulkhead. The missing planks are due to high storm surge and strong current during the Superstorm Sandy. 2. In multiple locations, there is significant erosion behind the bulkhead that was caused by the Sandy storm surge. Structural stability of the bulkhead may be compromised. 3. At multiple places throughout the length of the bulkhead, there are shattered/broken wood beans along the face of the bulkhead. This damage could compromise the structural integrity 4. There is extensive erosion of bluff along the east end of the bulkhead. There is a significant loss of soil and vegetation required to stabilize the slope, protect the bluff from erosion and protect adjacent properties from damage. 5. The concrete ramp on the south side of the retaining wall has significant cracks caused by the Superstorm Sandy and the washout of soil underneath the concrete ramp during the storm.

	6. Significant erosion of the bluff is also evident along the west end of the bulkhead. There is a significant loss of soil and vegetation required to stabilize the slope, protect the bluff from erosion and protect adjacent properties from damage. Specifically, the following took place and quantities of lost materials were estimated: The effect of Hurricane Sandy was that sea water overtopped the existing 10 foot high vinyl/wood bulkhead and washed away a few sections of the steep slope earth above the bulkhead. This occurred just west of the existing gabion section for a distance of approximately 138 feet long by about 18 feet deep by about 10 feet in height into a 1 on 1.5 side slope that was washed away from the site. The quantity of existing eroded earth material on the west side equaled 12,450 cubic feet or 462 cubic yards. This also occurred on the east side of the existing gabion section for approximately 36 feet in length by about 28 feet deep and 18 feet in height on into the 1 on 1.5 slope that was eroded away. The approximated total is 900 cubic yards of select earth fill. These two side slopes were vegetated with existing beach grass on the west side of the existing gabion structure and 36 feet x 28 feet or 1,008 square feet of beach grass on the east side. The approximated total is 3,500 square feet of beach grass. The sand layer that was behind the top of the bulkhead was also washed away for the full length of the bulkhead for a distance of 280 feet by average width range from 4 feet to 18 feet by about 1 foot deep. This equates to 3,080 cubic feet. The approximated total is 200 cubic yards of selected fill. The hurricane also damaged and removed about one quarter of the top cap boards which are about 2 feet wide located and screwed into the top of the existing bulkhead. It is assumed that there is approximately 300 square feet of wood cap board replacement necessary to bring the condition back to normal, pre-storm event.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. By taking no action, future storms will create additional damage to the bulkhead, erosion behind the bulkhead and continued erosion of the bluff to the point which may endanger the private properties adjacent to the site and located landward side of the bluff.
	2. One alternative considered is to replace the gabion with a steel sheetpile bulkhead. While this alternative conceptually would achieve the same goal as the gabion, difficulties with the means and methods of construction as well as difficulties with permitting prohibit this alternative from being a viable option. A conceptual cost budget for this alternative is $750,000.
	3. An alternative considered is to eliminate the gabion and re-grade and terrace the slope. This alternative would include substantial re-grading, terracing, and planting. Though it would eliminate the gabion, the long term stability of the slope would be uncertain. This alternative would result in additional annual maintenance beyond the preferred alternative to maintain

	the slope's stability. A conceptual cost budget for this alternative is $600,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The major aspect of the project involves extending the length of the area that the gabions protect. This action was determined by the Town's engineering consultants as the most cost-effective solution for risk reduction. Although the cost of extending/adding gabions will be higher than replacing and repairing the gabions "in-kind", the additional gabions will serve as the foundation for this community's long-term strategy to break the cycle of disaster damage. Areas which are currently protected by gabions did not experience damage from the storm. These additional gabions will better protect the property from future disasters. The project will extend the gabion walls in order to protect the areas of the bluff which have experienced significant erosion and will stabilize the toe slope. Furthermore, the existing bluff will be reestablished and fortified with jute mesh and beach grass. Eroded areas behind the existing bulkhead shall be stabilized with additional fill. In addition, the project will include repairs to the cap of the existing bulkhead. In order to eliminate openings/gaps in the cap, missing wood planks will be installed.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 5, 11, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $141, 150
Estimated Cost	$364,500
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, FMA, PDM, Severe Repetitive Loss, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	20 months
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 #: 470
Mitigation Action/Initiative: Riverhead Drive, Sound Beach, New York

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 Brookhaven
Number: Sandy HMGP LOI #: 476
Mitigation Action/Initiative: Brookhaven North Shore Properties - Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion
Specific problem being mitigated:	The Town of Brookhaven spans the entire width of Long Island sharing both north and south coastlines. As a result of Super Storm Sandy many north shore properties (Shoreham Beach to Mount Sinai Harbor) experienced damage as a result of soil erosion and severe stormwater runoff. While many road endings (right-of-way) are maintained by the Highway Department, many other municipal properties have impacted adjacent private properties and right-of-ways. One of the main contributors to the problem is the instability of the toe of bluff along most of the north shore coastline. During these storm events which consist of high tidal surges, many areas of the bluff are eroded at the bottom of the slope and cause major collapses to the upper slope and features in proximity of the bluff. Many properties and roadways are impacted by properties that are adjacent (east-west) of the actual parcel or roadway. When the bluffs collapse soil and vegetation is removed leaving the areas even more prone to further deterioration. The Town spends its resources protecting these parcels and maintaining the stormwater runoff each year.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action. (This will allow more erosion to occur, increasing the likelihood of property and roadway damage.)
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate these problem areas along the twelve-mile section of the Town of Brookhaven (Shoreham to Mount Sinai), the following measures have been proposed; coastal hardening to strengthen the toe of bluff, upland installation of stormwater runoff collectors, erosion and sediment controls along the bluff areas (native vegetative plantings, geotextile "jute mesh" coverings and geogrid slope reinforcement solutions) and removal of features that are detrimental to slope stability during storm events. To mitigate the existing deteriorating condition. Wave run-up calculations will be made to determine the elevation of the top of the proposed shoreline protection system and the area above the proposed coastal hardening features (bulkhead, stone revetment). By protecting these areas in a manner that can withstand future damage, the cost to repair/replace private property and roadways is decreased.
Mitigation Action/Project Type	Structure and Infrastructure Project

Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	Recent Damages: $1,000,000
Estimated Cost	$1,000,000
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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 #: 476
Mitigation Action/Initiative: Brookhaven North Shore Properties - Hazard Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provides emergency access
Property Protection	1	Will reinforce and harden structures at this location
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to this stretch along Brookhaven's North Shore
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This will help lessen damage to this site and surrounding environment, and the Town will comply with all regulations
Social	1	This project will help limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	13	
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 Brookhaven
Number: Sandy HMGP LOI #: 1747
Mitigation Action/Initiative: Purchase of a Generator for Town Parks Administration Building

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Drought, Flooding, Hurricane, Infestation, Nor'Easters, Severe Storms, Severe Winter Storms, Wildfire.
Specific problem being mitigated:	Based on the quantity of the Town's parks and recreational facilities, the installation of a generator for the Parks Administration Building in Centereach is a priority. Based on the size of the Town and the demand for emergency services during disaster events, the need for a generator at the Town Parks facility is crucial. There are many resources located within the Town's jurisdiction where a level of safety and protection is required during a major disaster. These resources include both public and private facilities and infrastructure. The number and type of public resources with the Towns jurisdiction include 2,100 miles of Town highways, 36.1 square miles of parkland consisting of 20 parks, 20 beaches, 10 community centers, 14 marinas and docks, 10 boat launching ramps and an aquatics center. Other municipal facilities include a large Town Hall, a highway department facility located in Coram and various Highway yards, and an animal shelter. In addition there are many privately owned resources located in the Town that depend on the Town for providing a level of protection and safety during major disasters. The Town Parks Department personnel and field crews assist the Highway Department and Public Safety Departments in emergency service operations in clearing debris and opening of roads. Tight coordination occurs between the Supervisor's Office, and the Public Safety Department at Town Hall in Farmingville, the Highway Department located in Coram, and the Parks Department Administration building located in Centereach where direction can be given to assign field crews to supply back-up trucks and other equipment to assist in town wide emergency operations. These emergency services include the following: • Debris removal and road openings • Temporary closure of roads and redirecting traffic • Rescue operations for residents including: senior citizen, disabled and other residents living in flood prone areas. • Tree Removal in Town right of way where fallen trees threatened the safety of pedestrians, property owners, and businesses. • Fire and Building Code issues where structural safety is an

	issue • Coordinate Traffic Light Failures where personnel are needed to direct traffic • Coordination with School districts for the use of facilities for EVAC • Notify Suffolk County with problems on their roads such as traffic light failure Installation of a generator, will allow for the continuity of government operations during periods of disasters. It is crucial to the welfare, health and safety of the community that it represents. The communication between Town departments located throughout the large area of the Town keeps this continuity intact.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Without generator power for crucial facilities, the Town will have difficulty in managing and carry out operations in any natural disaster during power outages. Recovery services, including road closings and rescue attempts could be interrupted without direction and coordination from Town staff. Knowledge about residents seeking help or reporting incidents to the Town would be prevented in the event of power failure.
	2. In lieu of an onsite generator a second primary electric feed could be installed to the building. This alternative is not preferred because should the entire electrical grid be out of service the building will be without power. The project cost for this alternative is estimated at $200,000.
	3. In lieu of an onsite back-up generator an alternate power system could be installed to serve the entire building off-grid. A co-generation, fuel cell, or solar system could be installed. This option is not preferred because of the cost and complexity of installing and maintaining the system. A cost estimate is $1,000,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The preferred project to provide stand by power at the Parks Administration Building is to install a new natural gas engine generator in a weatherproof enclosure outside of the building. The new 100 KW generator will be installed in a landscape area near the existing utility transformer. Electrical feeders from the generator will be extended into the Building's utility room through an existing spare underground conduit that was installed during the Building's construction. A new automatic transfer switch will be installed in the utility room adjacent to the electrical service entrance equipment. A new natural gas service for the generator will be installed, and it will consist of a new tap of the gas main in the roadway, and a new gas meter for the generator.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 3, 12, 13, 14, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing

Benefits (losses avoided)	Recent Damages: $38,522,905
Estimated Cost	$148,750
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, PDM, Town of Brookhaven for Local Match
Timeline for Completion	22 Months
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 #: 1747
Mitigation Action/Initiative: Purchase of a Generator for Town Parks Administration Building

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 Brookhaven
Number: Sandy HMGP LOI #: 1748
Mitigation Action/Initiative: Construction of Emergency Operations Center with Backup Power Generation - Coram

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, severe Storms, Severe Winter Storm, Wildfire
Specific problem being mitigated:	In order to prepare the Town of Brookhaven Highway Department for future natural disaster events, it is crucial that the department have the ability to manage a coordinated, organized and thorough preparation and response throughout a disaster event. The Town, located in Suffolk County, New York has a population of 480,040 (2010 Census) and by area is the largest Town in New York State. Currently there is an Emergency Operation Center at the Town Highway Department on Old Town Road in Coram, New York that lacks a central location for administration officials to manage debris clearance, tree removal, snow clearance and coordination with other governmental agencies, private contractors, and quasi-governmental agencies such as the electric and gas company providers, LIPA and KeySpan. The much needed upgrade to the facilities would provide the administration with an efficient infrastructure for dispatching crews to emergency sites, communication and organization, and work tracking monitoring. As the Town experienced Tropical Storm Lee, Hurricane Irene, Superstorm Sandy, and Blizzard Nemo, the enormous coordination required in these events calls for an infrastructure that can facilitate emergency management operations. During disasters the Town performs emergency services that include the following: • Debris removal and road openings • Temporary closure of roads and redirecting traffic • Rescue operations for residents including: senior citizen, disabled and other residents living in flood prone areas. • Tree Removal in Town right of way where fallen trees threatened the safety of pedestrians, property owners, and businesses. • Coordinate Traffic Light Failures where personnel are needed to direct traffic • Notify Suffolk County with problems on their roads The existing building does not have back up power generation so that if the building loses power during a disaster event, operations will be impeded and possibly endangering Town residents that need the Highway Departments services.

Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Without the installation of the generators, the preferred alternative, the facility has exhibited that it can lose power during a disaster event and also at other times. Losing power during a disaster will jeopardize the flow and coordination of all operations and potentially rescue operations where the potential for loss of life is prominent.
	2. One alternative considered is to provide stand-by power to the Highway Administration Building and the Highway Maintenance Facility by installing two generators as opposed to one generator. This alternative is not preferred because of the increased construction and maintenance costs associated with two generators.
	3. In lieu of onsite generators a second primary electric feed could be installed to the building. This alternative is not preferred because of long cable runs to the site from a different utility service than the existing service. In addition, should the entire electrical grid be out of service, the building will be without power. The project cost for this alternative is estimated at $400,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The project will include the installation of a back up generator necessary to support emergency operations. Specifically, the proposed project is to install a new 150 kW natural gas engine generator to serve the Highway Department complex. Specifically, the generator will serve both the Administration Building and the maintenance shop. The generator will be 150 kW at 277/480V, and will provide power at 277/480V to the maintenance shop via a 100A automatic transfer switch. The Administration Building will be fed from a 250A automatic transfer switch, and a dry type transformer will be installed to convert the generator's power to 120/208V to serve the building.
Mitigation Action/Project Type	Structure and infrastructure Project
Objectives Met	1, 3, 7, 12, 13, 14, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $38,488,360
Estimated Cost	$340,100
Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, PDM, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	20 months
Reporting on Progress	

Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (page 2)**

Number: Sandy HMGP LOI #: 1748

Mitigation Action/Initiative: Construction of Emergency Operations Center with Backup Power Generation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will help maintain communications with fleet
Property Protection	1	Will reinforce and harden structure at this facility
Cost-Effectiveness	1	Yes
Technical	1	Will help provide long term stability for Town communications
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This project will help lessen damage at this site, and the Town will comply with all regulations
Social	1	This project will help limit potential impact that would have an adverse effect at this location
Administrative	1	Yes
Multi-Hazard	1	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project will serve as a critical capital improvement, and will also stimulate the local economy by employing contractors and helping small area businesses
Total	14	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP LOI #: 1752
Mitigation Action/Initiative: Purchase of Interoperable 700MHz Communication System

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storms, Wildfire
Specific problem being mitigated:	The Town of Brookhaven's Highway Department experienced many communication problems during recent disasters such as Tropical Storm Lee, Tropical Storm Irene, Hurricane Sandy and Blizzard Nemo. Because of the large land area of the Town, and large number of lane-miles, effective real time communication is crucial in many aspects of disaster management. An example of this includes clearing debris to open emergency roads. Not being able to communicate between highway units, hinders these emergency operations. The Department is currently operating on an antiquated radio system and using cell service as a backup which has proven to be unreliable. Communication between agencies and among the Highway Department's vehicles is imperative to facilitate a proper response to major weather events. The public safety associated with clearing roadways of debris, snow or other impediments during and following a major storm has major public safety ramifications. The safety of all of the Town's residents may be impacted if the department cannot communicate internally as well as with other Town agencies. This is a major capital investment in the communication system for the department and will lead to major cost savings in the future with regard to cell phone bills. The ability for the department to better communicate internally as well with other Town and County agencies will create a more efficient and coordinated response to major weather events. A great benefit to the community exists with a new communication system as it will increase the department's responsiveness to everyday work orders as well as major weather events. This project will provide additional constituent services as a new communication system will increase the department's responsiveness to everyday jobs as well as in major disaster events.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. In the no action alternative, without an effective communication system, operations of the Highway Department during disaster events or emergency situations will be hindered.
	2. The Town could issue cell phones to the operators of the 212 Town trucks. This alternative has proven ineffective as many of the field personnel lost cell phone service during Hurricane Sandy, and those that didn't had a difficult time keeping the phones charged.
	3. Purchase a communications system with a different radio bandwidth. This is not the preferred alternative because Town officials will not be able to communicate with other first responders throughout Suffolk County.

Action/Project Intended for Implementation	
Description of Selected Action/Project	The project will consist of reconstruction and rehabilitation of the existing building to include computer integration of work tracking methods, central dispatching of communications, and GPS facilities. The Town is requesting funding for a town-wide radio system based upon the current P25 communication standards. The system will operate in the 700 MHz band with 11 frequencies that have recently been licensed to Suffolk County. The system will be housed at three sites that will be co-located with the Suffolk County Police Department system. These three sites will be located at high ground locations to shield it from flood damage and ensure continued operation of our communications operations. The Town system can be integrated into the Suffolk County system and leverage existing RF infrastructure to both save cost and provide efficient Town coverage. The Suffolk County system, the Town's Public Safety Department and fire marshals, are currently using the system and finding that it has proven reliable throughout the last three weather events. This upgraded system will allow for reliable communication between the Highway Department's 210 vehicles and other departments within the Town. The costs associated with implementing these technologies will be lessened as the Town can integrate with the Suffolk County's system. The cost under the grant would be to equip the 210 Town vehicles and other divisions in the Town.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	3, 12, 13, 14, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $38,324,800
Estimated Cost	$780,000
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	12 months
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 #: 1752
Mitigation Action/Initiative: Purchase of Interoperable 700MHz Communication System

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provides communications during Weather events
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability of Highway Department's communications
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	
Social	1	
Administrative	1	Yes
Multi-Hazard	1	Will increase communication capability year round
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 1755
Mitigation Action/Initiative: Generator Replacement at Brookhaven Town Hall

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, severe Winter Storms, Wildfire
Specific problem being mitigated:	The emergency management operations during disaster events have been coordinated out of the large Town Hall located in Farmingville, New York. The Town Hall currently has a generator to serve the legally required life safety loads, but there is no temporary power to support the critical office spaces that are necessary to help the Town government function during emergencies, which include the call center which allows the public to notify the Town about issues and problems occuring during the events. The continuity of government is crucial during disaster events. The major disasters that have afected the Town have been coordinated from Town Hall. The total damages reimbursed by FEMA under the Public Assistance Program reflect the extent of the disasters and the need for having a secure source of power for the Town Hall.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Without the installation of the generators, the preferred alternative, the facility has exhibited that it can lose power during a disaster event and also at other times. Losing power during a disaster will jeopardize the flow and coordination of all operations and potentially rescue operations where the potential for loss of life is prominent.
	2. Three generators are proposed as the preferred project as they offer the easiest and most cost effective option to provide back-up power to the building. The three generators are conventional secondary line voltage that can be worked on by the Town's electricians. In addition, with three generators the entire building would not be without service if one generator is not available. An alternate to three generators is to install a single medium voltage generator on the utility company's primary electric feed to the building. This installation would include a new medium voltage generator, service entrance switch, automatic transfer switch, and new step-down transformers. The medium voltage generator and equipment would require servicing by electricians that are certified for medium voltage work. This would lead to additional costs by the Town to retain these specialized electricians. The project cost for this alternative is estimated at $2,750,000.
	3. In lieu of onsite generators a second primary electric feed could be installed to the building. This alternative is not preferred because of long cable runs to the site from a different utility service than the existing service. In addition, should the entire electrical grid be out of service the

	building will be without power. The project cost for this alternative is estimated at $1,500,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Town Hall is a 225,000 square foot building that is served by 480V, Three Phase secondary service. The separate services enter the building and feed three 2,500A service entrance switches. The three services are common metered at a master meter for the building. The building was formerly all electric heat and was converted in the 1990's to natural gas. The service entrance switches are original to the building and are therefore oversized for the current load. The ten year (2003 – 2013) peak demand recorded at the utility meter was 1,494 kW (see electric consumption utility information included as an appendix to the application). The total load is assumed to be equally divided between each service switch. With a 20 percent factor of safety, three 600 kW generators are assumed to be required to serve the building. Exact sizing of the generators will be performed by a licensed Professional Engineer during the design phase of the project. The three generators will be dual fuel – diesel and natural gas. This option has been selected due to lower equipment costs (diesel engine as compared to a straight natural gas engine), lower operating costs, and the reliability of diesel fuel as a power source. The installation will consist of three generators installed in a fenced compound to be constructed in the parking lot near the Building's mechanical room. Three new 1,000A automatic transfer switches will be installed to transfer load to the generators during a utility outage. A new 6,000 gallon underground diesel tank will be installed to feed the three generators to allow for approximately 72 hours of continuous operation at the building's average load if running 100 percent diesel. When running a blend of diesel and natural gas the run time from the 6,000 gallon diesel tank will be over 225 hours. The building contains a 300 KW diesel engine generator that serves legally required life safety loads (elevator, lighting, etc.). This generator will remain in service to comply with code. The three new generators will be for emergency service.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 7, 12, 13, 14, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $41,814,080
Estimated Cost	$1, 235,000
Priority*	High

Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP; PDM, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	22 Months
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 #: 1755
Mitigation Action/Initiative: Generator Replacement at Brookhaven Town Hall

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	This location is the primary seat and communications center of Town government, and houses all essential services including Town EOC, Housing & Human Services, Building Department, Fire Marshal, Town Clerk (Records), Law Department and Public Safety
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to primary seat of Town government for communications
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	
Social	1	
Administrative	1	Yes
Multi-Hazard	1	Ensures continuity of government operations during power interruptions, during all hazards and/or "brown outs". It also provides capability to come off grid and shed demand on supply
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board department with jurisdiction over this project fully support this plan
Other Community Objectives	1	
Total	14	
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 Brookhaven
Number: Sandy HMGP LOI #: 1792
Mitigation Action/Initiative: Dedicated Emergency Operations Center and Purchase of Back-Up Generators – Cassel Building

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storms, Wildfire
Specific problem being mitigated:	In order to prepare the Town of Brookhaven for future natural disaster events, it is crucial that the Town have the ability to manage a coordinated, organized and through preparation and response during a disaster event. As a large Town, there are many resources located within the Town's jurisdiction where a level of safety and protection is required during a major disaster. An Emergency Operations Center would be located a the Town's Vehicle Control Facility, known as the "Cassel" building, located in Patchogue, New York. The building will function as an Emergency Operations Center and its distingushing feature is that it will be a First Responder Facility. Currently part of the 20,000 s.f. building serves as a vehicle maintenance facility which serves as an important function in disaster events. Appoximately 10,000 s.f. of vacant office space will be dedicated to Town departments identified as the Department of Building and Fire Preventation and the Department of Public Safety. Both of these departments are crucial in managing disaster events and particularly the hazmat unit in responding to hazardous waste spills.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Without the installation of a generator and improvements to the facility, the Town's response to managing a natural disaster will be less effective. Recovery services could be hindered without coordinating and management from the secure facility. Knowledge about residents seeking help or reporting an incident or a hazardous material situation would be jeopardized by not having the use of the building.
	2. One alternative to the window shuttering system is to remove the windows and reconstruct the eastern façade of the building with block and smaller hurricane rated windows. This alternative is not preferred because of the expense and disruption to the building. In lieu of an on-site generator, a second primary electric feed could be installed to the building. This alternative is not preferred because should the entire electrical grid be out of service, the building will be without power.
	3. An alternate to the communications tower and microwave link to Town Hall is to install a hard wire cable connection between the two buildings. At a distance of almost 5 miles, this alternative is not feasible. A conceptual

	budget cost estimate for this alternative is approximately $1,500,000. In lieu of an on-site back-up generator an alternate power system could be installed to serve the entire building off-grid. A co-generation, fuel cell, or solar system could be installed. This option is not preferred because of the cost and the complexity of installing and maintaining the system.
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to coordinate an effective response during storms and disaster events, a dedicated Emergency Operations Center (EOC) needs to be established. The EOC is proposed to be located at the Town's Vehicle Control Facility in Patchogue, NY. Due to the multi-use of the current facility, the benefits of a build out of the emergency operations center at this location will have additional benefits. The operation is currently housed in Town Hall where the facility is lacking adequate space for the equipment and personnel of the department. The project will encompass the following: The build-out of an Emergency Operations Center addresses key components as described by the Federal Emergency Management Agency's EOC Assessment Check List. "Survivability, Security, Sustainability, Interoperability and Flexibility." In order to accomplish this, the following project components will take place: 1. Purchase and installation of a shuttering system. Currently, the entire east facing wall of the building is comprised of a glass panel wall. This wall has an overall length of 76' and a height of 11'5" (glass). The wall is the outer wall of the area housing the hazardous materials response vehicles and equipment and is within 50 feet of the proposed Fire Marshals Office and the dedicated space for the Emergency Operation Center. This portion of the "hardening project" was identified as a needed enhancement for the protection of the building. 2. The installation of communication and information technology infrastructure is an important aspect of this project. The use of an existing fiber optic line linking this facility to the Town Hall facility, for purposes of telephone communications and information technology data exchange is planned. In addition, an erection of an estimated 100 foot tall tower at the facility will allow the installation of multiple microwave links over which data, phone and radio communications will be passed between this facility and the Town Hall facility. One link will be utilized as a redundancy to the IT fiber optic link, for data and telephone. The second link will provide for the Emergency Operations Center's primary radio communications. This link from, the facility to a high point antenna site at the Town Hall facility where a multi-band broadcast and receiving station will be permanently positioned, will enable optimum radio communications for town resources and allow for interoperability with county and local partners. This communication system will also be utilized to communicate with 39 volunteer fire departments and 11 volunteer ambulance companies, and other stakeholders within the Town's jurisdiction. A local redundant radio communications system will be installed, utilizing the same tower for local

	antenna mounting, to maintain communication should the link be interrupted or lost. 3. The build-out of a sufficiently sized, secure and technologically modern Emergency Operations Center is planned in the designated 1350 sq.ft space within the facility. Currently, the space is devoid of any furnishings, computers, status display equipment, etc. Nine ergonomically supportive work stations, equipped with computers and multi-line telephone sets will be installed. There exists the ability of an expansion to 10 additional work stations, as needed, will be included. In addition to the computers, status display equipment and telephone systems, the utilization of a real-time resource management tracking system is planned. This system, with the ability to visually plot all Town of Brookhaven resources during the event and post event activities will allow for streamlined task assignments and tracking to completion. Utilizing a packaged Geographical Information System (GIS) program, in conjunction, the town GIS data, real time and accurate damage assessments will be logged and addressed. The designated EOC space is located within the center of the building, providing for both protection and security of the space. 4. In addition, a significant aspect of the project that should be cited is the multipurpose use of this facility. This single building houses the following Town services that are used on a daily basis and are particularly important to maintain operational during storms and disaster events: A. Heavy duty vehicle repair services – snow plows, dump trucks, etc. B. Medium and light duty vehicle repair services, puck-up trucks, plows, passenger vehicles C. Small equipment repair facility – snow blowers, chain saws, etc. D. Welding shop repairs of all equipment 5. Installation of a Back-Up Generator Purchase and installation of a generator to provide back-up power in the event of the loss of normal utility provided power is a crucial aspect of this project. A properly sized generator of 350 KW will provide the needed power to prevent the interruption of any and all services located within the facility. Of greatest importance is the continued and uninterrupted electrical power to the proposed Emergency Operations Center.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 7, 12, 13, 14, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $38,784,460

Estimated Cost	$750,000
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP; PDM, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	22 Months
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 #: 1792

Mitigation Action/Initiative: Dedicated Emergency Operations Center and Purchase of Back-Up Generators - Cassel

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will provide long term stability and protection to communications
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	
Social	1	
Administrative	1	Yes
Multi-Hazard	1	Ensures continuity of government operations during power interruptions, during all hazards and/or "brown outs". It also provides capability to come off grid and shed demand on supply
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and department with jurisdiction over this project fully support this plan
Other Community Objectives	1	
Total	14	
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 Brookhaven
Number: Sandy HMGP
Mitigation Action/Initiative: Woodhull Landing Shoreline Revetment, Sound Beach, NY

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter storm
Specific problem being mitigated:	The Town of Brookhaven owns and maintains a public beach access and drainage easement at the end of Woodhull Landing Road in Sound Beach, New York. The beach access is via a steep access road that is approximately 16 feet wide, 160 feet long, and has an elevation change of about 30 feet. In addition to offering access to the public, this access road is used by first responders during emergency events. Due to the steep grade of the road, a gabion revetment was constructed on the beach to dissipate the stormwater runoff and prevent scour and erosion at the beach. The gabion mat was destroyed by recent storm activity, and requires replacement to prevent beach erosion and scour/undermining of the beach access roadway.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. The no action alternative will allow continued scouring and erosion of the beach.
	2. One alternative considered is to replace the gabion rip rap. While rip rap is effective against scour without the confining gabion basket, the stone will migrate with vehicular traffic and storm action.
	3. An alternative to the gabion is a concrete pad. This alternative would be effective at erosion control, but would not likely be permitted by the New York State D.E.C.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town will construct a new 75' long by 35' wide gabion mat to replace the existing damaged gabion mat required to prevent beach erosion and scour/ undermining of the beach access roadway.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 5, 15, 16
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $50,000
Estimated Cost	$70,000
Priority*	Medium

Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP, FMA, Town of Brookhaven Capital Budget for Local Match
Timeline for Completion	15 months
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

Mitigation Action/Initiative: Woodhull Landing Shoreline Revetment, Sound Beach, NY

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provides emergency access
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will help provide long term stability and protection to this location
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative representatives
Fiscal	0	Envisioned as part of Town's future capital plan
Environmental	1	This project will lessen damage to this site and surrounding environment, and the Town will comply with all regulations
Social	1	This project will limit potential impacts that would have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement, and will also stimulate local economy by employing contractors and helping small area businesses
Total	12	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: Sandy HMGP
Mitigation Action/Initiative: Purchase of a 56' Landing Craft Vessel

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storm
Specific problem being mitigated:	In order to ensure the safe transportation of vehicles and equipment from Patchogue to Fire Island prior to and following a major storm event, the Town must replace its aged and non-functioning landing craft vessel. As the only transportation alternative is by sea, the department is unable to transport heavy equipment across the Great South Bay to Fire Island where the equipment is used in clean-up operations such as debris removal, snow removal, concrete replacement, and rescue operations.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. The no action alternative will jeopardize the safety of the residents of the Fire Island communities.
	2. The Town could hire private contractors to transport the equipment as exorbitant costs.
	3. The Town could store equipment on Fire Island but this alternative would be costly as a storage facility would have to be built, and the equipment from transported from the mainland would have to be replaced.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The preferred alternative would be to replace the existing non-functioning 56' Land Craft Vessel.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 12, 13,
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Recent Damages: $400,000
Estimated Cost	$325,000
Priority*	Medium
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP; FMA, PDM, Town Capital Budget for Local Match
Timeline for Completion	12 months
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (page 2)**

Prioritization

Number:
Mitigation Action/Initiative: Purchase of a 56' Landing Craft Vessel

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Movement of manpower and supplies (emergency & municipal), pre and post event
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will help provide long term stability to affected communities
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works closely with pertinent NYS agencies and our local state legislative delegation
Fiscal	0	Envisioned as part of Town's future capital plan
Environmental	1	This project will help lessen damage and protect the environment/infrastructure of surrounding communities for its intended use, and the Town will comply with all regulations
Social	1	This project will limit potential impacts that would have an adverse effect on local community
Administrative	1	Yes
Multi-Hazard	1	Vessel needed for transportation of maintenance, personnel and supplies, and for use with pre/post emergency response and recovery
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	
Total	13	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Bay Avenue – Bulkhead & Stormwater Improvements

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Severe Storms
Specific problem being mitigated:	This project entails the replacement of the highway road ending bulkhead and drainage improvements at Bay Avenue. The site is located in Patchogue in the Town of Brookhaven. The Bay Avenue Bulkhead is dilapidated and in severe need of replacement. The landward side of the bulkhead has lost a considerable amount of soil and without drastic improvement it will continue to erode. This area is to be backfilled with clean sand from on-site or local sources. Approximately 20 linear feet of the existing timber bulkhead is to be removed and disposed of at an approved waste facility. The existing drainage system which discharges through the road ending bulkhead is comprised of a series of catch basins and drainage pipes along Bay Avenue between Smith Street and S. Breeze Drive.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Erosion will continue to occur causing further damage landward side of the bulkhead)
	2. Repair Bulkhead and Drain Pipe in kind. (This will only be a temporary fix and will not remove any sediment, oil and debris from the water)
	3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	The following is proposed to stabilize the existing shore line and improve stormwater quality at this location. The bulkhead system is to be replaced at an elevation equal to that of the adjacent bulkheads with an addition of a 10 foot return on the north end. The bulkhead is to consist of vinyl sheeting, CCA treated timber wales, CCA treated timber piles, and a CCA treated timber wave screen. The existing outfall pipe is to be removed and a new 18" diameter ADS pipe run is to be installed along with a Vortech Stormwater Treatment System or approved equal. The Vortech system uses hydrodynamic separation to help remove sediment, oil and floating and sinking debris. In addition to the Vortech structure a manhole and catch basin will be installed and act as an overflow bypass for heavier flows. These improvements should minimize the extent of damage during severe storm events.
Mitigation Action/Project Type	Structure and infrastructure project

Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	
Estimated Cost	$160,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Bay Avenue – Bulkhead & Stormwater Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Eliminates erosion
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with NYS agencies and local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding property, and the Town would comply with all regulations
Social	1	This project would limit potential impacts that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town Department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project would serve as a critical capital improvement, and would help stimulate local economy by employing contractors and help small area businesses
Total	11	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Cranberry Drive – Fishing Pier

Assessing the Risk	
Hazard(s) addressed:	*Hurricane, Severe Storms*
Specific problem being mitigated:	The fishing pier situated at the south terminus of Cranberry Drive in Mastic was completely repositioned by Super Storm Sandy. The pier overlooked Smiths Point Beach and was heavily used by the local fishing community. In the immediate aftermath of the storm sections of the pier were found in neighboring waterways and on the adjacent beaches. After Tropical Storm Irene sections of the asphalt pavement parking area which enables access to the handicap ramp were damaged and made accessing the pier by wheelchair difficult.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (would leave existing fishing pier susceptible to further damage in the event of a storm and the pier would be unusable by the community)
	2. Install a concrete pile boardwalk. (Cost is too high)
	3. Install Vinyl Bulkhead and new boardwalk. (Cost is too High)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town proposes to rehabilitate the existing ramp, asphalt ramp approach and install an entirely new fishing pier (same size) using FEMA building standards regarding the pier's substructure, pile foundation and decking detail. The sturdier building standards while provide a long lasting benefit to the Parks Department and enable the community to use the pier after significant storm events.
Mitigation Action/Project Type	**Structure and infrastructure project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructures**
Benefits (losses avoided)	
Estimated Cost	$97,000.00
Priority*	

Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Cranberry Drive – Fishing Pier

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Donald Court East – Bulkhead & Stormwater Improvements

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Flooding, Hurricane, Severe Storms
Specific problem being mitigated:	This project entails stormwater management improvements and the replacement of the highway road ending bulkhead at Donald Court East. The site is located in Blue Point in the Town of Brookhaven. The Donald Court East Bulkhead is dilapidated and in severe need of replacement. Approximately 20 C.Y. of soil has been lost along the east side of the existing timber bulkhead. This area is to be backfilled with clean sand from on-site or local sources. Approximately 70 linear feet of the existing timber bulkhead is to be removed and disposed of at an approved waste facility. There is currently no drainage located along Donald Court E.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Erosion will continue to occur causing further damage landward side of the bulkhead)
	2. Repair Bulkhead and Drain Pipe in kind. (This will only be a temporary fix)
	3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	The following is proposed to stabilize the existing shore line and improve stormwater quality at this location. The exiting bulkhead is to be replaced at an elevation equal to the adjacent bulkheads. The bulkhead is to consist of vinyl sheeting, CCA treated timber wales and CCA treated timber piles. Stormwater from Donald Court E. runs off the west end of the roadway. The stormwater then flows through a manmade drainage ditch and directly into Patchogue Bay. The Town is proposing to construct an infiltration basin located at the west end of Donald Court E. between the edge of the existing pavement and the proposed bulkhead. The infiltration basin has been designed to hold the calculated water quality volume. An overflow basin is to be installed at the west end of the infiltration basin to capture anything exceeding the calculated water quality volume. Peak water volumes will drain from the proposed catch basin through a 12" ADS drainage pipe and discharge through the proposed bulkhead.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	16

Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	
Estimated Cost	$100,000
Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Donald Court East – Bulkhead & Stormwater Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Eliminates erosion
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with pertinent NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding property, and the Town would comply with regulations
Social	1	This project would limit potential impacts that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	Town Supervisor, Town Board and Town department with jurisdiction over this project are in full support
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will help stimulate local economy by employing contractors and helping small area businesses
Total	11	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Great Gun Marina – Coastal Protection Features

Assessing the Risk	
Hazard(s) addressed:	Coastal Erosion, Hurricane, Severe Storms
Specific problem being mitigated:	The Town owns and operates a transient marina off of the east end of Fire Island called Great Gun Marina. The marina accommodates approximately 120 boats of various sizes. The Town has a playground, picnic area, boardwalk and bathroom facility (solar-powered) landward of the beach and bulkhead. Each time a significant storm occurs the tidal surge causes beach erosion and damage to the recreational site features. The damage is caused primarily along the two (2) unprotected coastlines of the facility. The area behind the central boardwalk remains unaffected by the strong tidal surges.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (would leave existing features susceptible to further damage in the event of a storm)
	2. Install a concrete pile boardwalk. (Cost is too high)
	3.N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to protect the recent investments made by the Town in 2012 and in the immediate aftermath of Super Storm Sandy, the Town proposes to mitigate the reoccurring problem of beach erosion and damage from the tidal surge by constructing coastline protection measures (either bulkhead or stone revetment) along the east and primarily the west side of the marina. The hardening of the coastlines would minimize the cost to replace sections of boardwalk, the bathrooms (solar power system, water filtration system), playground equipment and other park amenities. The overall cost of these mitigation measures would provide protection for many years versus the increasing annual cost for maintenance and replacement.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures

Benefits (losses avoided)	
Estimated Cost	$450,000.00
Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Great Gun Marina – Coastal Protection Features

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Property conservation
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperative with NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding property, and the Town would comply with all regulations
Social	1	This project would limit potential impacts that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Erosion control, tourism and recreation
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical improvement for the Town, and will also stimulate local economy by employing contractors, help small area businesses, and protect recreational and tourism components
Total	12	
Priority (High/Med/Low)	Medium	

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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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Montauk Avenue – Stormwater Runoff & Tidal Mitigation

Assessing the Risk	
Hazard(s) addressed:	Flooding, Hurricane, Severe Storms
Specific problem being mitigated:	Montauk Avenue is a residential roadway in East Moriches that is orientated east-west. The east terminus of the roadway ends at Harts Cove which is a tributary of Moriches Bay. Montauk Avenue east of Atlantic Avenue is a 520 linear foot long residential roadway that experiences flooding during significant storm events. There are ten (10) residences that occupy the low-lying street that contains a sidewalk along the south side. There are no stormwater runoff structures or piping installed on the street which often experiences water from Harts Cove during significant storms.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Flooding will continue to occur during storms)
	2. Install a new bulkhead system and raise the road. (Cost is too high)
	3. Install a new bulkhead and drainage system. (Cost is too high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate the flooding associated when a storm occurs or when historic tidal surges happen, the Town is proposing shallow drainage installations and rehabilitate the existing bulkhead within the Town right-of-way. The mitigation would propose protection of the north and south ends of the bulkhead with armor stone revetments. The coastal hardening would strengthen the integrity of the bulkhead system and minimize soil loss. The cost of drainage structures and bulkhead system will reduce future maintenance costs of the Town roadway and avoid significant property damage.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	
Estimated Cost	$ 175,000.000
Priority*	Medium

Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Montauk Avenue – Stormwater Runoff & Tidal Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Residential property
Property Protection	1	Conservation and erosion control
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding property, and the Town would comply with all regulations
Social	1	This project would limit potential impacts that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Emergency response, life safety and erosion control
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement, and will stimulate local economy by employing contractor and helping small area businesses
Total	13	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Roberts Street – Roadway Development

Assessing the Risk	
Hazard(s) addressed:	Flooding, Hurricane, Severe Storms
Specific problem being mitigated:	The project location is Roberts Street and Southaven Avenue in Mastic, New York. Roberts street is located between Mastic Boulevard and Southaven Avenue. Southaven Avenue is located between Roberts Street and Mastic Road. Roberts Street is a dirt drive and Southaven Avenue is a paper street. Emergency vehicles cannot travel north-south on Roberts Street and have to use other adjacent roadways in the area. Some smaller vehicles in the area have been known to navigate through the undeveloped sections of the roadway in order to reduce travel time.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Travel Time for Emergency Vehicles will continue to be hindered)
	2. Install an RCA road for emergency vehicles to use. (This will not help with any drainage problems.)
	3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	The purpose of the project is to construct a roadway between Mastic Boulevard and Southaven Avenue. Also, approximately 350' of roadway is to be constructed between Roberts Street and Southaven Avenue. Leaching basins will be installed to contain storm water on the previously mentioned roadways. By developing this section of roadway to highway standards the Town will mitigate problems associated with emergency vehicle access during a disaster.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	
Estimated Cost	$ 700,000.00
Priority*	Medium

Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Roberts Street – Roadway Development

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Emergency access
Property Protection	1	Erosion control
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding property, and the Town would comply with all regulations
Social	1	This project would limit potential impacts that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Emergency access, erosion control
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will stimulate local economy by employing contractors and helping small area businesses
Total	13	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Roe Avenue – Stormwater Runoff & Tidal Mitigation

Assessing the Risk	
Hazard(s) addressed:	Flooding, Hurricane, Severe Storms
Specific problem being mitigated:	Roe Avenue is a residential roadway in East Patchogue that is orientated north-south. The south terminus of the roadway ends at Patchogue Bay. The end of Roe Avenue has experienced coastal erosion and damage from tidal surges during storm events. The last 50' of asphalt roadway is buckled, sections of guide are dislodged and beach erosion has occurred in the area between the road and Bay. There is limited stormwater runoff structures installed on the west side of the street which often experiences water from Patchogue Bay during significant storms.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Flooding will continue to occur during storms)
	2. Install a new bulkhead system and raise the road. (Cost is too high)
	3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to mitigate the flooding associated when a storm occurs or when historic tidal surges happen the Town is proposing to provide coastal hardening at the south terminus of the right-of-way. Installing a bulkhead system with an armor stone revetment will minimize tidal intrusion onto the roadway and limit beach erosion/soil loss. The cost of installing additional drainage structures and bulkhead system with armor stone revetment will reduce future maintenance costs of the Town roadway and avoid significant property damage.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	
Estimated Cost	$ 160,000.000
Priority*	Medium
Plan for Implementation	

Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Roe Avenue – Stormwater Runoff & Tidal Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Erosion control
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding property, and the Town would comply with all regulations
Social	1	This project would limit potential impact that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project would serve as a critical capital improvement for the Town, and will stimulate local economy by employing contractors and helping small area businesses
Total	11	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Sandspit Marina – Bathroom Rehabilitation & Mitigation

Assessing the Risk	
Hazard(s) addressed:	Hurricane, Severe Storms
Specific problem being mitigated:	The public bathroom building situated centrally within the Sandspit Marina Facility in Patchogue has been damaged in the past by tidal surges that exceed the existing bulkhead system. The building serves the various uses of the facility (playground, boat slips, employees and residents who use the facility for temporary parking (ferry service to Davis Park). The damage inflicted during previous storms includes moisture damage to the interior of the bathrooms, sediment and debris clogging the sanitary system and minor electrical problems.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (would leave existing comfort station susceptible to further damage in the event of a storm)
	2. Demolish existing comfort station and build a new building using a pile foundation. (Cost is to high)
	3. Move the building to the North. (This would not work because of the layout of the site and the cost would be to high)
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Town proposes to raise the comfort station building using a pile supported foundation and concrete modular building (2 pieces) meeting all ADA accessibility standards. The new building built to FEMA floodplain elevation and building standards would provide the Town with a public bathroom no longer subject to the continuous restoration and maintenance after severe storms. The cost benefit to building the building to current standards would make the site feature eligible for reimbursement when future disasters strike. The Sandspit Ferry Terminal was built to FEMA standards in 2007 and was not affected by T.S. Irene or Super Storm Sandy.
Mitigation Action/Project Type	Structure and infrastructure project
Objectives Met	16
Applies to existing structures/infrastructure, future, or not applicable	Existing Structures/Infrastructures
Benefits (losses avoided)	
Estimated Cost	$375,000

Priority*	Medium
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Sandspit Marina – Bathroom Rehabilitation & Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protection of property, elevation of facility
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site
Social	1	This project would limit potential impacts that might have an adverse effect at this site and surrounding environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project would serve as a critical improvement for the Town, and would help stimulate local economy by employing contractors and helping small area businesses. This site also serves as a critical tourism and recreation transport location
Total	11	
Priority (High/Med/Low)	Medium	

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Scott's Beach Community – Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Coastal Erosion, Hurricane, Severe Storms*
Specific problem being mitigated:	The private community of Scott's Beach is just one parcel of land originally owned by Thomas Blythe Scott. Mr. Scott owned a total of 330 acres in Miller Place from Long Island Sound to North Country Road. The Scott's Beach parcel comprised approximately 108 acres of land with various dwellings. It was bounded on the north by Long Island Sound, on the south by the Old Rocky Point Landing Road – now known as Lower Rocky Point Road – on the west by the road leading to Woodhull Landing, and on the east by the Schwencke property. In 1937 the Scott's Beach parcel was turned into a subdivision. By 1947 the property was deeded to the residents, together with its water system and beaches. In 1991, because of the contamination of one of the two water wells that serviced the community, the water system was turned over to Suffolk County Water Authority. For the last five decades, the estate mansion and several of its cottages have been the retirement home for members of the Daughters of Wisdom Roman Catholic religious community. In 1998, 17 acres of the estate parcel was approved as the "Daughters of Wisdom subdivision," by Brookhaven Town. The DOW Subdivision subsequently became part of Scott's Beach Club, Inc. Since then, homes have been built on nine of the ten subdivision lots. In the immediate aftermath of Tropical Storm Irene the Scott's Beach Club, Inc. had a bluff rehabilitation plan with up-gradient stormwater management features designed by J.R. Holzmacher P.E. LLC. The plan was prepared to rehabilitate the damaged bluff area, remove the outfall pipe and provide drainage collectors along Hilltop Drive (the main access road of the community). Elements of the Hilltop Drive drainage collection features were installed prior to Super Storm Sandy. Severe soil erosion from the adjacent roadway (outside of the community) to the west, Woodhull Landing Road, required the

	construction of an earthen berm to contain the storm water from entering onto Hilltop Drive. Storm water from Woodhull Landing Road contributed to the washout of a 200 foot long section of 25' wide roadway (Hilltop Drive) during Irene. The community has since had the asphalt road repaired with additional drainage installed. Due to the excessive damage, flooding and erosion caused by the historic tidal surge of Super Storm Sandy, part of Hilltop drive became exposed to erosion from wave action which put at risk the only road access to 6 to 7 residences out of the private community.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Erosion will continue and the road will continue to be damaged. Road access for residences may be cut off)
	2. N/A
	3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Scotts Beach Club proposes to increase the height of the berm/shallow bluff by extending from the stair case both east and west to meet the existing privately owned bulkhead structures. An armor stone revetment located seaward of the berm structure would be installed for tidal protection. The construction of the berm/shallow bluff structure shall be either a trap-bag method of construction and/or an engineered slope using geosynthetic grids for reinforcement and/or a stone revetment structure. The finished surface of the berm/shallow bluff will be native beach plantings and grasses to support proper erosion and sediment control. The edge of the existing asphalt roadway will be reinforced with a 30" deep concrete haunch to protect the exposed edge of rolled macadam. The haunch would be installed on the north edge of roadway where the elevation of the roadway is below elevation 20.0. Wave run-up calculations will be made to determine the elevation of the top of the proposed shoreline protection system and the area above the proposed stone revetment will be re-established with native plantings suitable to the site. At the center of the site (beach front), the Scotts Beach Club proposes to restore a portion of the soil lost and armor the toe of this area with a heavy stone revetment. Sloped areas above the stone revetment will be re-established with native plantings suitable to the site and erosion control measures such as jute mesh will be installed to provide erosion control during the establishment period of the new vegetation. Where slope stability is a concern on the re-established slopes geogrid slope reinforcement products will be incorporated into

	the design.
Mitigation Action/Project Type	**Structure and infrastructure project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructures**
Benefits (losses avoided)	
Estimated Cost	$ 350,000.000
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
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: N/A
Mitigation Action/Initiative: Scott's Beach Community – Hazard Mitigation

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 Brookhaven
Number: N/A
Mitigation Action/Initiative: Marina & Boat Ramp Underwater Investigations – Hazard Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Coastal Erosion, Hurricane, Sever Storms*
Specific problem being mitigated:	The Town of Brookhaven spans the entire width of Long Island sharing both north and south coastlines. Along these coastlines are many beaches, boat basins, marinas, docks and boat ramps. As a result of Super Storm Sandy many of these facilities experienced a buildup of sedimentation and obstructions (migrating debris) due to the storm surge and tidal action. Repositioned debris and soil can cause injury to people using beaches and create unsafe conditions for navigation within these marine facilities.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 .No action (Potential injury to people and damage to water craft). Access to these facilities could be impacted by the build-up of sedimentation within the boat basins, marinas, boat ramps and waterways.
	2. N/A
	3. N/A
Action/Project Intended for Implementation	
Description of Selected Action/Project	In order to certify that the post-storm conditions due not pose an underwater hazard to nautical navigation or create unsafe conditions at beaches, an underwater investigation is conducted using high resolution underwater cameras, survey equipment and sonar. The investigation would define any obstructions encountered and compare underwater topographic surveys (soundings) using GPS survey equipment. The product of each investigation would provide a basis for the Town to restore utility to each facility to their pre-storm conditions.
Mitigation Action/Project Type	**Structure and infrastructure project**
Objectives Met	**16**
Applies to existing structures/infrastructure, future, or not applicable	**Existing Structures/Infrastructures**

Benefits (losses avoided)	Damage to residents boats, emergency access and potential lawsuits from injuries at bathing beaches.
Estimated Cost	$ 150,000
Priority*	*Medium*
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	Capital improvement plans and budgets
Potential Funding Sources	HMGP; Grant Funding with local cost share, Federal 75%, Local 25%
Timeline for Completion	Within 90 days of storm event (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: N/A
Mitigation Action/Initiative: Marina & Boat Ramp Underwater Investigations – Hazard Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Aide in emergency response
Property Protection	1	Post storm recovery
Cost-Effectiveness	1	Yes
Technical	1	
Political	1	This plan has the support of the Town Supervisor and Town Board
Legal	1	Yes, the Town works cooperatively with NYS agencies and our local state legislative representatives
Fiscal	0	
Environmental	1	This project will lessen damage to this site and surrounding area, and the Town would comply with all regulations
Social	1	This project would limit potential impacts that might have an adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	1	Aide in emergency response and post storm recovery
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This project serves as a critical capital improvement for the Town, and will stimulate local economy by employing contractors, helping small area businesses, and protect local recreation and tourism components
Total	13	
Priority (High/Med/Low)	Medium	

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 Brookhaven

Number: HMGP

Mitigation Action/Initiative: Compile Comprehensive Emergency Management Plan

Assessing the Risk	
Hazard(s) addressed:	• Coastal Erosion • Drought • Flooding (riverine, flash, coastal, and urban flooding) • Groundwater Contamination (natural) • Hurricane (tropical cyclones, including tropical storms and tropical depressions) • Infestation (Asian Longhorn Beetle, Lyme Disease and West Nile Virus) • Nor'Easters (extra-tropical cyclones, including severe winter low-pressure systems) • Severe Storms (windstorms, thunderstorms, hail, lightning and tornados) • Severe Winter Storm (heavy snow, blizzards, ice storms) • Shallow Groundwater • Wildfire • Expansive Soils • Other
Specific problem being mitigated:	During recent natural disasters (e.g. Hurricanes Lee/Irene and Sandy and Superstorm Nemo) many of the Town's operations were shut-down or unable to function to the level or capacity as needed. The impact on the health and safety for our constituents was significant, especially during the extended power and network outages. The Town needs to improve our emergency management including communications, decision making, resourcing and ultimately our performance during any disaster.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action – During recent storm events (incl. Hurricanes Irene/Lee and Sandy) Town government struggled to effectively respond to the needs of our community. Our efforts were often uncoordinated and less than optimally effective which led to negative impacts for our community. These problems are likely to re-occur until an emergency management plan is compiled and implemented by the Town.

	2.
	3.
Action/Project Intended for Implementation	
	The Town of Brookhaven is seeking to hire a qualified consulting firm to work with the Town to compile a *Comprehensive Emergency Management Plan*. Note: this document will compliment the *Hazard Mitigation, Disaster Recovery and Business Continuity Plan* which we are planning to compile under a separate prject (see LOI # 450). The *Comprehensive Emergency Management Plan* will include the following content: • An emergency operations plan that will: - Provide an organizational structure and assign roles and responsibilities - Define both internal and external communications protocols and procedures - Identifiy hazards/threats and pre-defined hazard/threat-specific responses • A resource assessment and plan that will identify and assign staff and define the training that needs to occur • Identify resources and supplies, including mutual aid and assistance agreements, relevant MOUs/MOAs and standby contracts and include resource typing • Designate facilities for emergency use including the primary and backup EOCs, shelters, distribution centers and storage areas • An exercise plan for proactive test Plan activation, exercsing, hot washes and as-needed Plan modications It is expected that the *Plan* will allow the Town to support its highest priority business functions during any disaster or other interruption of normal business operations and allow the Town to be responsive and proactive in its actions during and after any disaster strikes.
Mitigation Action/Project Type	Local Plans and Regulations (LPR)
Objectives Met	1. Enhance the public's understanding of natural hazards, the risk they pose and ways to mitigate those impacts. 3. Continually improve understanding of the location and potential impacts of natural hazards, the vulnerability of building types, and community development patterns and the measures needed to protect life safety at the local government level. 12. Develop or improve early warning emergency response systems and evacuation procedures. 14. Seek to integrate/coordinate all phases of Emergency Management within the planning area.

Applies to existing structures/infrastructure, future, or not applicable	Not applicable
Benefits (losses avoided)	Recent Damages: $1,841,076
Estimated Cost	$200,000
Priority*	
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Chief of Operations
Local Planning Mechanism	
Potential Funding Sources	HMGP; _____ for Local Match
Timeline for Completion	Eight months
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (page 2)**

Prioritization

Number: HMGP

Mitigation Action/Initiative: Compile Comprehensive Emergency Management Plan

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	This plan will not have a direct impact on saving lives or preventing injury
Property Protection	1	
Cost-Effectiveness	1	Yes
Technical	1	Will help provide long term plan for Town
Political	1	This plan has the support of Town Supervisor and Town Board
Legal	1	Yes, the Town will work closely with pertinent NYS agencies and our local state legislative delegation
Fiscal	0	Envisioned as part of Town's future capital plan
Environmental	1	Will help Town maintain operations/communications
Social	1	No; not applicable
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project support this plan
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	Medium	

Guidance to Complete the Mitigation Action Worksheet

The following provides additional guidance on how to complete the Mitigation Project Capture Sheet. If you have any questions, please contact:

Jonathan Raser
Tetra Tech, Inc., 1000 The American Road, Morris Plains, NJ 07950
973-630-8042 jonathan.raser@tetratech.com

Assessing the Risk

Hazard(s) addressed: Please enter the hazard(s) of concern you are mitigating. For this plan, the hazards of concern identified for the planning area are:

- Coastal Erosion
- Drought
- Flooding (riverine, flash, coastal, and urban flooding)
- Groundwater Contamination (natural)
- Hurricane (tropical cyclones, including tropical storms and tropical depressions)
- Infestation (Asian Longhorn Beetle, Lyme Disease and West Nile Virus)
- Nor'Easters (extra-tropical cyclones, including severe winter low-pressure systems)
- Severe Storms (windstorms, thunderstorms, hail, lightning and tornados)
- Severe Winter Storm (heavy snow, blizzards, ice storms)
- Shallow Groundwater
- Wildfire
- Expansive Soils

Specific problem being mitigated: Please describe the specific problem being mitigated.

Evaluation of Potential Actions/Projects

Actions/Projects Considered: Please consider different options to mitigate the problem identified. One alternative is always to accept the current level or risk (tolerate the vulnerability/problem) by deciding to take no action at this time. If you choose to take no action, please complete the worksheet up to and including this section and this will be noted in the Plan.

Please include the name of the action considered and a brief reason as to why the action was not selected. The reasoning documents the consideration of these alternatives.

Action/Project Intended for Implementation

Description of the Selected Project: Please provide a brief description of the selected project.

Mitigation Action Type:

- 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.

Objectives: Please insert the plan objectives (by number) that would be met if the action/project is implemented.

Plan Objectives:

16. Enhance the public's understanding of natural hazards, the risk they pose and ways to mitigate those impacts.

17. Retrofit, acquire, or relocate structures in high hazard areas, including but not limited to those known to be or subject to repetitive damages.

18. Continually improve understanding of the location and potential impacts of natural hazards, the vulnerability of building types, and community development patterns and the measures needed to protect life safety at the local government level.

19. Strengthen codes so that new construction can withstand the impacts of natural hazards and lessen the impact of that development on the environment's ability to absorb the impact of natural hazards.

20. Seek projects that minimize or mitigate their impact on the environment including but not limited to: beach nourishment, stream channel restoration, and wetlands creation/preservation.

21. Consider providing incentives to promote wise land uses in known or identified high risk areas.

22. Establish a partnership among all levels of government and the business community to improve and implement methods to protect property.

23. Develop and implement wildfire mitigation and watershed. Protection strategies that reduce losses to wildlife habitat and protect water while also reducing damage to development.

24. Lower cost of flood insurance premiums through CRS program.

25. Protect against invasive species (noxious weeds) and exclude and eradicate invasive insects, disease, and weeds.

26. Implement water conservation measures, use reclaimed water, and increase groundwater usage, create surface water storage where appropriate.

27. Develop or improve early warning emergency response systems and evacuation procedures.

28. Work to lower emergency service response times, including improvement to transportation facilities.
29. Seek to integrate/coordinate all phases of Emergency Management within the planning area.

30. Seek mitigation projects that provide the highest degree of natural hazards protection at the least cost by considering projects that will mitigate the impacts of multiple hazards and/or leverage multiple funding sources.

31. Increase resilience of critical facilities and infrastructure.

Benefits: Please describe the losses avoided when the project is implemented. This includes physical property damage; loss of function; road closing/detours; etc.

Estimated Cost:
Please provide the estimated cost or use the following ranges:
Low = < $10,000 Medium = $10,000 to $100,000 High = > $100,000

Priority: Please enter High/Medium/Low. Refer to the prioritization exercise and table, and instructions below.

Plan for Implementation

Potential Funding Source: Please identify the anticipated funding source, which could be "Grant funding with local cost share". Sources may include federal, state and local sources.

Timeline for Completion: Short = 1 to 5 years. Long Term= 5 years or greater. OG = On-going program.

Reporting on Progress

Note: This is for long term project progress review and need not be completed at this time.

Please provide a status update on the selected action/project. Along with this description, please indicate if the action/project is completed or not completed.

Actions which are not complete may be dropped with a rational provided (e.g., project deemed unfeasible…). Other incomplete actions should clearly be indicated as continuing; indicate percent complete, and identify any hurdles/obstacles/reasons for change in schedule. Even actions that have had no progress to date can be identified as continuing. For any action that is not yet complete and will continue, always consider modifying the action to promote implementation.

Please note this report on progress should be done, at minimum, each year prior to the annual Planning Committee update outlined in the plan maintenance procedures in Section 7 (Plan Maintenance).

Guidance to Complete the Evaluation/Prioritization Table

Complete this table to help evaluate and prioritize each mitigation action being considered by your municipality. Please use these 14 criteria to assist in evaluating and prioritizing new mitigation actions identified. Specifically, for each new mitigation action, assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria in the provided table, defined as follows:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Use the numerical results of this exercise to help prioritize your actions as "Low", "Medium" or "High" priority. Your municipality may recognize other factors or considerations that affect your overall prioritization; these should be identified in narrative in the Priority field of the worksheet.

The 14 evaluation/prioritization criteria are:

1. Life Safety – How effective will the action be at protecting lives and preventing injuries?

2. Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?

3. Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?

4. Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.

5. Political – Is there overall public support for the mitigation action? Is there the political will to support it?

6. Legal – Does the State have the authority to implement the action?

7. Fiscal - Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?

8. Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?

9. Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

10. Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?

11. Multi-hazard – Does the action reduce the risk to multiple hazards?

12. Timeline - Can the action be completed in less than 5 years (within our planning horizon)?

13. 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?

14. 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: Sandy HMGP LOI #: 1331
Mitigation Action/Initiative: Cedar Beach Facility Storm Surge Mitigation

Assessing the Risk	
Hazard(s) addressed:	*Flooding, Hurricanes, Nor'Easters, Severe Storms*
Specific problem being mitigated:	The Suffolk County Marine Environmental Learning Center at Cedar Beach is a public facility housing Cornell Cooperative Extension's Marine Program. The Marine Program conducts extensive shellfish and habitat restoration projects; water quality sampling analysis; and provides education to the public. The waterfront facility is vulnerable to flooding and frequently experiences damages as a result of storm surges. Redirection of water from the adjacent tidal creek and installation of green infrastructure measures will aid in the draining problem and subsequent property damage in the future.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Relocation of SCMELC Facility-not financially feasible
	2. Construction of Seawall or Dyke System-permit and funding obstacles
	3. No Action-property continues to flood and damages to facilities continues
Action/Project Intended for Implementation	
Description of Selected Action/Project	Installation of a culvert will help redirect water to preserve the laboratories, shellfish hatchery, and offices located within this facility. During the 2012 storm season we had more than 18" of water in some of our outbuildings. Installing the culvert system would allow for more efficient drainage of the tidal creek away from the facility limiting damage. During Hurricane Sandy one vehicle was lost and a large amount of supplies and scientific equipment were damaged. The culvert, paired with additional strategically placed green infrastructure installations including impervious driveways, rain gardens and rain barrels with help mitigate flooding and further damage at this public facility.
Mitigation Action/Project Type	**Structure and Infrastructure, Natural Systems Protection**
Objectives Met	**2, 3, 5**
Applies to existing structures/infrastructure, future, or not applicable	
Benefits (losses avoided)	Recent Damages: $50,000
Estimated Cost	$320,000
Priority*	*High*
Plan for Implementation	

Responsible Organization	Suffolk County, Town of Southold, and Cornell Cooperative Extension of Suffolk County
Local Planning Mechanism	
Potential Funding Sources	HMGP; municipal funding sources, grants and in-kind resurces for Local Match
Timeline for Completion	Two Years
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 #: 1331
Mitigation Action/Initiative: Cedar Beach Facility Storm Surge Mitigation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Facility houses marine lab and aquaculture facility and numerous offices
Cost-Effectiveness	1	Long term solution to flooding
Technical	1	
Political	1	This project have support on many levels of government
Legal	0	
Fiscal	1	
Environmental	1	Water quality of creek will be enhanced due to increased flushing
Social	1	
Administrative	0	
Multi-Hazard	0	
Timeline	1	
Agency Champion	1	Local Suffolk County Legislative support has been identified
Other Community Objectives	1	Project would ensure SCMELC facility can continue to operate and serve the public
Total	10	
Priority (High/Med/Low)	High	

Guidance to Complete the Mitigation Action Worksheet

The following provides additional guidance on how to complete the Mitigation Project Capture Sheet. If you have any questions, please contact:

Jonathan Raser
Tetra Tech, Inc., 1000 The American Road, Morris Plains, NJ 07950
973-630-8042 jonathan.raser@tetratech.com

Assessing the Risk

Hazard(s) addressed: Please enter the hazard(s) of concern you are mitigating. For this plan, the hazards of concern identified for the planning area are:

- Coastal Erosion
- Drought
- Flooding (riverine, flash, coastal, and urban flooding)
- Groundwater Contamination (natural)
- Hurricane (tropical cyclones, including tropical storms and tropical depressions)
- Infestation (Asian Longhorn Beetle, Lyme Disease and West Nile Virus)
- Nor'Easters (extra-tropical cyclones, including severe winter low-pressure systems)
- Severe Storms (windstorms, thunderstorms, hail, lightning and tornados)
- Severe Winter Storm (heavy snow, blizzards, ice storms)
- Shallow Groundwater
- Wildfire
- Expansive Soils

Specific problem being mitigated: Please describe the specific problem being mitigated.

Evaluation of Potential Actions/Projects

Actions/Projects Considered: Please consider different options to mitigate the problem identified. One alternative is always to accept the current level or risk (tolerate the vulnerability/problem) by deciding to take no action at this time. If you choose to take no action, please complete the worksheet up to and including this section and this will be noted in the Plan.

Please include the name of the action considered and a brief reason as to why the action was not selected. The reasoning documents the consideration of these alternatives.

Action/Project Intended for Implementation

Description of the Selected Project: Please provide a brief description of the selected project.

Mitigation Action Type:

- 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.

Objectives: Please insert the plan objectives (by number) that would be met if the action/project is implemented.

Plan Objectives:

1. Enhance the public's understanding of natural hazards, the risk they pose and ways to mitigate those impacts.

2. Retrofit, acquire, or relocate structures in high hazard areas, including but not limited to those known to be or subject to repetitive damages.

3. Continually improve understanding of the location and potential impacts of natural hazards, the vulnerability of building types, and community development patterns and the measures needed to protect life safety at the local government level.

4. Strengthen codes so that new construction can withstand the impacts of natural hazards and lessen the impact of that development on the environment's ability to absorb the impact of natural hazards.

5. Seek projects that minimize or mitigate their impact on the environment including but not limited to: beach nourishment, stream channel restoration, and wetlands creation/preservation.

6. Consider providing incentives to promote wise land uses in known or identified high risk areas.

7. Establish a partnership among all levels of government and the business community to improve and implement methods to protect property.

8. Develop and implement wildfire mitigation and watershed. Protection strategies that reduce losses to wildlife habitat and protect water while also reducing damage to development.

9. Lower cost of flood insurance premiums through CRS program.

10. Protect against invasive species (noxious weeds) and exclude and eradicate invasive insects, disease, and weeds.

11. Implement water conservation measures, use reclaimed water, and increase groundwater usage, create surface water storage where appropriate.

12. Develop or improve early warning emergency response systems and evacuation procedures.

13. Work to lower emergency service response times, including improvement to transportation facilities.
14. Seek to integrate/coordinate all phases of Emergency Management within the planning area.

15. Seek mitigation projects that provide the highest degree of natural hazards protection at the least cost by considering projects that will mitigate the impacts of multiple hazards and/or leverage multiple funding sources.

16. Increase resilience of critical facilities and infrastructure.

Benefits: Please describe the losses avoided when the project is implemented. This includes physical property damage; loss of function; road closing/detours; etc.

Estimated Cost:
Please provide the estimated cost or use the following ranges:
Low = < $10,000 Medium = $10,000 to $100,000 High = > $100,000

Priority: Please enter High/Medium/Low. Refer to the prioritization exercise and table, and instructions below.

Plan for Implementation

Potential Funding Source: Please identify the anticipated funding source, which could be "Grant funding with local cost share". Sources may include federal, state and local sources.

Timeline for Completion: Short = 1 to 5 years. Long Term= 5 years or greater. OG = On-going program.

Reporting on Progress

Note: This is for long term project progress review and need not be completed at this time.

Please provide a status update on the selected action/project. Along with this description, please indicate if the action/project is completed or not completed.

Actions which are not complete may be dropped with a rational provided (e.g., project deemed unfeasible…). Other incomplete actions should clearly be indicated as continuing; indicate percent complete, and identify any hurdles/obstacles/reasons for change in schedule. Even actions that have had no progress to date can be identified as continuing. For any action that is not yet complete and will continue, always consider modifying the action to promote implementation.

Please note this report on progress should be done, at minimum, each year prior to the annual Planning Committee update outlined in the plan maintenance procedures in Section 7 (Plan Maintenance).

Guidance to Complete the Evaluation/Prioritization Table

Complete this table to help evaluate and prioritize each mitigation action being considered by your municipality. Please use these 14 criteria to assist in evaluating and prioritizing new mitigation actions identified. Specifically, for each new mitigation action, assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria in the provided table, defined as follows:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Use the numerical results of this exercise to help prioritize your actions as "Low", "Medium" or "High" priority. Your municipality may recognize other factors or considerations that affect your overall prioritization; these should be identified in narrative in the Priority field of the worksheet.

The 14 evaluation/prioritization criteria are:

1. Life Safety – How effective will the action be at protecting lives and preventing injuries?

2. Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?

3. Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?

4. Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.

5. Political – Is there overall public support for the mitigation action? Is there the political will to support it?

6. Legal – Does the State have the authority to implement the action?

7. Fiscal - Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?

8. Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?

9. Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

10. Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?

11. Multi-hazard – Does the action reduce the risk to multiple hazards?

12. Timeline - Can the action be completed in less than 5 years (within our planning horizon)?

13. 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?

14. 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: Town of Brookhaven
Number: Water Island Wells LOI #: 928
Mitigation Action/Initiative: Water Island Wells (Fire Island), NY

Assessing the Risk	
Hazard(s) addressed:	Wildfire, Severe Storms, Hurricane, Flooding, severe Winter Storm
Specific problem being mitigated:	This proposed project involves the design/engineering, site preparation and installation of two to three of fire protection wells, and distribution system creating a positive pressure water system for fire protection use. The current system uses drafting wells which require the fire protection apparatus to be within 20 feet of the well and are located south of the dunes. The new system will provide multiple connection points allowing the equipment to be nearer to the location of need. It will also obviate the need to run hose long distances to supply water to the location of the fire. Both of these will decrease overall response time for the fire department. The installation of associated piping and outlets will provide the fire protection water needed in the event of a fire. As part of the design and installation, primary power with redundant backup power generation systems to the pumps / wells will be installed. Components of the system(s), such as the well pumps and electrical systems will be installed in hardened structures to prevent potential storm damage. The location of the wells and components with be located north of the dunes, providing additional protection. This project will replace the current all drafting wells located south of the dunes, which have sustained significant storm damage on several occasion causing funds to be expended to repair same. Six of the six wells are not accessible at this time due to submergence and littoral shift of the beach in the area of the wells.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. In the no action alternative, without making the necessary improvements, there will be a danger of not being able to suppress a fire in the vicinity to the 50 homes and 200 people that reside in the immediate area.
	2. One alternative is to reestablish the existing wells in their existing location and protect the existing wells that are serviceable. This would involve installing bulkheading around all six wells and drilling new wells for the three that have been damaged beyond repair. This option does not provide year round protection for the wells and would require the district to continue its current operation. It also does not protect the wells from future littoral shift and requires permitting that may not be attainable from the National Park Service. The estimated cost for this option is $140,000.
	3. Alternative #2 requires the Suffolk County Water Authority (SCWA) to bring water from the main land to the fire district and provide connection

	points that are accessible from the dune side for the district. The proposal is to run a twelve inch diameter main from the main land. This option has several drawbacks as it will require several permits that may not be granted including dredging permit from the Army Corps of Engineers, National Parks Service, and the New York State Department of Environmental Conservation. Additionally, SCWA would need to consider their existing infrastructure and if the new fire demand can be supplied at the point of the Fire District connection. The cost estimate for this option is $1,500,000.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Based on discussions with the Authority Having Jurisdiction (Town of Brookhaven Fire Marshal) and the local Fire District, the preferred option is to abandon six drafting wells and relocate new wells north of the dunes on private property. As available Town-owned land is limited in the project area, the Town may seek easements from owners of property located within the Water Island Fire District to locate the wells on private property. The project will include locating two or three wells in 10 foot by 12 foot reinforced concrete structures with backup power generation in the event of power failures. The structures will be elevated to two feet above the local base flood elevation. Additionally, fire protection mains and fire hydrants will be located immediately adjacent to the north side of the dunes to give access to the fire district quickly in the event of an emergency.
Mitigation Action/Project Type	Structure and Infrastructure Project
Objectives Met	1, 2, 13, 16
Applies to existing structures/infrastructure, future, or not applicable	New Structures
Benefits (losses avoided)	Recent Damages:
Estimated Cost	$355,300
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Brookhaven: Matt Miner, Deputy Supervisor
Local Planning Mechanism	Suffolk County Multi-Jurisdictional Hazard Mitigation Plan
Potential Funding Sources	HMGP; FMA, PDM, Town capital Budget for Local Match
Timeline for Completion	20 months
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 #: 928

Mitigation Action/Initiative: Water Island Wells, Fire Island, NY

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Fire Protection
Property Protection	1	This will serve to reinforce and protect structures at this location
Cost-Effectiveness	1	Yes
Technical	1	This will provide long term stabilization and protection at this location
Political	1	
Legal		This plan has the support of the Town Supervisor and Town Board
Fiscal	1	The Town has already authorized funding as required under HMGP
Environmental	1	This will help lessen damage to this site and surrounding environment, and the Town will comply with all regulations
Social	1	This will limit potential impact that may have adverse effect on local environment
Administrative	1	Yes
Multi-Hazard	0	
Timeline	1	Can be completed within 5 years
Agency Champion	1	The Town Supervisor, Town Board and Town department with jurisdiction over this project fully support this plan
Other Community Objectives	1	This is a critical capital improvement for the Town, and will also stimulate local economy by employing contractors and helping small area businesses, as well as tourism since there are numbers of people who reside and visit Fire Island
Total	13	
Priority (High/Med/Low)	High	