This document was developed by the Mastic Beach and Smith Point of Shirley Planning Committee as part of the NY Rising Community Reconstruction (NYRCR) Program within the Governor’s Office of Storm Recovery (GOSR). The NYRCR Program is supported by NYS Homes and Community Renewal, NYS Department of State, and NYS Department of Transportation. Assistance was provided by the following consulting firms (NYRCR Consultant Team):

- Jacobs
- Cameron Engineering & Associates, LLP

### NYRCR Mastic Beach and Smith Point of Shirley Planning Committee

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<tr>
<th>Committee Role</th>
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<tr>
<td>Co-Chair</td>
<td>Kerri Rosalia</td>
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<td>Co-Chair*</td>
<td>Jim Wisdom</td>
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<tr>
<td>Member*</td>
<td>William Biondi</td>
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<tr>
<td>Member*</td>
<td>Nicholas Busa</td>
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<tr>
<td>Member</td>
<td>Frank Cappiello</td>
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<tr>
<td>Member*</td>
<td>Gail Cappiello</td>
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<td>Member</td>
<td>Paul Casciano</td>
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<tr>
<td>Member*</td>
<td>Alan Chasinov</td>
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<td>Member*</td>
<td>William Doyle</td>
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<td>Member*</td>
<td>Frank Fugarino</td>
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<td>Member</td>
<td>Tom Gross</td>
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<td>Member*</td>
<td>Ed Hennessey</td>
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<td>Mike Kobasiuk</td>
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<td>Member</td>
<td>Lenny Levy</td>
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<td>Member*</td>
<td>Bob Marrow</td>
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<td>Member</td>
<td>Evan Proios</td>
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<td>John Siebert</td>
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<td>Josh Slaughter</td>
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<td>Member*</td>
<td>Maura Spery</td>
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<td>Mike Trotta</td>
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<td>Member</td>
<td>Beth Wahl</td>
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* Non-voting member
Foreword

Introduction

In the span of approximately one year, beginning in August 2011, the State of New York experienced three extreme weather events. Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy wreaked havoc on the lives of New Yorkers and their communities. These tragic disasters signaled that New Yorkers are living in a new reality defined by rising sea levels and extreme weather events that will occur with increased frequency and power. They also signaled that we need to rebuild our communities in a way that will mitigate against future risks and build increased resilience.

To meet these pressing needs, Governor Andrew M. Cuomo led the charge to develop an innovative, community-driven planning program on a scale unprecedented and with resources unparalleled. The NY Rising Community Reconstruction (NYRCR) Program empowers the State’s most impacted communities with the technical expertise needed to develop thorough and implementable reconstruction plans to build physically, socially, and economically resilient and sustainable communities.

Program Overview

The NYRCR Program, announced by Governor Cuomo in April of 2013, is a more than $650 million planning and implementation process established to provide rebuilding and resiliency assistance to communities severely damaged by Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. Drawing on lessons learned from past recovery efforts, the NYRCR Program is a unique combination of bottom-up community participation and State-provided technical expertise. This powerful combination recognizes not only that community members are best positioned to assess the needs and opportunities of the places where they live and work, but also that decisions are best made when they are grounded in rigorous analysis and informed by the latest innovative solutions.

One hundred and two storm-affected localities across the State were originally designated to participate in the NYRCR Program. The State has allocated each locality between $3 million and $25 million to implement eligible projects identified in the NYRCR Plan. The funding for these projects is provided through the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant – Disaster Recovery (CDBG-DR) program.¹

¹ Five of the 102 localities in the program—Niagara, Herkimer, Oneida, Madison, and Montgomery Counties—are not funded through the CDBG-DR program.
Forty-five NYRCR Communities, each comprising one or more of the 102 localities, were created and led by a NYRCR Planning Committee composed of local residents, business owners, and civic leaders. Members of the Planning Committees were identified in consultation with established local leaders, community organizations, and in some cases municipalities. The NYCR Program sets a new standard for community participation in recovery and resiliency planning, with community members leading the planning process. Across the State, more than 500 New Yorkers represent their communities by serving on Planning Committees.

More than 400 Planning Committee Meetings have been held, during which Planning Committee members worked with the State’s NYRCR Program team to develop community reconstruction plans and identify opportunities to make their communities more resilient. All meetings were open to the public. An additional 125-plus Public Engagement Events attracted thousands of community members, who provided feedback on the NYRCR planning process and proposals. The NYRCR Program’s outreach has included communities that are traditionally underrepresented, such as immigrant populations and students. All planning materials are posted on the NYRCR Program’s website (www.stormrecovery.ny.gov/nyrcr), providing several ways for community members and the public to submit feedback on materials in progress.

Throughout the planning process, Planning Committees were supported by staff from the Governor’s Office of Storm Recovery (GOSR), planners from New York State (NYS) Department of State (DOS) and NYS Department of Transportation (DOT), and consultants from world-class planning firms that specialize in engineering, flood mitigation solutions, green infrastructure, and more.

With the January 2014 announcement of the NYRCR Program’s expansion to include 22 new localities, the program comprises over 2.7 million New Yorkers and covers nearly 6,500 square miles, which is equivalent to 14% of the overall State population and 12% of the State’s overall geography.

The NYRCR Program does not end with this NYRCR Plan. Governor Cuomo has allocated over $650 million of funding to the program for implementing projects identified in the NYRCR Plans. NYCR
Communities are also eligible for additional funds through the program’s NY Rising to the Top Competition, which evaluates NYCR Communities across eight categories, including best use of technology in the planning process, best approach to resilient economic growth, and best use of green infrastructure to bolster resilience. The winning NYCR Community in each category will be allocated an additional $3 million of implementation funding. The NYCR Program is also working with both private and public institutions to identify existing funding sources and create new funding opportunities where none existed before.

The NYCR Program has successfully coordinated with State and Federal agencies to help guide the development of feasible projects. The program has leveraged the Regional Economic Development Council’s State Agency Review Teams (SARTs), comprised of representatives from dozens of State agencies and authorities, for feedback on projects proposed by NYCR Communities. The SARTs review projects with an eye toward regulatory and permitting needs, policy objectives, and preexisting agency funding sources. The NYCR Program is continuing to work with the SARTs to streamline the permitting process and ensure shovels are in the ground as quickly as possible.

On the pages that follow, you will see the results of months of thoughtful, diligent work by NYCR Planning Committees, passionately committed to realizing brighter, more resilient futures for their communities.

**The NYCR Plan**

This NYCR Plan is an important step toward rebuilding a more resilient community. Each NYCR Planning Committee began the planning process by defining the scope of its planning area, assessing storm damage, and identifying critical issues. Next, the Planning Committee inventoried critical assets in the community and assessed the assets’ exposure to risk. On the basis of this work, the Planning Committee described recovery and resiliency needs and identified opportunities. The Planning Committee then developed a series of comprehensive reconstruction and resiliency strategies, and identified projects and implementation actions to help fulfill those strategies.

The projects and actions set forth in this NYCR Plan are divided into three categories. The order in which the projects and actions are listed in this NYCR Plan does not necessarily indicate the NYCR Community’s prioritization of these projects and actions. **Proposed Projects** are projects proposed for funding through a NYCR Community’s allocation of CDBG-DR funding. **Featured Projects** are projects and actions that the Planning Committee has identified as important resiliency recommendations and has analyzed in depth, but has not proposed for funding through the NYCR Program. **Additional Resiliency Recommendations** are projects and actions that the Planning Committee would like to highlight and that are not categorized as Proposed Projects or Featured Projects. The Proposed Projects and Featured Projects found in this NYCR Plan were voted for inclusion by official voting members of the Planning Committee. Those voting members with conflicts of interest recused themselves.
from voting on any affected projects, as required by the NYCR

NYCR Mastic Beach and Smith Point of Shirley is eligible for up to
$3 million in CDBG-DR implementation funds.

While developing projects for inclusion in this NYCR Plan, Planning
Committees took into account cost estimates, cost-benefit analyses,
the effectiveness of each project in reducing risk to populations and
critical assets, feasibility, and community support. Planning
Committees also considered the potential likelihood that a project or
action would be eligible for CDBG-DR funding. Projects and actions
implemented with this source of Federal funding must fall into a
Federally-designated eligible activity category, fulfill a national
objective (meeting an urgent need, removing slums and blight, or
benefiting low to moderate income individuals), and have a tie to the
natural disaster to which the funding is linked. These are among the
factors that the Governor’s Office of Storm Recovery will consider, in
consultation with local municipalities and nonprofit organizations,
when determining which projects and actions are best positioned for
implementation.

The total cost of Proposed Projects in this NYCR Plan exceeds the
NYCR Community’s CDBG-DR allocation to allow for flexibility if
some Proposed Projects cannot be implemented due to
environmental review, HUD eligibility, technical feasibility, or other
factors. Implementation of the projects and actions found in this
NYCR Plan are subject to applicable Federal, State, and local laws
and regulations, including the Americans with Disabilities Act (ADA).
Inclusion of a project or action in this NYCR Plan does not guarantee

that a particular project or action will be eligible for CDBG-DR
funding or that it will be implemented. The Governor’s Office of
Storm Recovery will actively seek to match projects with funding
sources.

In the months and years to follow, many of the projects and actions
outlined in this NYCR Plan will become a reality helping New York
not only to rebuild, but also to build back better.
Table of Contents

EXECUTIVE SUMMARY ............................................................... ES-1

SECTION 1. COMMUNITY OVERVIEW .................................... 1
A. GEOGRAPHIC SCOPE OF THE NYRCR PLAN ...................... 8
B. DESCRIPTION OF STORM DAMAGE .................................. 13
   Overview of Superstorm Sandy Effects ............................ 13
C. CRITICAL ISSUES ............................................................... 15
D. COMMUNITY VISION ......................................................... 16
   i. Vision Statement ....................................................... 16
E. RELATIONSHIP TO REGIONAL PLANS ............................. 17
   Regional Overview ....................................................... 17
   Regional Plans and Studies ........................................... 18
   Local Plans and Studies ............................................... 19

SECTION 2. ASSESSMENT OF RISK AND NEEDS .................... 21
A. COMMUNITY ASSETS AND ASSESSMENT OF RISK ............... 22
   i. Community Assets and Risks .................................... 22
   ii. Assessment of Risk to Assets and Systems .................. 31
   iii. Risk Assessment Results ....................................... 32
B. ASSESSMENT OF NEEDS AND OPPORTUNITIES ............... 34
   i. Community Planning and Capacity Building ................. 35
   ii. Economic Development ......................................... 35
   iii. Health and Social Services .................................... 35
   iv. Housing .................................................................. 36
   v. Infrastructure ......................................................... 37
   vi. Natural and Cultural Resources ............................... 38

SECTION 3. RECONSTRUCTION AND RESILIENCE STRATEGIES ...... 40

SECTION 4. IMPLEMENTATION - PROJECT PROFILES ................ 56
A. INTRODUCTION ................................................................. 57
   Cost Benefit Analysis .................................................. 58
   Project Costs .............................................................. 58
   Project Benefits .......................................................... 59
   Risk Reduction Analysis ............................................... 59
B. PROJECT PROFILES .......................................................... 60
   Proposed Project: Construct Phase I of Greenway/Blueway Trail .... 60
   Proposed Project: Elevate and Repair Violet’s Cove Building after Acquisition ........................................ 64
   Proposed Project: Construct Resilient Landscape for Violet’s Cove after Acquisition .............................. 67
   Proposed Project: Construct Resilient Amenities for Violet’s Cove after Acquisition ................................. 70
   Proposed Project: Prepare Engineering Design for Sewer System .... 73
   Proposed Project: Restore and Protect Selected Wetlands and Replenish Four Beaches ......................... 77
   Proposed Project: Conduct Flood Protection Study of Smith Point of Shirley ............................................. 81
   Proposed Project: Prepare Economic and Market Analysis .......... 83
   Proposed Project: Emergency Communication System and Education Program ...................................... 85
   Proposed Project: Install Solar Streetlights with Battery Backup .... 90
   Proposed Project: Engage Local Disaster Recovery Manager ....... 92
   Proposed Project: Prepare Stormwater Management Plan and Construct Improvements ....................... 94
   Featured Project: Construct Phase II of Greenway Trail .......... 97
   Featured Project: Construct Sewer System for Central Business District and Portion of Residential Area .... 99
Featured Project: Design and Construct Phase One of an Emergency Shelter/Community Center .................................................. 102
Featured Project: Design and Construct Phase Two of the Emergency Shelter/Community Center .................................................. 105
Featured Project: Provide Flood Protection for Smith Point of Shirley .......................................................................................... 107
Featured Project: Construct Marina and Recreational/Educational Facility at Smith Point Park North ........................................ 109
Featured Project: Construct Railroad Crossing at Hawthorne Street 112
Featured Project: Extend Natural Gas Service ........................................ 114
Featured Project: Conduct Flood Protection Engineering Analysis ...116
Featured Project: Elevate Portions of Mastic Road for Emergency Evacuation .................................................................................. 118

SECTION 5. ADDITIONAL MATERIALS ........................................ 120
A. ADDITIONAL RESILIENCE RECOMMENDATIONS ...................... 121
B. MASTER TABLE OF PROJECTS ..................................................... 124
C. PUBLIC ENGAGEMENT PROCESS ............................................. 131
   Committee Meetings .................................................................. 131
   Public Engagement .................................................................. 131
   Public Engagement Events ....................................................... 132
   Expert Sessions ................................................................... 133
   Online Meetings .................................................................. 134
   Other Considerations ........................................................... 134
   Website ............................................................................ 134
   Print and Broadcast Media ........................................................ 134
   Outreach Techniques for Receiving Input .................................. 134
   NYRCR Staff Communication .................................................. 135
   E-Mail ............................................................................... 135
   Comment Forms .................................................................. 135
   Requests for Information ........................................................ 135

D. COMMUNITY ASSET INVENTORY ........................................ 136
   Group Like Assets .................................................................. 136
   Determining Community Value ............................................... 136
   Using the Risk Assessment Tool ............................................. 138
E. GLOSSARY .............................................................................. 141
   Acronyms ......................................................................... 141
   Terms ............................................................................... 141
F. END NOTES ........................................................................... 143
Table of Figures

FIGURE 1: GEOGRAPHIC SCOPE ................................................................. 9
FIGURE 2: RISK AREA MAP ....................................................................... 23
FIGURE 3: ASSET MAP ............................................................................... 25
FIGURE 4: PROPOSED GREENWAY AND BLUEWAY TRAILS ....................... 63
FIGURE 5: RESTORE FOUR BEACHES AND WETLANDS PROJECT ................. 78

Table of Tables

TABLE 1: RISK ASSESSMENT .................................................................... 26
TABLE 2. ASSETS: ECONOMIC CENTERS .................................................. 27
TABLE 3. ASSETS: HOUSING ........................................................................ 27
TABLE 4. ASSETS: HEALTH AND SOCIAL SERVICES: LIFE SAFETY .............. 28
TABLE 5. ASSETS: HEALTH AND SOCIAL SERVICES: ADMINISTRATION AND EDUCATION ... 28
TABLE 6. ASSETS: STATE AND FEDERAL BUILDINGS AND PROPERTIES .......... 28
TABLE 7. ASSETS: STATE AND FEDERAL BUILDINGS AND PROPERTIES .......... 29
TABLE 8. ASSETS: INFRASTRUCTURE RESOURCES .................................... 29
TABLE 9. ASSETS: PARKLAND RESOURCES ............................................. 30
TABLE 10. ASSETS: NATURAL RESOURCES ............................................ 30
TABLE 11. ASSETS: RELIGIOUS INSTITUTIONS ......................................... 30
TABLE 12. ASSETS: CULTURAL RESOURCES .......................................... 31
TABLE 13. ASSETS: NATIONAL REGISTER LISTED HISTORIC RESOURCES ...... 31
TABLE 14. NEEDS AND OPPORTUNITIES ............................................... 39
TABLE 15. STRATEGY: RESTORE AND REBUILD WATERFRONT ATTRACTIONS AND RECREATIONAL OPPORTUNITIES ...................................................... 43
TABLE 16. STRATEGY: ENHANCE PUBLIC ACCESS TO AND USES OF THE WATERFRONT ...... 44
TABLE 17. STRATEGY: ENHANCE AND DEVELOP COMMERCIAL DISTRICT ....... 45
TABLE 18. STRATEGY: EXPAND EMERGENCY SHELTER OPTIONS .................... 46
TABLE 19. STRATEGY: PROVIDE COASTAL FLOOD PROTECTION ..................... 48
TABLE 20. STRATEGY: IMPROVE SAFETY AND COMMUNICATION DURING AND AFTER A STORM EVENT ................................................................. 50
TABLE 21. STRATEGY: IMPROVE EVACUATION OPTIONS .............................. 51
TABLE 22. STRATEGY: PROTECT THE ENVIRONMENT AND PROPERTIES FROM FUEL SPILLS . 52
TABLE 23. STRATEGY: PROTECT THE ENVIRONMENT AND HUMAN HEALTH FROM WASTEWATER POLLUTION ...................................................... 54
TABLE 24. STRATEGY: RESTORE AND PROTECT WETLANDS, CREEKS, AND BEACHES ...... 55
TABLE 25. ADDITIONAL RESILIENCY RECOMMENDATIONS .......................... 121
TABLE 26. MASTER PROJECT TABLE ....................................................... 124
Executive Summary

Overview of NY Rising Community Reconstruction Community: Village of Mastic Beach and Smith Point of Shirley

NY Rising Community Reconstruction (NYCR) Village of Mastic Beach and Smith Point of Shirley (Community) is one of eight NYCR Communities identified within Suffolk County. The Community is referred to in the NYCR Plan as Mastic Beach and Smith Point of Shirley.

Mastic Beach and Smith Point of Shirley are located on a peninsula in the southern portion of the Town of Brookhaven in Suffolk County, surrounded by Bellport Bay, Narrow Bay, and Moriches Bay and the Forge River. Pattersquash Creek and John’s Neck Creek flow into Narrow Bay, and Lons Creek and Home Creek are tributaries of the Forge River. In the interest of brevity, the New York Rising Community Reconstruction (NYCR) Community name has been shortened to “Mastic Beach and Smith Point of Shirley” throughout the remainder of this document.

The Village of Mastic Beach is approximately 4.8 square miles with elevations ranging from zero to approximately 35 feet above sea level (NAVD 88). The incorporated Village of Mastic Beach was only two years old when Sandy hit, yet Village personnel played a major role in the storm response and cleanup efforts. They continue to serve the residents of the Village of Mastic Beach by addressing their post-Sandy needs. Smith Point of Shirley is the peninsula west of William Floyd Parkway and south of Neighborhood Road.

Neighboring communities include the hamlets of Mastic and Moriches and the northern portion of the hamlet of Shirley. A total of $3 million has been allocated for resiliency projects within this Community.

Housing lots in Mastic Beach and Smith Point of Shirley were first advertised in the 1920’s through an ad in a Brooklyn newspaper. As of 2010, the U.S. Census Designated Place (CDP) of Mastic Beach had a population of 12,930 residents and approximately 4,231 households. The average household size was 3.41 individuals, considerably higher than the household size in Suffolk County of 2.93 individuals. According to the 2010 Census, 80% of housing units are owner-occupied and 20% renter-occupied. According to members of the NYCR Committee, many rental units are not permitted and are therefore not reported. Committee members indicated that as much as 40 percent of the housing units are rentals.

On October 29, 2012, Superstorm Sandy slammed into Mastic Beach and Smith Point of Shirley, bringing rain, wind, and record-high storm surge that flooded much of the Community. In addition to flooding, trees were downed, power was lost, and homes damaged. Mastic Beach First Assistant Fire Chief Carlo Grover reported that over 100 emergency rescues were made – some by boat – as seawater inundated the Community. The Village’s seniors, including residents with disabilities, presented additional concerns during the initial response to the storm. Village officials reported that some senior citizens were trapped in their homes for days following the storm.
Suffolk County reported that between 60 and 80 homes in Mastic Beach and Smith Point of Shirley were deemed either unlivable or condemned due to structural damage. Many hundreds more homes were damaged to such an extent that residents could no longer occupy them. Since Mastic Beach and Smith Point of Shirley do not have sewers, floodwaters wreaked havoc with residential on-site wastewater systems. The inundation of septic systems rendered many of them inoperable, presenting significant health and safety issues for the Community. Not only were these systems not functioning, but they were also releasing thousands of gallons of raw untreated wastewater into the Community and local waterways.

In addition to wastewater and septic issues, the Community faced a serious problem with fuel oil and propane tanks that broke free and spilled their contents during the storm. Further, many of the fugitive tanks burst or ignited, adding the danger of fire to that of flooding and water pollution.

These documented effects, combined with the first-hand experiences shared by residents at multiple well-attended public engagement events led to the identification of several critical issues facing the Village. These issues served to define needs, opportunities, strategies, and eventually projects that would help make the Community more resilient and sustainable.

Critical issues in Mastic Beach and Smith Point of Shirley include:

- Residential flooding;
- A lack of economic and development opportunities;
- Better coordination of emergency communication systems;
- Limited emergency evacuation routes and preparedness procedures;
- Environmental and human health exposure to wastewater from septic systems and fuel oil from residential storage tanks;
- Loss of tidal wetlands, beaches, and other natural resources due to the erosive effects of Superstorm Sandy and degraded water quality; and
- Limited access to medical and emergency services.
NYRCR Program: A Community-Driven Process

The Mastic Beach and Smith Point of Shirley NYCR Planning Committee (Committee) spent significant time and effort in developing a vision for their community’s resilient future. This vision was based on establishing a series of goals that could act as targets or waypoints for the community on its journey towards resiliency. This final vision was informed by public input from community members. The Community Vision Statement represents a consensus assessment of the direction this Community wishes to move towards, and is as described below.

The Mastic Beach and Smith Point of Shirley Community wishes to protect and enhance the safety and quality of life of its residents. We want to develop a sustainable local economy that is built on our natural and cultural resources. We need to protect our assets by increasing our resilience to climate change and our capacity to withstand future storms.

To achieve our vision, we will:

- Utilize our natural and cultural resources as economic assets to retain and attract young people, visitors, and appropriate businesses.
- Revitalize our downtown by expanding housing and retail choices and increasing its function as a village center.
- Protect our housing stock, infrastructure, and other critical assets from future storms and the effects of climate change.

All strategies and projects identified were measured against the Community Vision to ensure that recommended actions helped achieve the community’s desired goals.

The Public Engagement Process did not end with the development of the Vision Statement. In keeping with Governor Cuomo’s emphasis on bottom-up planning, members of the Community were involved in each step of the NYRCR Program. The NYRCR Committee was composed of residents who could speak directly from experience of the character of the community, its needs, and strengths in good times and bad. Eleven Committee meetings have been held as of March 15, 2014. All Committee meetings were open to the public, with meeting dates and times posted on the NYRCR website (www.stormrecovery.ny.gov/nyrcr).

The Community at-large was invited to take part in the NYRCR Program through a variety of methods. Their feedback was reviewed by the Committee and incorporated into the decision-making that informed the development of this Plan. Engagement activities included several in-person and web-based opportunities for participation:

- Three open-house style events were held during the development of the Plan and a fourth will present this final document;
- Residents were encouraged to complete a web-based survey to gauge public opinion on the Proposed Projects in conjunction with Public Engagement Event 3;
- Younger members of the community were invited to participated in a web-based “Next Generation” survey to gather feedback on proposed projects that would likely affect their futures in the Community;
- The NYCR Mastic Beach and Smith Point of Shirley website (http://stormrecovery.ny.gov/nyrcr/community/mastic-beach-and-smith-point-shirley) served as a repository for downloadable
versions of all public information and event notifications. The website includes an area to accept public comment;

- Planning information was disseminated through local print media to keep the Community informed and to respond to media inquiries;
- E-mail comments and requests for information could be sent to the State’s e-mail address at: info@stormrecovery.ny.gov; and
- Comment forms were available at Committee meetings and public engagement events and on the State’s website to provide an opportunity for the public to contribute their feedback, which were then passed along to the Committee.

**NYRCR Plan: A Blueprint for Resiliency**

An asset inventory was conducted for the Village to identify assets both built and natural, which are critical to the safety, resiliency, and character of the Village. The identified assets were evaluated in detail to understand their level of risk, or potential for damage, to future storm events. Identification of risks to critical assets provided the framework within which resiliency strategies were developed. Strategies are general approaches to types of projects, programs, policies, or other actions that specifically address an identifiable need or leverage an existing opportunity within the Community. For every need or opportunity, potential strategies were generated for each resiliency issue. The list of strategies spanned an array of methodologies and timeframes, from preparedness to retrofits, from immediate procedural improvements to long-range capital investment programs.

Projects are the path to executing the strategies and meeting the Community’s need for resiliency. Three tiers of projects were identified: Proposed Projects, Featured Projects, and Additional Resiliency Recommendations. Proposed Projects are projects that are under consideration for Community Development Block Grant Disaster Recovery funding using the Community’s $3 million allocation. It is important to note that there is no priority order or ranking of projects aside from the project tier. The following table presents all Proposed Projects by Strategy:
## NYRCR Mastic Beach and Smith Point of Shirley Resiliency Projects

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
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<tbody>
<tr>
<td>Restore and rebuild waterfront attractions, educational and recreational opportunities</td>
<td>Elevate/Repair Violets Cove Building after Acquisition</td>
<td>Elevate and repair the main building of the Violet’s Cove property after acquisition from Suffolk County.</td>
<td>$1,400,000</td>
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<td></td>
<td>Construct Resilient Landscape for Violets Cove Property after Acquisition</td>
<td>Make improvements to the property to make it flood resilient including installation of a naturalized landscape with green infrastructure to survive flooding after acquisition from Suffolk County.</td>
<td>$780,000</td>
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<td>Construct Resilient Amenities for Violet's Cove Building after Acquisition</td>
<td>Make improvements to the property to allow the temporary docking of transient vessels at the facility after acquisition from Suffolk County. Incorporate educational opportunities with a small nature center</td>
<td>$98,000</td>
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<td></td>
<td>Construct Phase 1 of Greenway/ Blueway Trail</td>
<td>Phase 1 of this project would include the design and construction of phase 1 of a “greenway” and “blueway” trail network.</td>
<td>$231,000</td>
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<td>Economic &amp; Market Analysis</td>
<td>Identify opportunities for niche businesses and improvements to the business district and broader Community needed to attract investment.</td>
<td>$125,000</td>
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<td></td>
<td>Flood Reduction Study of Smith Point of Shirley</td>
<td>Conduct engineering evaluation of measures to reduce flooding for properties north of Suffolk County's Smith Point Park North.</td>
<td>$125,000</td>
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<td></td>
<td>Prepare Stormwater Management Plan and Construct Improvements</td>
<td>Inventory drainage collection and recharge components. Recommend green infrastructure improvements and property acquisitions for storage and recharge, and possible dual use for parks during dry weather.</td>
<td>1,000,000</td>
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<td></td>
<td>Emergency Communication System and Education Program</td>
<td>Design and install fixed equipment to operate local emergency radio system on the VHF band. Equipment includes fixed repeater stations to amplify the signal throughout the Community, installation of an antenna fixed to an existing or newly constructed tower.</td>
<td>$95,000</td>
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<td>Local Emergency Preparedness Plan</td>
<td>Develop a local emergency preparedness plan that can be implemented by the Village and local emergency service providers in coordination with the plan in place by Suffolk County.</td>
<td>$35,000</td>
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<tr>
<td>Strategy</td>
<td>Project Name</td>
<td>Short Description</td>
<td>Estimated Cost</td>
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<td>Improve safety and communication during and after a storm event</td>
<td>Install Solar Streetlights with Battery Backup</td>
<td>Design and install 200 solar streetlights at key intersections, primary roadways, park entrances, and places used during emergencies.</td>
<td>$600,000</td>
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<td>continued</td>
<td>Engage Local Disaster Recovery Manager</td>
<td>Engage a full-time Local Disaster Recovery Manager for two years to coordinate implementation of recovery and resilience projects and prepare funding applications for additional projects.</td>
<td>$300,000</td>
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<tr>
<td>Protect the environment and human health from wastewater pollution</td>
<td>Design Wastewater Collection and Treatment System</td>
<td>Prepare engineering designs and construction documents for a wastewater collection and treatment system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road).</td>
<td>$1,200,000</td>
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<tr>
<td>Restore and protect wetlands, creeks, and beaches</td>
<td>Restore and Protect Selected Wetlands and Replenish Four Beaches</td>
<td>A submerged rock breakwater to reduce wave velocity and retain the sand would protect tidal wetlands damaged by the storm due to the erosive action of waves. The rock structure would be seeded with oysters to function as a “living breakwater.” Invasive and exotic wetland plant species would be replaced with natives. Wetlands denuded by waves and sand scour would be replanted.</td>
<td>$720,000</td>
</tr>
</tbody>
</table>
Section 1. Community Overview

*View of barrier beach across Narrow Bay*
Mastic Beach and Smith Point of Shirley are located on a peninsula in the southern portion of the Town of Brookhaven in Suffolk County, surrounded by Bellport Bay, Narrow Bay, and Moriches Bay and the Forge River. Pattersquash Creek and John’s Neck Creek flow into Narrow Bay, and Lons Creek and Home Creek are tributaries of the Forge River. In the interest of brevity, the New York Rising Community Reconstruction (NYRCR) Community name has been shortened to “Mastic Beach and Smith Point of Shirley” throughout the remainder of this document.

The Village of Mastic Beach is approximately 4.8 square miles with elevations ranging from zero to approximately 35 feet above sea level (NAVD 88). The incorporated Village of Mastic Beach was only two years old when Sandy hit, yet Village personnel played a major role in the storm response and cleanup efforts. They continue to serve the residents of the Village of Mastic Beach by addressing their post-Sandy needs.

Smith Point of Shirley is the peninsula west of William Floyd Parkway and south of Neighborhood Road. Neighboring communities include the hamlets of Mastic and Moriches and the northern portion of the hamlet of Shirley.

The water was – and still is – everything to many of us. In an out-of-the-way place that has seen its share of hard luck, the water, beaches and nature preserves have been a point of pride, a refuge that we all can enjoy and even earn a living from. And then, out of a dark and swirling October sky, the water was everywhere it wasn’t supposed to be. It stranded our neighbors in flooded houses, cars, and businesses and pushed our first responders to the brink of exhaustion. Superstorm Sandy had roared ashore with a ferocity that did nothing less than transform our best asset into our worst nightmare. “The water is gorgeous, it’s why a lot of us came here,” said Jon Siebert, a member of the NYCR Mastic Beach and Smith Point of Shirley Committee. “But it can also be very unforgiving. Sandy was as bad as we’ve seen.”

Through the years, fair or not, the feeling in the Mastic-Shirley area was that the rest of world did not care about our problems and did not do much to solve them. Little help for years in cleaning up a polluted river, improving our little downtown, or bringing our houses up to Code. The majority – but, no, not all of us – felt so strongly that we created our own village to give us more control over the future of our Community.

But Sandy taught us some positive things about our Community and about the “outside world.” For all our well-chronicled political differences, we learned how well we could come together to help ourselves – especially the most vulnerable among us. We learned that we could count on not just our firefighters, police officers, and ambulance drivers – many of them volunteers who did their jobs while they worried about their own families – but also on our religious leaders, librarians, teachers, and especially our students. Hundreds of kids gave and kept on giving their time. “I wanted to help out because so many people were suffering and I had it pretty good,” said Moses Goetschius, 16, a junior at William Floyd who is lauded for all the hours he put in. “It felt good to bring them food and make them smile.”
The local imam collected and donated 3,000 blankets; the Catholic priest opened the doors of his church to feed 700 people their first warm meal in days; the rabbi welcomed a soup kitchen that operated round the clock; ministers from many faiths were there for us in many ways.

The Mastic Beach Property Owners Association (MBPOA) also helped greatly: they opened their clubhouse to serve over 600 hot meals, distribute food and clothing donations, and provide residents a place to warm up.

In the days after Sandy, our library became the Community hub. A place where we could get information, water, a place to plug in a computer and charge a cell phone, to share experiences with friends and neighbors. A place for help and healing. The library proved especially important to our Spanish-speaking immigrants. Librarian Kerri Rosalia, Co-Chair of the NYRCR Committee, made sure that all emergency and recovery information was translated into Spanish for our Community’s growing number of Latinos, many of whom lived in homes literally washed away by the storm surge. She also ensured that these people would have a voice in creating this NYRCR Plan. Part of one of the NYCR Committee’s public meetings, which were part of a determined public outreach effort, featured translators so the Spanish speakers could both understand and be understood. “They were thrilled,” said Mrs. Rosalia. “They have felt overlooked, living in the shadows especially those who may be undocumented. They are so afraid of authorities that they might not even open their doors to a first responder. But after this meeting they felt part of the Community.”

For all the indifference we had experienced from outsiders, we saw how much they were willing to help us – giving their time as well as money and supplies. In our time of greatest need, donations poured in from everywhere, including two trucks sent by the Marshall Tucker Band and another truckload of supplies sent directly from Hurricane Katrina survivors: the charitable group “Ship Art Installs” drove a truckload of supplies from New Orleans in an event known as “New Orleans Gives Back.”

So much clothing, cleaning supplies, batteries, and other necessary items found their way to the Mastic-Shirley area that Ron Gross, who teaches a course at William Floyd High School about the history and development of the Community, persuaded the school district to donate the entire wing of a school for storage. Every room was filled within weeks.

As much of a logistical challenge as the items presented, the boost of morale was as bracing as the morning breeze off the Great South Bay. “We had felt forgotten for such a long time,” said Mr. Siebert, who with Friends of Long Island has spent countless hours with people from inside and outside the Community cleaning up and rebuilding houses. “In a way, Sandy put us on the map.”
Voices

“I was proud of the kids. They got a real, honest lesson in service to the community. They really stepped up...”

--Ron Gross, high school teacher

“The kids did so much. They didn’t do it with an attitude. They did it because they cared. It made us feel proud big time...”

--Donato Sangemino, food pantry founder and operator

And the Mastic-Shirley Community has stayed together. More than a year and a half after Sandy struck, many social service agencies are not yet back to normal operations, but a temporary soup kitchen has become a heavily patronized food pantry. The library has remained a safe haven for the Latino population and a learning center where English is not just translated into Spanish but also is taught in classes for parents and their children. Teams of volunteers, including people from beyond Long Island, have continued to repair and rebuild homes for those who need the physical or financial help. Carol Costaldo, who was injured and stranded for days before being discovered and rushed for emergency care, lost almost everything to the sea. By the time she was ready to return home, her house had been rebuilt by volunteers.

We are proud of these efforts that help show Mastic-Shirley in a positive light. But the Committee and the Community we represent are not kidding ourselves. We are not the wealthiest of places and know a lot of work remains. We also know there is a lot more to be done before we can say that we are ready for the next Big One.

That is one of the reasons why we believe that the work of the NY Rising Community Reconstruction (NYRCR) Program, the NYCR Mastic Beach and Smith Point of Shirley Committee, and the many people who participated in the Community-driven planning set in motion by Governor Andrew M. Cuomo, as well as local and Federal officials, was so important. No, consensus was not always easy to reach. But because all sectors of the Community were involved, and we were able to draw upon the expertise of our consultants and State experts, the process produced what we believe to be sound plans for recovery and resiliency. Perhaps more importantly for the long haul, the program also offered us a planning forum that did more than recognize and respect our experiences, expertise, and preferences. It was a process that empowered people and promoted constructive dialogue. “We felt we had a real say in the process,” Mrs. Rosalia said. “And it helped bring us and keep us together. We have never been a community where consensus is found easily. But the Committee accepted that we had to put aside differences for the community. It was refreshing to see.”
If we are to become truly resilient, we know it is not enough just to feel good about more people volunteering for Community efforts. We know we have to learn from the experience – and from some of the deficiencies we have identified, particularly in wastewater treatment, flood control, economic development, evacuation routes, and communication equipment. Even if we were a more prosperous community, many of our needs could only be met with the assistance of Federal, State, and regional governments. As a small village and part of an unincorporated hamlet, we know that huge infrastructure projects are beyond the ability of us to plan and finance on our own. That is not a situation unique to our communities. Many other small suburban villages and hamlets need help “from above” to undertake major public works initiatives. It is up to the Committee to make our best case.

Voices

“I came down to help at the food pantry because I wanted to be in the National Junior Honor Society. But I really liked it. I enjoyed making people happy and not hungry. It makes me appreciate what I have…”

--Gavin Henderson, 13, middle school student

Voices

“The Community would benefit from improved emergency preparedness planning and procedures, particularly for populations that do not speak English as a first language. As Superstorm Sandy approached, many residents failed to evacuate, not recognizing that a serious storm could threaten their life and safety. Too few had given serious thought to evacuation needs or procedures, some had to be rescued during the storm, putting them, and rescue workers in peril, and in the aftermath only a minority knew how to access critical response and recovery resources.”

--NYRCR Committee Member

One thing the Committee and the Community agreed upon right from the start: It is not acceptable to simply restore the Community to what it was before Sandy. That would be a squandering of an opportunity to revive Mastic Beach and Smith Point of Shirley that may never come along again. That is why the Committee focused early on strategies that would protect our natural and cultural assets in ways that both improve our resiliency and encourage economic development. To attract tourists, we wanted (and propose) to make more of our parks, marinas, wetlands, and beaches on the coastline. We certainly need to make them more accessible. And while we build sewers and extend natural gas lines to protect the environment and the public’s health against pollution, we are pursuing new
opportunities to attract investment in niche businesses in downtown Mastic Beach. The Committee and the public recognized that economic strategies are perhaps one of the most critical elements of a successful recovery.

But improving our economic prospects must go hand in hand with protecting homes, businesses, and natural assets from flooding. Since much of the devastation took place in extreme and high-risk flood zones, we are advocating projects to create berms and elevated roadways that help stop or slow the tidal surge of major storms. So, too, must we restore and protect our damaged and diminished wetlands, creeks, and beaches to naturally reduce the power of waves. Preventing flooding is important but another truly big storm may not stop Mother Nature. Nobody who lived through Sandy can say otherwise. That is why we also are asking for help to ensure safe and secure evacuation routes along roads that are jammed in normal rush hours, much less emergencies. Our experience also told us that our communication systems are not adequate to deal with disruptions that can come with disasters. Their failure puts everyone at risk but most especially our elderly and disabled populations. Our communication systems must be augmented with new equipment and coordinated by block captains who know their neighborhoods. We cannot solve this problem with technology alone.

Not everybody has friends and family in dry places. And in a severe flood, cars can be lost or of no use. We saw hundreds of cars strewn along roads and driveways. Having an emergency shelter or relief supplies miles away will not help if people need to leave their homes.

So we need an emergency shelter to serve Mastic Beach and Smith Point of Shirley as well as people from other areas. To make the most of these precious dollars, we are in need of a facility that would double in normal times as a recreational center.

Before we move on to the details of our plans and Community, we want to be clear about a few more things: We in Mastic Beach and Smith Point of Shirley understand that recovery remains an ongoing task that requires continued collaboration with Federal, State, and local authorities. We also recognize that we will not get everything we want, certainly not right away. But we are prepared to do our part, to work together to refine our priorities and do everything we can to get what we need.

As several of the Committee members put it, “This is our best chance to start over again as a Community.” And to do so on the strength of more outside aid and expertise than we are likely to see in the foreseeable future. So we in Mastic Beach and Smith Point of Shirley are determined that we can make the most of the water we love and keep it where it is supposed to be.

**Historic Context**

Once we were the Hamptons on the cheap, a summer refuge for the working class, and in some ways, we still are – although perhaps no longer for people from New York City.

Mastic Beach was originally developed in the 1920s as affordable summer home communities designed for workers from the New York City. Back then, a Brooklyn newspaper advertised that if readers bought a subscription they could purchase a plot out here for $50.
That is how cheap land was. From *The History of Mastic Beach* written by Janice L. Schaefer in 1994; “The first reference to Mastic Beach was made by the Home Guardian Company developed by Warren and Arthur Smadbeck. They opened the first map of Mastic Beach in 1926.”

Several years later, the existing pattern of development began to take shape when Walter T. Shirley purchased approximately 10,000 acres of undeveloped land and created large-scale subdivision development plans. Then we became suburbia in a big way. From 1945 to 1962, at the dawn of the suburban era, Shirley filed over 45 subdivision maps, which played a major role in developing the existing road network and pattern of circulation.

**Present Day**

The Village of Mastic Beach was incorporated in November 2010, a rare event nowadays in New York State where the creation of new levels of government has been discouraged for years. The Village was established based largely upon many – but not all – of our resident’s desire to enact and implement their own land use decisions, to bring decisions about zoning districts and the actual pattern of land uses to the Village, to have direct control of the quality of life and to preserve community identity, and to obtain the authority to guide future development. Prior to incorporation as a Village, Mastic Beach was a hamlet within the Town of Brookhaven.

Land use in the area is predominately low-density residential with only about 150 commercial properties (accounting for nearly 50 acres of development) within the 5.3 square mile Village, clustered around the Central Business District on Neighborhood Road and Mastic Beach Road near the William Floyd Schools. Detached single-family homes account for over 90% of the total acreage. The remaining land includes mixed-use, business, and waterfront development districts. There are no industrially zoned parcels or industrial uses within the NYRCR Mastic Beach and Smith Point of Shirley Community (Community).

Perhaps the greatest barrier to commercial development in Mastic Beach is the lack of a public sewer collection system – a priority for Suffolk County – and treatment plant to serve the commercial district. The lack of sewers means that restaurants and businesses are limited in the number of customers they can serve, which, in turn, limits the number and type of businesses that Mastic Beach can attract.

The natural environment of Mastic Beach and Smith Point of Shirley has been altered by residential development and historic land management measures. Houses were built in the wetlands prior to floodplain and environmental regulations. They are consequently highly vulnerable to storm surge inundation and must contend with high groundwater. Both of these conditions makes wastewater management difficult and severely impairs drainage.
A. GEOGRAPHIC SCOPE OF THE NYRCR PLAN

The identification of a geographic scope for the NYCR Plan was of paramount importance as it helped to develop parameters and inform the extent of the planning effort. As such, establishing a geographic scope was a crucial responsibility undertaken by the Mastic Beach and Smith Point of Shirley NYCR Planning Committee (Committee). The NYCR Plan is intended to deliver strategies and projects that will make the Community resilient in the face of future storms and sea level rise.

The Committee defined the geographic scope of the NYCR Plan by the areas where assets are most at risk to current and future flood risk, where future construction or reconstruction of existing development should be encouraged, and where key investments to enhance resilience can be made.

Initially, the geographic scope of the NYCR Plan was defined as the Incorporated Village of Mastic Beach. The Committee recognized, however, that the risk area extended across the Mastic peninsula from the Forge River on the east to the Carmans River on the west. The Committee, therefore, added the western portion of the peninsula outside the incorporated Village that was identified as Smith Point of Shirley. That area extends from the William Floyd Parkway west and south from Neighborhood Road and including the County’s Smith Point Park North. Smith Point of Shirley was affected by hurricanes Sandy and Irene, as was the Village of Mastic Beach.

The inclusion of Smith Point of Shirley was important not only from a flood risk perspective, but also from a cultural, natural resource, and economic standpoint. Smith Point of Shirley is the eastern edge of the Carmans River and the Federal Wertheim Wildlife Preserve, an important natural resource and visitor attraction. Suffolk County’s Smith Point North was identified by the Community as a potential visitor attraction and economic asset that could feature a marina, fishing pier, and restaurant. The geographic scope was extended west and north into Smith Point of Shirley to include the Town-owned St. George Manor on the west side of the peninsula and the Federally owned (Fire Island National Seashore) William Floyd Estate on the east side of the peninsula. St. George’s Manor was originally a large tract of land owned by Colonel William Smith in the 17th century. Colonel Smith and the property itself played an important role in the Revolutionary War. The land remained in the Smith family until 1967. It was donated to the Town for preservation in 1974.

The William Floyd Estate was the home of William Floyd, a signer of the Declaration of Independence, from 1734 until 1803. The home is on the National Register of Historic Places and is a designated National Historic Landmark. The home was visited by a number of important historic figures including the Marquis de Lafayette. The house is owned by the National Park Service and is part of the Fire Island National Seashore (FINS).

Mention is made throughout the Plan to the Mastic-Shirley peninsula. This geographic area refers to all of the communities south of Montauk Highway including the hamlets of Shirley and Mastic and the incorporated Village of Mastic Beach.
Figure 1: Geographic Scope
Demographic Data

With the exception of data on ethnicity and race, all demographic data depicted below is taken from the U.S. Census Bureau’s American FactFinder at the Census Designated Place (CDP) level, and reflects data from the most recent American Community Survey (ACS). Demographic data relating to ethnicity and race were derived from the 2010 Census.

The CDP level of data aggregation was selected because the availability, detail, and geography of other data aggregation levels (e.g., Census Tracts, Groups, and Blocks) are subject to variation across the decennial censuses. The CDP level provided a uniform level of data aggregation and reporting periods. It is acknowledged that the CDP level data may include some areas that are not contained within the identified NYRCR Community. Additionally, the Census data’s intended use in this NYRCR Plan is to provide an overview of the Community. The 2010 data is for the Mastic Beach CDP, which is not exactly coincident with the Village of Mastic Beach. Smith Point of Shirley is not included in this analysis. It is unlikely, however, that areas included in the CDP but excluded from the Community delineation would result in a substantial effect on the overview-level interpretation of the data or affect the identification of needs and opportunities or projects under the NYRCR Program.

General Demographics

According to Year 2010 Census data for the Mastic Beach CDP, there were 12,930 residents in 4,231 households. The average household size is 3.41 individuals, considerably higher than the household size in Suffolk County of 2.93 individuals. According to the 2010 Census, 80% of housing units are owner-occupied and 20% renter-occupied. According to members of the NYRCR Committee, many rental units are not permitted and are therefore not reported. Committee members indicated that as much as 40 percent of the housing units are rentals. In 2010, the Census reported only 6.6% of housing units as vacant. The NYCR Committee estimates that more than 20% of housing units are vacant, with the most common reasons being that the property is damaged from the storm, in foreclosure or bank owned, for sale, or it is seasonally used.

The age of the population shows a typical suburban distribution among the Census age groups, with about 50% of the population under 35 years of age, 30% between 35 and 54 years, and 20% over 55 years. Approximately 31% of the population is less than 19 years old, a relatively high percentage compared with other CDPs in Suffolk County (25%), confirming the higher household size than in other parts of the County. Households with children likely find the Community more affordable than other parts of the County.

In 2010, the Mastic Beach CDP was 80.5% White, 9.5% African American, and 6.0% other single races. Individuals reporting two or more races represented 4.0% of the population. About 17.6% of the population is Hispanic or Latino (Hispanics and Latinos may be of any race, so also are included in applicable race categories).
The residents report that although the majority in the Community either speak English as the only language at home or rate their English proficiency as “very good,” there is a substantial population of Spanish-only speakers represented amongst the 17.6% of the population that is Hispanic or Latino. This information is important for the identification of needs and opportunities as the non-English speaking population represents a Community of concern that may not have easy access to important life safety information.

**Income**

The Mastic Beach CDP includes a range of individual wage earnings from more than $75,000 to below the poverty line. Ten percent of the residents earn $75,000 or more. However, more than 50% earn between $35,000 and $10,000. The median income for the Mastic Beach CDP was $66,926 in 2010, considerably lower than the $87,778 median income of Suffolk County. More than 20% earn less than $10,000. Similarly, more than 20% of the population is under 150% of the poverty level, indicating that the population reporting individual income under $10,000 may be individuals or families who represent an economically disadvantaged population. The census indicates that 12.9% of the 4,526 households are single parent households higher than the 7.2% of households for the County. In general, the Community is characterized by larger and younger families, a greater number of single parent households, and a median income almost 24% lower than the County as a whole.

**Employment and Journey to Work**

More than 80% of the residents of the Mastic Beach CDP work within Suffolk County, and nearly all of the residents work somewhere within New York. More than 90% of workers drive alone to work or carpool. The next largest means of travel to work is by bus (3%). The percentage of zero-car households is less than 2%.

Understanding the general character of the communities’ workforce helps identify needs and opportunities and the projects to maintain, restore, and enhance the economic vitality of the Community.

While workers residing in the Mastic Beach CDP are employed in a diverse array of industries, educational services, retail trade, and real estate and related services composed more than half of all industries represented.
Guidance and Insight from Demographic Analysis

The demographic analysis suggests a few trends and characteristics. Schools and similar educational facilities are important to this Community as almost one-third (31%) of the population is under 19 years of age. The William Floyd Schools are also a major employer (though it is unclear how many of its employees live in the Community). The schools could serve as temporary evacuation centers during emergencies, though they are not suitable as longer-term shelters. Ensuring the resiliency of educational facilities is therefore a goal supported by the Census data.

Most of Mastic Beach CDP’s workers commute by car to employment centers on Long Island, including 80% who work in Suffolk County. The Community is served by the Mastic-Shirley LIRR station, and it is 64 miles to Penn Station (1 ½ to 2 hours via the train). There are connecting Suffolk County buses at the station. Adequate roadway capacity is important as most residents leave the peninsula to work. As a peninsula, these same roads are utilized for evacuation.

The NYRCR Committee reports that Census data for housing does not adequately reflect conditions in the Community. Many rental units are not reported to the Census or to the municipalities as they were constructed without permits and are not reported as rental housing.

The NYRCR Committee reports that some of these units are “substandard” and rent for less than market rate, thus attracting tenants with lower incomes such as the poor, recent immigrants, the elderly, and the disabled.

These residents are especially vulnerable during storm events as they may not be connected to electronic media or may simply be out of communication. Many do not have cars and most have limited options for relocation within their Community.
B. DESCRIPTION OF STORM DAMAGE

Overview of Superstorm Sandy Effects
On October 29, 2012, Superstorm Sandy slammed into Mastic Beach and Smith Point of Shirley, bringing rain, wind, and record-high storm surge that flooded much of the Community. Overnight the Mastic peninsula faced unprecedented devastation. In addition to flooding, trees were downed, power was lost, and homes damaged. Mastic Beach First Assistant Fire Chief Carlo Grover reported that over 100 emergency rescues were made – some by boat – as seawater inundated the Community.

The Village’s seniors, including residents with disabilities, presented additional concerns during the initial response to the storm. Village officials reported that some senior citizens were trapped in their homes for days following the storm.

We were fortunate to have a team of experienced first responders and emergency service personnel to protect and assist those in harm’s way. In the days following the storm, more than 100 Mastic Beach evacuees sought refuge in nearby shelters.

Residents and other members of the Community quickly organized to help those in need. Local civic associations mobilized to provide food, shelter, and key items throughout the Community. Despite widespread devastation, many residents volunteered their help.

Following the initial emergency response, the Community soon began to assess the storm’s impacts on residences, businesses, and infrastructure. Suffolk County reported that between 60 and 80 homes in Mastic Beach and Smith Point of Shirley were deemed either unlivable or condemned due to structural damage. There were 3,755 housing units in the 2000 U.S. Census. According to Committee members, the real number of unlivable homes far exceeds the County’s estimate. The Village of Mastic Beach received the damage assessments and continues to process building permit applications.

Many hundreds more homes were damaged to such an extent that residents could no longer occupy them. Most of these residents could not relocate inside Mastic Beach and Smith Point of Shirley, as there were few available rental apartments or homes. Some of the displaced residents will not return to their homes, as the cost of repairs, back rent or mortgage payments and temporary housing exceed their ability to pay. Residents who do return are faced with the costly and difficult process of rebuilding due to the need to address significant health and safety issues such as ground and structural contamination from septic systems, fuel oil, and mold.

Superstorm Sandy also devastated local businesses. Mastic Beach has two small, central commercial districts along Mastic Road and Neighborhood Road, and it is also home to several marinas and boating facilities along its extensive coastline. The Mastic Beach Property Owners Association manages two marinas. There is also a marina on Osprey Point off Home Creek. There are scores of “stick docks” in Pattersquash Creek. The County’s Smith Point Park North has a boat launch and parking. A commercial marina is located in
Violet’s Cove, an area that is well-suited for boat access given its proximity to Fire Island and the boating channels of Narrow Bay. Vessels berthed at the Community’s marinas were heavily damaged, as were docks, bulkheads, and marina buildings.

Overall, much of the Community’s infrastructure was damaged or rendered unusable. Since Mastic Beach and Smith Point of Shirley do not have sewers, floodwaters wreaked havoc with residential on-site wastewater systems. The inundation of septic systems rendered many of them inoperable, thus presenting significant health and safety issues for the Community. Not only were these systems not functioning, but they were also releasing thousands of gallons of raw untreated wastewater into the Community and local waterways.

Septic system tanks typically hold 1,000 or 1,500 gallons of liquids and solids. Leaching pools have a capacity of 3,000 gallons or more. Thus, any single damaged system can release over 1,000 gallons of wastewater, and there are hundreds such systems located in the high groundwater, low elevation flood zone. Today, residents continue to report issues with on-site wastewater systems, particularly along the waterfront. Residents south of Quail Road (on the west side of Pattersquash Creek), for example, can no longer flush toilets during higher-than-normal tides or during a normal rain event.

In addition to wastewater and septic issues, the Community faced a serious problem with fuel oil and propane tanks that broke free and spilled their contents during the storm. There is no piped natural gas service to this Community. Without natural gas service in many areas, residents rely on outdoor fuel oil tanks to provide heating fuel.

Further, many of the fugitive tanks burst or ignited, adding the danger of fire to that of flooding and water pollution.

Matters were made worse when a strong winter storm hit the area the following week, exacerbating the situation of those already suffering from the loss of power and heat. As most homes are served by public water, adequate drinking water was available during and after the storm.
C. CRITICAL ISSUES

The NYRCR Committee and the public identified a variety of issues related to the protection of the life and safety of residents in the face of future storm events. They also spoke to the need to strengthen the local economy and ensure that it is able to recover quickly following a storm or other disaster. Some of the most significant and widespread issues identified by the Committee and Community include:

- Residential flooding;
- A lack of economic and development opportunities;
- Better coordination of emergency communication systems;
- Limited emergency evacuation routes and preparedness procedures;
- Environmental and human health exposure to wastewater from septic systems and fuel oil from residential storage tanks;
- Loss of tidal wetlands, beaches, and other natural resources due to the erosive effects of Superstorm Sandy and degraded water quality; and
- Limited access to medical and emergency services.
D. COMMUNITY VISION

i. Vision Statement

The following Vision Statement served as a guide throughout the planning process to ensure that recommended actions achieve stated goals.

*The Mastic Beach and Smith Point of Shirley Community wishes to protect and enhance the safety and quality of life of its residents. We want to develop a sustainable local economy that is built on our natural and cultural resources. We need to protect our assets by increasing our resilience to climate change and our capacity to withstand future storms.*

To achieve our vision, we will:

- Utilize our natural and cultural resources as economic assets to retain and attract young people, visitors, and appropriate businesses.
- Revitalize our downtown by expanding housing and retail choices and increasing its function as a village center.
- Protect our housing stock, infrastructure, and other critical assets from future storms and the effects of climate change.

In order to achieve their Vision, the Committee identified a list of Community goals to be achieved through the implementation of the NYRCR Plan:

- Provide residential flood protection, resilience measures, and opportunities for buyouts, acquisitions, and land swaps;
- Provide resilient redevelopment of the waterfront to stimulate economic development and expand recreational opportunities for residents and visitors;
- Strengthen emergency communication systems;
- Improve emergency evacuation routes and preparedness procedures;
- Protect the environment and human health from wastewater pollution by installing a wastewater collection and treatment system;
- Restore natural systems including wetlands, beaches, and creeks for their ecological, recreational, and economic values;
- Stimulate redevelopment of the commercial areas;
- Expand local medical and emergency services; and
- Make natural gas available to Mastic Beach and Smith Point of Shirley.
E. RELATIONSHIP TO REGIONAL PLANS

Regional Overview

Mastic Beach and Smith Point of Shirley exists as part of a regional Community. It is part of the larger Mastic-Shirley peninsula, much of which is in the unincorporated portion of the Town of Brookhaven. It is the gateway to the FINS. It is bracketed by two significant waterways: the Forge River and the Carmans River. The Forge River on its eastern side is a New York State Department of Environmental Conservation (NYS DEC) designated “impaired” waterbody. It has suffered from decades of nitrogen inputs from the peninsula’s on-site wastewater systems and fertilizer. The Carmans River, on the western side of the peninsula, is a relatively pristine waterbody that flows through the Wertheim Preserve. Narrow Bay to the south of the Community is another impaired waterbody. Plans for Mastic Beach and Smith Point of Shirley must consider the protection and improvement of these waterbodies and the wetlands that border them, as they are all regional assets.

Transportation is another regional concern. The William Floyd Parkway transports residents and visitors off the peninsula north to the center of Long Island and south to the FINS. Mastic Road is the only other north/south roadway that connects to roads and areas off the peninsula as the Long Island Rail Road tracks interfere with all other north-south routes. Access to regional roadways like the William Floyd Parkway and Mastic Road is necessary for the mostly commuting workforce and during a disaster.

Infrastructure such as natural gas and wastewater collection and treatment are other regional concerns. Natural gas is provided by National Grid, a private utility, but only to the northernmost portion of the peninsula. Its delivery to Mastic Beach and Smith Point of Shirley could provide environmental, economic, and social benefits to the Community. Wastewater collection and treatment have been and continue to be a high regional priority for the Mastic-Shirley peninsula, for the development of its commercial districts and the protection of its adjoining waterbodies.

Economic development is never just a local issue. Plans to enhance economic resilience are best developed after an economic and market analysis has been conducted for the local area that considers regional economic conditions.

Plans and studies have been prepared at the regional, county, and local levels that encompass Mastic Beach and Smith Point of Shirley. The following local and regional studies were reviewed for background information. They are discussed below.

- Draft Local Waterfront Revitalization Plan for Mastic Beach and Shirley (2006);
- Smart Growth Policy Plan for Suffolk County, Suffolk County Department of Planning (2000);
- Shopping Center and Downtowns, Suffolk County (May 2006);
- Hazard Mitigation Plan (October 2008; update scheduled);
- Suffolk County Demographic, Economic and Development Trends (August 2009);
- Land Available for Development and Population Analysis Western Suffolk County (October 2009);
Mastic Beach and Smith Point of Shirley - NY Rising Community Reconstruction Plan

Regional Plans and Studies

A number of regional plans and studies were reviewed for their relevance to NYRRC Mastic Beach and Smith Point of Shirley.

*Long Island’s Dynamic South Shore: A Primer on the Forces and Trends Shaping Our Coast, New York Sea Grant (2012)*; *A Community-Based Vision and Revitalization Plan for Neighborhood Road & Mastic Road, Mastic Beach, Town of Brookhaven (2006).*

*Regional Comprehensive Sustainability Plan (2010)* – The Long Island Regional Planning Council issued this report in 2010. The plan noted the inability of Long Island to sustain itself fiscally, environmentally, and socially based on current governance methods and policies. The plan suggested that fundamental change is necessary to alter the course of the Island’s future. Mastic Beach and Smith Point of Shirley can develop a sustainable local economy by promoting its natural and cultural resources and attracting related businesses.

*Fire Island Inlet to Montauk Point (FIMP) Reformulation Study (2009)* – Implementation of this 2009 U.S. Army Corps of Engineers (USACE) plan is in progress. The study identified, evaluated, and recommended a long-term solution to reduce hurricane and storm damage to homes and businesses on the barrier islands from Fire Island Inlet to Montauk Point. Construction of an extensive (80 plus miles) of dunes will reduce flooding not only on the barrier island but also in the communities that border the south shore bays. The FIMP planning area extends across the bays to the mainland of Long Island (all in Suffolk County). In some locations, the study area extends northward to Sunrise Highway. The plan also includes selected home elevations and buyouts some of which are located in Mastic Beach and Smith Point of Shirley. In March 2014, the USACE and the U.S. Department of Interior agreed on the details of the project, allowing it to move forward.
Comprehensive Water Resources Management Plan (in progress) – This plan, by the Suffolk County Department of Health, will update a similar study completed in 1987. The study includes collection and testing of groundwater samples, the mapping of land uses, and the development of build-out projections throughout the County.

The purpose of the study is to ascertain if the County is meeting water quality standards that are necessary to ensure a safe drinking water supply. Since Suffolk County’s 1.5 million residents rely on groundwater as their sole source of drinking water, safeguarding the quality and quantity of groundwater water is critical to public health, safety, and welfare. Groundwater quality is a great concern for the Community as groundwater elevations are high and groundwater is high in nitrogen from the on-site wastewater systems. The high water table makes proper installation of on-site wastewater systems stormwater recharge difficult or impossible. The elevated nitrogen concentrations have contributed to the degradation of the local waterbodies. The Community wishes to promote the recreational use of these waterbodies to stimulate eco-tourism.

Long Island South Shore Estuary Reserve Comprehensive Management Plan (2001) - This plan was prepared by the Long Island South Shore Estuary Reserve Council for the New York State Department of State (NYS DOS). The South Shore Estuary Reserve (SSER) includes Great South Bay from Reynolds Channel to the west to Shinnecock Bay to the east encompassing 173 square miles of bays between the mainland and the barrier islands. The plan includes recommendations to improve and maintain the SSER’s water quality, to protect and restore living resources, to expand public use, and to sustain its related economies. The plan can serve as a guide to the Community as it plans to develop its recreational and eco-tourism economy.

Suffolk County Comprehensive Plan 2035 (2011) - The Suffolk County Planning Commission issued this report in 2011 as the first volume of a series that will cover all aspects of the County including its environment, economy, sustainability and resource issues. Volume One presented updated information on demographics and socio-economic statistics, development trends, as well as a summary of prior regional and local plans. Subsequent volumes of the plan will address County roads, drainage, parks and wastewater treatment, all issues of great import to Mastic Beach and Smith Point of Shirley.

Local Plans and Studies

Several studies focus specifically on Mastic Beach and Smith Point of Shirley or communities in the immediate vicinity.

Narrow Bay Floodplain Protection and Hazard Mitigation Plan (1997). The Suffolk County Department of Planning prepared a local pre- and post-hurricane property acquisition plan for parcels vulnerable to coastal flooding. The April 1997 plan analyzed land use, population characteristics, and coastal hazards in the Mastic-Shirley peninsula. It made recommendations for County-owned properties to curtail development in low-lying areas. The plan speaks to the threat of storm surge inundation and increased tidal range from storm-created barrier island inlets and increased inlet size. Storm surge inundation and increased tidal range can and should influence land use planning decisions in the Mastic Beach and Smith Point of Shirley floodplains.
**Tri-Hamlet Comprehensive Plan (1995)** - This June 1995 plan was prepared by the Suffolk County Department of Planning for inclusion in an update of the Brookhaven Town 1987 Comprehensive Plan. Developed with extensive input from multiple community-based committees, the Plan reviewed the existing land uses, demographics and housing, and the zoning. It addressed environmental issues including wetlands and flooding, spoke to the need for more parks, discussed schools, emergency planning, and transportation. The NYRCR process was informed by a number of the recommendations that were found to remain relevant today.

**Superstorm Sandy damage**

A Community-Based Vision and Revitalization Plan for Neighborhood Road & Mastic Road, Mastic Beach (2006) - This study was completed in November 2006 by the Town of Brookhaven’s Department of Planning, Environment & Land Management. It included an analysis of existing conditions in what was and still is considered the downtown. A Montauk Highway Commercial Market Analysis was included to evaluate the potential for new business in the Mastic Beach downtown. The effort resulted in 33 recommendations including Downtown Redevelopment Design Standards. The Revitalization Plan outlined a framework for and recommendations on how the hamlet of Mastic Beach could spur economic development along the Neighborhood Road and Mastic Road commercial districts.

**Tri-Hamlet Renaissance Project - First Year Progress Report (2013)** - The Tri-Hamlet Renaissance Project is a collaborative effort among various government and civic organizations to develop a plan to enhance the quality of life in the tri-hamlet area, which includes Mastic, Shirley, and Mastic Beach, which includes all of the NYRCR area. A “Proposal Book” (issued on April 29, 2012) described the challenges to be addressed by the initiative. Elected officials and Community leaders formed six Working Groups to address the following topics: infrastructure, economic development, real estate, quality of life, public safety, and marketing. The Working Groups issued a First Year Progress Report in May 2013.

While this project has not been completed, the focus of the Working Groups mirrors some of the Planning Committee’s issues, particularly infrastructure, economic development, quality of life, and public safety. The plan will lend support to the NYRCR Plan proposed projects and recommendations.
Section 2. Assessment of Risk and Needs
A. COMMUNITY ASSETS AND ASSESSMENT OF RISK

i. Community Assets and Risks

One goal of the NY Rising Community Reconstruction (NYRCR) Plan is to ensure that the Community’s social, economic, and natural resource assets and systems that were affected by Superstorm Sandy are made more resilient against future storms. Toward that end, assets potentially at risk from storm events were identified and then evaluated in more detail. The risk assessment yielded information that aided in the development and identification of specific actions to reduce risk and sustain Community functions.

Assets are places or entities where economic, environmental, and social functions of the NYRCR Mastic Beach and Smith Point of Shirley Community (Community) occur. Examples of assets include public facilities such as schools and medical facilities; emergency and public safety services including fire and police protection; as well as natural, cultural, and recreational resources such as wetlands, beaches, and parks. Assets also include critical infrastructure such as transportation roadways, utility networks, and storm water systems required to support those essential public facilities.

The purpose of the inventory is to create a comprehensive description of the assets within or outside of the Community, whose loss or impairment due to flood events would compromise essential functions or critical facilities of the Community. The inventory documents both landscape features and vulnerable features of the asset itself that contribute to flood risk.

Assets were identified in the following three geographic areas at risk to future storm inundation and sea level rise. The data and methods to create the three risk areas are available on the NYCR website.

- **Extreme Risk Area**: Assets located in the extreme risk area are currently at risk of frequent inundation, vulnerable to erosion in the next 40 years, or likely to be inundated in the future due to sea level rise;
- **High Risk Area**: Assets upland of the Extreme risk area that are currently at occasional risk of inundation or at future risk from sea level rise; and
- **Moderate Risk Area**: Assets upland of the High Risk Area that are currently at infrequent risk of inundation or at risk in the future from sea level rise.

Figure 2 on the next page is a Risk Area Map of Mastic Beach and Smith Point of Shirley.
Figure 2: Risk Area Map

Legend
- Mastic Beach and Smith Point of Shirley NYRCP Planning Area
- Other NYRCP Planning Areas
- Long Island Railroad Station
- Long Island Railroad
- Mastic Beach Village Boundary

Roads
- Interstate
- Highways
- Ferry

Risk Area
- Extreme
- High
- Moderate
- Hurricane Inundation

Source: NYS DOT, NYS DOCS, MTA, USGS, US Bureau of the Census
The complete asset inventory, found in Section 5, provides detailed information on each identified asset, such as its classification as a critical or non-critical facility, whether the asset serves a vulnerable population, and the relative value, or importance, of the asset to the Community. The NYRCR Mastic Beach and Smith Point of Shirley Planning Committee (Committee) identified the assets’ value as high, medium, or low.

**Low:** Assets(s) that play a role in the functioning of a Community’s day to day life, but whose loss could be managed and overcome with in a Community without substantial impact to that Community’s functioning. Can be started, replaced, or temporarily duplicated in a short-term time frame with limited burden to a Community’s long-term health.

**Medium:** Asset(s) that are important to the functioning of that Community’s day to day life and that the loss of that asset or extended lack of functioning would cause hardship to the Community’s well-being but whose function could be replaced or duplicated in a mid-term time frame without significant burden to a Community’s long-term health.

**High:** Asset(s) that are so significant in the support of that Community’s day to day function that the loss of that asset or extended lack of functioning would create severe impacts to the Community’s long-term health and well-being or result in the loss of life or injury to residents employees or visitors.

As part of the complete inventory, contributing landscape attributes and physical features of the asset that contributed to the severity of storm impacts were noted. For example, assets located near shorelines lacking the protective features of wide beaches, healthy dunes, and stable, indigenous vegetation are at increased risk of flooding. Specific features of the asset that are at risk (e.g. mechanical equipment below flooding elevation) are also recorded in the inventory. These important observations will help guide the selection of appropriate strategies and projects for risk reduction.

An asset map of Mastic Beach and Smith Point of Shirley is found on the following page. An overview of Community assets, including economic, health and social services, housing, infrastructure systems, and natural and cultural resources is provided below.
Figure 3: Asset Map

Assets on this map are identified by Risk ID # in the Asset Risk Table within the document.

Source: NYS DOT, NYS DOB, MTA
### Table 1: Risk Assessment

<table>
<thead>
<tr>
<th>ID#</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Violet’s Cove</td>
</tr>
<tr>
<td>2</td>
<td>Mastic Beach Yacht Club</td>
</tr>
<tr>
<td>3</td>
<td>Neighborhood Rd Commercial Business District</td>
</tr>
<tr>
<td>4</td>
<td>Mastic Beach Fire Department Headquarters - Station</td>
</tr>
<tr>
<td>5</td>
<td>Mastic Beach Fire Station</td>
</tr>
<tr>
<td>6</td>
<td>Residential Housing – Extreme Risk Area</td>
</tr>
<tr>
<td>7</td>
<td>Residential Housing - High Risk Area</td>
</tr>
<tr>
<td>8</td>
<td>Residential Housing - Moderate Risk Area</td>
</tr>
<tr>
<td>9</td>
<td>Mastic Road</td>
</tr>
<tr>
<td>10</td>
<td>William Floyd Parkway</td>
</tr>
<tr>
<td>11</td>
<td>Drinking Water Well</td>
</tr>
<tr>
<td>12</td>
<td>MBPOA Stick Docks</td>
</tr>
<tr>
<td>13</td>
<td>Osprey Point Private Marina</td>
</tr>
<tr>
<td>14</td>
<td>MBPOA Marina #1</td>
</tr>
<tr>
<td>15</td>
<td>MBPOA Marina #5</td>
</tr>
<tr>
<td>16</td>
<td>Smith Point County North Park (undeveloped)</td>
</tr>
<tr>
<td>17</td>
<td>MBPOA Clubhouse</td>
</tr>
<tr>
<td>18</td>
<td>Bayview Park</td>
</tr>
<tr>
<td>19</td>
<td>Manor of St. George Park</td>
</tr>
<tr>
<td>20</td>
<td>Johns Neck Creek</td>
</tr>
<tr>
<td>21</td>
<td>Johns Neck &amp; Other Tidal Wetlands</td>
</tr>
<tr>
<td>22</td>
<td>Lawrence Creek</td>
</tr>
<tr>
<td>23</td>
<td>Pattersquash Creek</td>
</tr>
<tr>
<td>24</td>
<td>William Floyd Estate</td>
</tr>
<tr>
<td>25</td>
<td>Osprey Park</td>
</tr>
</tbody>
</table>

**COLOR KEY:**
- Extreme Risk Range
- High Risk Range
- Moderate Risk Range
Economic Centers

Although there are over 150 commercial properties in the NYRCR Community, only 18 are located in a risk area (see Table 2). Fewer than half of these are located along William Floyd Parkway, a major four lane divided arterial that runs north south through the western third of the planning area. The remaining at-risk commercial properties are distributed in various locations along the shoreline and portions of Neighborhood Road and other clusters within the Community. Only a few of the commercial properties in the downtown are in the Moderate Risk area at it only crosses Neighborhood Road in a few areas.

<table>
<thead>
<tr>
<th>Table 2. Assets: Economic Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asset</strong></td>
</tr>
<tr>
<td>3 commercial properties</td>
</tr>
<tr>
<td>15 commercial properties</td>
</tr>
</tbody>
</table>

Housing

The 5,114 single-family homes comprise nearly all of the 5,263 at-risk residential structures in the Community; the remaining at-risk residential structures consist of two- and three-family residences (see Table 3). Most of the housing stock is in one of the risk areas. There are no large, multi-family structures within the Community. The residential structures located in one of the risk areas, 60, 23, and 17 percent are in the extreme, high, and moderate risk areas respectively.

<table>
<thead>
<tr>
<th>Table 3. Assets: Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asset</strong></td>
</tr>
<tr>
<td>873 single-family, 23 two-three-family structures</td>
</tr>
<tr>
<td>1,163 single-family, 32 two-three-family structures</td>
</tr>
<tr>
<td>3,078 single-family, 94 two-three-family structures</td>
</tr>
<tr>
<td>Fairfield Senior Housing</td>
</tr>
<tr>
<td>150-Unit Senior Housing (Colony Preserve)</td>
</tr>
</tbody>
</table>

N/A – Not applicable since asset is located outside of risk area

Health and Social Services: Life Safety

Health and Social Services: Life Safety includes fire protection, police services, hospitals, and emergency operations facilities.

There are two emergency operations facilities along the South Shore of Long Island: the Babylon Town Civil Defense facility located directly north of NYRCR Village of Lindenhurst and the Islip Public Safety facility located between the West Islip and the Oakdale/West Sayville NYRCR Communities. Both are a considerable distance from Mastic Beach and Smith Point of Shirley.
Although the Suffolk County Police Department provides police services to this Community, the nearest police station is the 7th precinct located in Shirley at 1495 William Floyd Parkway. The Community is serviced by the volunteer firefighters of the Mastic Beach Fire Station, as well as the Mastic Beach Ambulance Company (see Table 4). Both facilities are located in the moderate risk area. As assets in the moderate risk area, these three assets are upland of the high and extreme risk areas and are at infrequent risk of inundation. The closest hospital is the Brookhaven Memorial Hospital Medical Center, located in Patchogue, 11 miles to the west.

The Saint Andrews School is located in a moderate risk area in the central portion the Community on Birch Road at Saint Andrew’s Episcopal Church (see Table 5). The William Floyd School District, which includes one high school, two middle schools, and five elementary schools, is located outside of both the Community and the risk areas.

### Table 5. Assets: Health and Social Services: Administration and Education

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saint Andrew’s School</td>
<td>Moderate</td>
<td>Medium</td>
</tr>
<tr>
<td>WM Floyd School District</td>
<td>N/A</td>
<td>Medium</td>
</tr>
</tbody>
</table>

N/A – Not applicable since asset is located outside of risk area

A NYS Office for Persons with Developmental Disabilities facility is located in a moderate risk area on Birch Road (an eastern extension of Neighborhood Road). The U.S. Post Office on Mastic Road is also in a moderate risk area (see Table 6).

### Table 6. Assets: State and Federal Buildings and Properties

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYS Office for People With Developmental Disabilities</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>U.S. Post Office</td>
<td>Moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>
Infrastructure: Transportation

Assets in this category include transportation infrastructure as well as transportation-related facilities, including mass transit. The only critical transportation infrastructure within the Community is the William Floyd Parkway (see Table 7). The area encompassing the William Floyd Parkway north of Saint George Drive is in a moderate risk area; the area south of Saint George Drive to the Great South Bay is designated as a high risk area. A review of available State data did not identify any other transportation-related infrastructure within this NYRCR Community.

Table 7. Assets: State and Federal Buildings and Properties

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Floyd Parkway</td>
<td>Moderate, High</td>
<td>High</td>
</tr>
</tbody>
</table>

Infrastructure: Utilities

Other than the commercial district of Neighborhood Road and Mastic Road, the Community is comprised almost entirely of residential development and natural areas. There are no large-scale utilities. Water and electric systems are well-distributed throughout the developed portions of the Community. They are mapped by the respective utilities: Suffolk County Water Authority (SCWA) and PSEG-Long Island. There is a small drinking water well, presumably owned by the SCWA, in the moderate risk area.

There is no natural gas service in the Community; heating is provided almost exclusively by fuel oil, though some properties are supplied by on-site propane tanks. There are 11 flood control properties (recharge basins) in the Community distributed through the three risk areas (see Table 8) that are owned by the Town of Brookhaven and Suffolk County.

Table 8. Assets: Infrastructure Resources

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 flood control properties</td>
<td>Extreme</td>
<td>High</td>
</tr>
<tr>
<td>3 flood control properties</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>3 flood control properties</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>1 small drinking water well</td>
<td>Moderate</td>
<td>High</td>
</tr>
</tbody>
</table>

Natural and Cultural Resources

Natural and cultural resources include woodlands, wetlands and marshes, recreation facilities, parks, open space, religious establishments, libraries, museums, historic landmarks, and performing arts venues.

The South Shore of Long Island, particularly in this Community, is home to extensive natural and multiple recreational resources. The Community’s tidal and freshwater wetlands are important in reducing storm surge. They also provide wildlife habitat and recreational opportunities. These resources span multiple risk areas.
Table 9 lists Parkland Resources within the Community and Table 10 Natural Resources. Natural and Cultural Resources are named according to the data set provided by the responsible government agency. When wetlands are associated with a waterbody, they are named as associated with that waterbody.

### Table 9. Assets: Parkland Resources

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith Point County Park North (undeveloped)</td>
<td>Moderate, High, and Extreme</td>
<td>Medium</td>
</tr>
<tr>
<td>Smith Point Boat Ramp</td>
<td>Extreme</td>
<td>Medium</td>
</tr>
<tr>
<td>Johns Neck and adjacent Tidal Wetlands</td>
<td>High and Extreme</td>
<td>Medium</td>
</tr>
<tr>
<td>Fire Island National Seashore</td>
<td>Extreme, High, Moderate</td>
<td>Medium</td>
</tr>
<tr>
<td>Osprey Park</td>
<td>Extreme and High</td>
<td>Medium</td>
</tr>
<tr>
<td>Bayview Park</td>
<td>Moderate</td>
<td>Medium</td>
</tr>
<tr>
<td>MBPOA Stick Docks</td>
<td>Extreme</td>
<td>Medium</td>
</tr>
<tr>
<td>MBPOA Marina 1, Marina 3, and Marina 5</td>
<td>Extreme</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### Table 10. Assets: Natural Resources

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater wetlands of Pattersquash Creek, Johns Creek, and Lawrence Creek</td>
<td>Extreme, High, Moderate</td>
<td>Medium</td>
</tr>
<tr>
<td>Tidal wetlands</td>
<td>Extreme and High</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Five religious institutions are located within the Community; four of which are in the moderate Risk Area (see Table 11).

### Table 11. Assets: Religious Institutions

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saint Jude’s Church</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Saint Andrew’s Episcopal Church</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Mastic Beach Hebrew Center</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Bayview Baptist Church</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Grace Lutheran Church</td>
<td>N/A</td>
<td>Low</td>
</tr>
</tbody>
</table>

N/A – Not applicable since asset is located outside of risk area

The southeastern and western edges of the Community are buffered from the Great South Bay by tidal wetlands and the yet undeveloped Suffolk County Smith Point Park North. The eastern edge is buffered by the Fire Island National Seashore wetlands (part of the William Floyd estate).
The creeks that flow north to south through the Community are tidal estuaries that are tributaries of Narrow Bay, itself a part of the larger Great South Bay. The Forge River is the Community’s northeastern boundary and has been the subject of considerable study as it is an impaired waterbody. Many parklands and natural resources are located in the extreme risk area thus are at risk of frequent inundation or are vulnerable to erosion.

The Mastic-Moriches-Shirley Community Library is outside the Community, but is considered a very important cultural asset to the Community (see Table 12).

### Table 12. Assets: Cultural Resources

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nathaniel Woodhull Cemetery</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Manor of Saint George</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Outside of NYRCR Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastic-Moriches-Shirley</td>
<td>N/A</td>
<td>Medium</td>
</tr>
<tr>
<td>Community Library</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N/A – Not applicable since asset is located outside of risk area

One National Register-Listed resource is located in this Community (see Table 13). The William Floyd House and grounds are part of the Fire Island National Seashore (FINS).

### Table 13. Assets: National Register Listed Historic Resources

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Community Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Floyd House</td>
<td>Extreme, High, Moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

### ii. Assessment of Risk to Assets and Systems

Risk is the chance that an asset will be damaged or destroyed. Assessing the risk to Community assets and systems helped the Committee to identify projects and understand measures to restore and protect its assets at greatest flood risk while also ensuring appropriate long-term economic growth. The three factors that contribute to the measure of overall risk for each asset are:

- **Hazard:** The likelihood and magnitude of future storm events. Examples of the most common hazard risks include coastal flooding, flooding in a 100-year floodplain, sea level rise, or hurricanes. Typically, assets located in an extreme risk area experience hazards with greater frequency and intensity than assets in a high or moderate risk area. This risk assessment uses the 100-year event, which has a 1% annual chance of occurrence, as the baseline event.

- **Exposure:** The variability of local topographic and shoreline features that influence the severity of storm effects on assets. If assets are more exposed (e.g., situated on low-lying floodplains, directly exposed to a probable storm surge, or otherwise unprotected), they are more likely to suffer storm effects than similar assets located at a higher elevation or on a rocky shoreline protected by dunes. Similarly, landscape features and vegetation are more important for an asset proximate to a flood source than an asset further inland.
**Vulnerability:** The level of impairment or consequences that assets may experience from a storm event, expressed as the length of time it takes an asset to return to service. If an asset recovers quickly with limited interruption in service, it has low vulnerability. An asset with extended service loss or permanently reduced capacity would be considered significantly vulnerable.

A standardized Risk Assessment Tool was used to quantify the risk to the Community’s assets and, later, to test whether various projects and management measures will reduce the risk to those assets. The Risk Assessment Tool is available at [http://www.stormrecovery.ny.gov/nyrcr](http://www.stormrecovery.ny.gov/nyrcr).

The asset inventory provided a baseline to identify the most critical assets in the Community to be advanced through the Risk Assessment Tool for further analysis. The assets selected from the inventory to be input into the Risk Assessment Tool include:

- Assets situated in Extreme and High Risk areas;
- Federal Emergency Management Agency (FEMA)-defined Critical Facilities in the Moderate Risk area;
- Locally-significant (High Community Value) assets in the Moderate Risk area;
- Assets with High Community Value in Non Risk Areas; and
- Assets providing critical life safety services.

FEMA defines a ‘critical facility’ as one where “even a slight chance of flooding is too great a threat,” and identifies typical critical facilities as those that “include hospitals, fire stations, police stations, storage of critical records, and similar facilities.” These facilities should be given special consideration when formulating regulatory alternatives and floodplain management plans. In addition, assets having similar functions and characteristics were grouped as a single asset because these assets would likely experience similar storm impacts and result in the same risk score. For example, residential neighborhoods with similar construction and exposure conditions were grouped by risk area.

For each asset input into the Risk Assessment Tool, the three factors that contribute to risk are scored and multiplied to produce a final risk score. The information collected during the Asset Inventory is automatically entered into the Risk Assessment Tool to calculate the risk score. The formula to calculate risk is:

**Hazard x Exposure x Vulnerability = Risk**

The hazard score for a 100-year event is 3. The exposure score ranges from 0.5 to 5 depending on which risk area the asset in question is located in and the presence and condition of protective landscape attributes. The vulnerability score ranges from 1 to 5 depending on the level of impairment that an asset would experience from a 100-year event. Multiplied together, the maximum risk score possible is 75. See Section 5, part D, for additional information.

**iii. Risk Assessment Results**

The asset inventory catalogued 25 assets that were identified by the Community, Committee or by NYS DOS databases and were located within the extreme, high, or moderate risk zones. These assets were carried through for analysis in the Risk Assessment Tool, which can be found in Section 5, Part D, of this NYCR Plan. These assets ranged from residential areas to commercial clusters along...
Neighborhood Road. Natural resource systems such as wetlands and rivers were also inventoried. Other asset categories included transportation facilities, EMS resources, and water utility locations.

The assets input into the Risk Assessment Tool received a final risk determination of severe, high, moderate, or residual, as illustrated in Figure 2 and Table 1. The identification number on the table corresponds to the ID number shown on the map. The table is also color coded by risk level, as follows:

- Severe Risk assets are shown in red in the table and map. Assets at Severe Risk have both very high exposure and very high vulnerability to storm effects, which could represent that the asset is in a dangerous situation or location;
- High Risk assets are shown in orange. Assets at high risk have either very high exposure or very high vulnerability to storm effects, which could lead to significant negative outcomes from a storm event;
- Moderate Risk assets are shown in yellow. Storm events pose moderate to serious consequences on these assets, but adaptation may be of lower priority due to one factor, either the exposure or vulnerability, remaining relatively low; and
- Residual Risk assets are shown in green. Both the exposure and vulnerability of these assets are relatively low. This situation suggests floods would pose a minor threat or infrequent consequences.

Risk score classifications ranged from Moderate Risk for the Mastic Beach Fire Department and the Neighborhood Road commercial district to Severe Risk for residential housing in the extreme risk area.

Eight assets or asset groups (out of 24) are at high or severe flood risk. The following assets received the highest risk score among the inventoried assets and are considered in the severe risk range: a) residential housing in the extreme risk area, b) Violet’s Cove, and c) the Mastic Beach Property Owners Association Stick Docks.

Generally, assets located along the waterfront or adjacent to creeks are at higher risk of inundation during extreme events and therefore have higher risk scores. There are however, no “critical” facilities in the extreme and high risk areas of this Community.

The Committee rated residential housing as a high value asset. Many homes are in fact in the extreme and moderate risk zones. Strategies to protect these assets are included in this NYRCR Plan.

Violet’s Cove represents a valuable economic asset for Mastic Beach and Smith Point of Shirley as well as the entire peninsula. Three of the Committee’s proposed projects involve resiliency improvements to the Violet’s Cove property. The improvements will allow the property to flood without causing serious damage. The more resistant property will be used for economic development, recreation, and education.

The wetlands along the Community’s waterfront are in the extreme risk area and are part of the natural flood protection system. Their protection and enhancement is a strategy that will reduce the effect of storm surge velocity on the upland assets.

The problems that resulted from Superstorm Sandy remain visible today. Many buildings remain unoccupied while others are in various stages of repair. The risk assessment helped to inform, focus, and provide context for the needs and opportunities considered by the NYRCR Mastic Beach and Smith Point of Shirley Planning Committee.
B. ASSESSMENT OF NEEDS AND OPPORTUNITIES

The Committee initially identified needs and opportunities based on the Community’s reconstruction and economic growth goals, existing plans and studies, and the Community’s overall vision for its future.

Thinking through what took place during the storm event, as well as what was damaged, provided the Committee with insight to the inherent resiliency of those structures, procedures, and operations. This assessment process led to a frank discussion of Community needs and included the recognition of changing climate patterns and the economic and practical necessity of factoring resiliency and adaptive capacity into recovery and redevelopment actions.

Opportunities are based on the idea that additional resiliency benefits, whether economic, environmental, social, or cultural, may be achieved through the integration of new methods, procedures, and materials into the normal course of rebuilding.

The post-disaster environment presents opportunities to rebuild in such a way to create a Community that is stronger and more resilient to future storms. Resilient communities tend to have redundant infrastructure and communication systems, diverse and flexible adaptation strategies, and collaborative public and private partnerships.

Throughout this plan, you will see projects and strategies discussed in the context of their Recovery Support Function (RSF)11. The Federal Emergency Management Agency (FEMA) uses these RSFs to identify, coordinate, and ultimately deliver assistance to the Community from several different funding sources available in the recovery effort – e.g., Federal, State, private, philanthropic, and not-for-profit. The “Economic Development” RSF, for example, will help bring together all the possible sources of assistance to achieve business recovery and resiliency through the projects identified by the Community (discussed further in Section 4: Proposed and Featured Project Profiles).

The six RSFs are:

- **Community Planning and Capacity Building** - The Community’s ability to both implement storm recovery activities and to plan to mitigate the effects of future storms;
- **Economic Development** - Returning economic and business activities to a state of health and developing new economic opportunities that result in a stronger, more resilient Community;
- **Health and Social Services** - Restoring and potentially expanding public health programs, health care facilities and essential social services, especially for vulnerable populations;
- **Housing** - Assessing local housing conditions and associated risk levels during the re-building process;
- **Infrastructure** - Investing in infrastructure to re-building capabilities lost during the storm and reducing future risks to critical assets; and
- **Natural and Cultural Resources** - The rehabilitation, management, and protection of the natural and cultural resources that define the Community’s physical and human character.
Below, the Committee identified its needs and opportunities in each of the six RSF categories:

**Community Planning and Capacity Building**

The Community would benefit from improved emergency preparedness planning and procedures, particularly for populations that do not speak English as a first language. As Superstorm Sandy approached, many residents failed to evacuate. The reasons were varied – lack of a plan, fear of relocating, and especially fear of looting as residents anticipated the power outage and darkness. Too few had given serious thought to evacuation needs or procedures. Some had to be rescued during the storm, putting them and rescue workers in peril, and in the aftermath only a minority knew how to access critical response and recovery resources. The Community realized the need for improved communication networks and more accessible evacuation centers, especially since the William Floyd School District (located immediately adjacent to the Community) was not a designated evacuation center.

**Economic Development**

Mastic Beach and Smith Point of Shirley had not recovered from the recent economic recession when Superstorm Sandy struck. The Committee and Community strongly felt that they needed to grow the local economy, strengthen the downtown, and expand the tax base by identifying businesses appropriate to the area along with measures that could be taken to increase business activity in the commercial district. The Village of Mastic Beach has two somewhat distinct commercial areas; one along Neighborhood Road and the other on Mastic Road.

Creating more of a “downtown” commercial district along Neighborhood Road, and introducing unique specialty businesses could attract visitors to the area as well as other businesses that rely on foot traffic. Growing the local economy will strengthen the tax base and enable the Village to provide more services including those that will make the Community more resilient to future storms.

**Health and Social Services**

One year post-Superstorm Sandy, health and social service needs have not been completely restored to Mastic Beach and Smith Point of Shirley. The Committee and Community indicated that the nearest hospital (Brookhaven Memorial Hospital Medical Center) is too far (approximately 7 miles away) and that a local medical clinic would be valuable. They suggested that local efforts to protect the socially vulnerable were valuable during and after the storm. Strategies were developed to address the continued need to have neighbors look after neighbors. They offered that volunteers might expand their role and bring information and perhaps supplies to neighbors in need. Improving building regulations to mandate better mold remediation was mentioned by the Committee. They also suggested that a local emergency shelter would have made many of their neighbors and friends more comfortable about leaving their homes for safety purposes during and after the Storm.
Housing

Housing lots were first offered for sale in Mastic Beach and Smith Point of Shirley in the 1920s. According to “The History of Mastic Beach” written by Janice L. Schaefer in 1994, lots were offered by Warren and Arthur Smadbeck of the Home Guardian Company. In order to sell the land that they owned, the Home Guardian Company advertised their property in a newspaper called the Brooklyn Citizen which sold for 2 cents. The Citizen actually sold the lots, but the title was issued by the Home Guardian Company.

According to the 1995 Tri-Hamlet Comprehensive Plan, approximately one-half of the housing units in the area were constructed before 1969, primarily by Walter Shirley’s development companies. One third of the units were constructed in the second wave of development, the 1970s. The size, condition, regulatory, and zoning status of the housing stock are related to its age and to the fact that many homes were built as summer bungalows (not for year-round use).

Superstorm Sandy created new challenges for Mastic Beach and Smith Point of Shirley housing. Some displaced homeowners rebuilt damaged homes quickly. Unfortunately, some of those homes are no more resilient than they were before the storm. Very few property owners have elevated their homes as of this writing. Elevation and new foundation construction is costly with estimates ranging from $80,000 to $120,000 depending on the size and construction of the home. Housing strategies are needed that will protect existing and future housing from the inevitable effects of future storms. Clear construction guidelines are available from FEMA that help protect homes from flooding and wind damage.

Following Superstorm Sandy, the Village of Mastic Beach reported that approximately 730 single-family homes in the Village (more than 15% of the 4,847 households listed in the 2010 Census) were damaged. As of December 2013, the Village had issued more than 300 substantial damage letters to residential property owners.

Over 150 building permits have been requested to make storm damage repairs and 12 permits have been requested to elevate homes.

Housing type and occupancy census data likely do not reflect actual conditions in the Community. The Community has many rental units that are not reported to the Census or to the municipalities. Many of these units are occupied by vulnerable populations, many of whom remain underserved and uncouned. They include the poor, recent immigrants, the elderly, and the disabled. These units can turn over frequently. These residents are especially vulnerable during a major storm event. The Committee and Community expressed the need to provide safe, resilient housing that would meet the needs of these residents. They also identified a need to grow their Community by attracting and retaining more 20 to 35 year old workers to help drive economic development. Some Committee members recognized the opportunity to attract artists to this quiet and beautiful area that has a wealth of affordable housing. Some of the housing could be adapted for artists’ studios. Committee members also realized that the supply of affordable housing would also be an opportunity to attract summer vacationers and second home owners.
Another major concern after Superstorm Sandy was leaking oil tanks that were not adequately secured to the home. The Committee discussed the opportunity to implement requirements to secure fuel oil tanks and thus reduce the risk to the environment and public health that resulted from the storm. Ultimately, many felt that natural gas would be a better fuel option.

**Infrastructure**

The need to update infrastructure in the Community, particularly in regards to wastewater and gas services, were the subject of intense conversations by the Committee and Community members. Much of the infrastructure in Mastic Beach and Smith Point of Shirley was constructed in the building booms of the 1920s, 1950s, and 1970s. Many of the stormwater drainage systems discharge directly to surrounding surface waters and wetlands with no pretreatment.

There were problems across the south shore of Long Island in all of the unsewered areas but one of the worst affected areas was Mastic Beach and Smith Point of Shirley. There is no centralized wastewater collection and treatment. All properties rely on onsite wastewater systems (i.e., cesspools and septic systems). The great majority of these systems were installed prior to the current Suffolk County Department of Health Services (DHS) requirements. One of the most relevant requirements is the vertical distance of these units from groundwater. Mastic Beach and Smith Point of Shirley is a low-lying area with high groundwater elevations. Consequently, many of these onsite systems do not meet DHS requirements. The discharge from many onsite systems is directly into groundwater. That groundwater flows into the creeks and bays surrounding the Community, thus degrading surface water quality. Rising sea level (and with it groundwater) exacerbates this situation.

Superstorm Sandy created additional problems with these onsite systems. Storm surge inundated the onsite systems. The lighter-than-seawater contents of many of the systems along with the gases contained therein caused the contents to leak into backyards, causing human health and environmental concerns. The Committee and Community all stressed the need for centralized wastewater collection and treatment (sewering) to eliminate storm-related health concerns in residential neighborhoods as well as for economic development in the commercial district. In their Comprehensive Water Resources Management Plan, Suffolk County identified sewering of the Mastic-Shirley peninsula as a high priority.

The Committee discussed the need for more reliable and a greater number of evacuation routes. They pointed to the need for a greater number of at-grade railroad crossings for evacuation. They discussed the condition of certain roads, such as portions of Riviera Drive, which are unpaved and frequently flooded, and suggested that solutions be found to address these conditions. The Committee and public also suggested that flooding from stormwater drainage systems could be reduced or eliminated if backflow valves were provided.

Communication equipment and facilities was an issue that the Committee and Community recognized could be improved. With electrical power out of service for as long as three weeks,
conventional forms of communication were near impossible. Other ways of communicating would be useful and could contribute to the Community’s health and welfare.

The Committee reported a serious safety concern during and after Superstorm Sandy when none of the streetlights functioned due to a lack of electricity, shrouding the Community in darkness at night. The Committee discussed the need to improve public safety before, during, and after storm events.

**Natural and Cultural Resources**

The majority of the Community and Committee recognized the environmental, economic, and protective value of its natural resources, particularly the freshwater and tidal wetlands that surround the Community. Natural features like wetlands are important during storms as they can reduce the velocity of waves and thereby lessen inland flood damage. Wetlands also filter the stormwater that runs off the peninsula, cleansing it before it enters the Great South Bay. However, the wetlands of Mastic Beach and Smith Point of Shirley offer more than storm protection and the treatment of runoff; they are what make this shoreline beautiful and attractive to residents and visitors alike.

The Community also acknowledged the economic and cultural value of its historic resources including the William Floyd Estate, home to one of the signatories of the U.S. Declaration of Independence and the St. George Manor, home for over 250 years to a locally significant family – the Smith family. These treasures could be better marketed to tourists.
## Table 14. Needs and Opportunities

<table>
<thead>
<tr>
<th>Community Planning and Capacity Building</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need</strong>: Improve emergency preparedness planning and procedures</td>
</tr>
<tr>
<td><strong>Need</strong>: Expand emergency shelter facilities</td>
</tr>
<tr>
<td><strong>Need</strong>: Produce emergency preparedness materials and procedures in other languages (i.e. Spanish)</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Develop plan to reduce risks to homes located in extreme risk areas</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Develop mitigation measures to decrease flood impacts and reduce flood insurance premiums</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need</strong>: Maintain and grow local tax base, create jobs and provide for the resiliency of the economy</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Establish regular community-oriented events in the downtown area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health and Social Services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need</strong>: Increase resiliency of essential health and social services to meet post-disaster needs</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Provide procedures and standards for mold remediation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need</strong>: Reduce risks to the community from external fuel oil tanks</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Provide safe, resilient housing to meet the needs of the community</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Take advantage of blighted and foreclosed vacant homes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need</strong>: Mitigate repetitive flooding in low-lying/high risk areas</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Improve management of wastewater</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Improve safety of local roadways</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Improve and expand evacuation routes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural and Cultural Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need</strong>: Protect and enhance recreational, cultural, and historic assets</td>
</tr>
<tr>
<td><strong>Opportunity</strong>: Protect existing tidal wetlands with in-water structures and replant denuded areas</td>
</tr>
</tbody>
</table>
Section 3. Reconstruction and Resiliency Strategies

Shoreline erosion and loss of beach sand
The process of identifying the NY Rising Community Reconstruction (NYRCR) Mastic Beach and Smith Point of Shirley Community’s (Community) post-storm needs and opportunities informed the Planning Committee’s (Committee) development of strategies to resolve these needs and realize opportunities, which, in turn, assisted in the conceptualization and design of projects. Strategies can be types of projects, programs, policies, or other actions that specifically address an identifiable need. Communities are most successful when they implement a combination of strategies such as blending traditional stabilization and repair actions with a holistic, long-range, forward-looking view of recovery and economic development. This section presents the strategies developed by the Committee for how best to use Community assets, capitalize on opportunities, and resolve critical issues.

For every need or opportunity, potential strategies were generated for each resiliency issue from multiple management angles. The list of strategies spans an array of methodologies and timeframes, from preparedness to retrofits, from immediate procedural improvements to long-range capital investments programs. Strategies also include conservation of natural protective features, regulatory changes and building code updates, structural defenses, resilient retrofits, market measures, land use planning, and education and outreach in an effort to employ multiple, complementary actions rather than relying on a single means of protection.

Careful consideration was given to what is at risk, what resources are available, and the capacity to implement various management measures. As general resiliency strategies evolved to specific projects and actions several factors were considered to begin prioritizing the most effective and feasible strategies, and thus identify the best use of recovery funds. These considerations included how each strategy relates to Superstorm Sandy’s impacts on the Community; to what extent each strategy would reduce current and projected risk; whether it contributed to protection of vulnerable populations; feasibility of successful implementation; compliance with existing regulations; upfront and long-term maintenance costs; direct and indirect benefits; and public perception.

The reconstruction and resiliency strategies presented in this section were developed to address one or more of the RSFs defined in the previous section:

- Community Planning and Capacity Building;
- Economic Development;
- Health and Social Services;
- Housing;
- Infrastructure; and
- Natural and Cultural Resources.
To rebuild a more resilient Community, the Committee developed reconstruction strategies which were derived from assets that were identified as being at risk relative to the Community’s needs; all of which was discussed in the previous section of this report. Each strategy was designed to take into account the following considerations:

- whether it reduced the level of risk and met an identified Community need;
- whether it helped (or improved the resiliency of) vulnerable populations; and
- whether it could be implemented through discrete programs and/or projects.

The Community’s reconstruction strategies are discussed and then summarized in the tables below.
Strategy: Restore and rebuild waterfront attractions, educational and recreational opportunities

The parks, marinas, and wetlands on the Community’s coastline are the prime natural and cultural assets that the Committee hopes will attract tourists and economic development to the area. This strategy promotes economic vitality, tourism, and recreational and educational opportunities thereby serving the residents of the Mastic Beach and Smith Point of Shirley as well as improving economic resilience. The strategy would also increase social interaction and recreational opportunities for elderly and disabled populations as facilities will be made universally accessible wherever possible.

The strategy is local, but has regional implications as it would attract and serve visitors and tourists in addition to local residents. There are three proposed and two featured projects that were derived from this strategy. Each of which would provide public benefits to the Community and region.

Table 15. Strategy: Restore and rebuild waterfront attractions and recreational opportunities

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevate and Repair Violets Cove Building after Acquisition</td>
<td>Elevate and repair the main building of the Violet’s Cove property after acquisition from Suffolk County.</td>
<td>$1,400,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Construct Resilient Landscape for Violets Cove Property after Acquisition</td>
<td>Make improvements to the property to make it flood resilient including installation of a naturalized landscape with green infrastructure to survive flooding after acquisition from Suffolk County.</td>
<td>$780,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Construct Resilient Amenities for Violet's Cove Building after Acquisition</td>
<td>Make improvements to the property to allow the temporary docking of transient vessels at the facility after acquisition from Suffolk County. Incorporate educational opportunities with a small nature center.</td>
<td>$98,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Construct Active Recreational Facility at Smith Point Park North</td>
<td>Construct Phase II of improvements to an existing Suffolk County park per the County’s plan. Improvements to include an active recreational facility.</td>
<td>$4,800,000</td>
<td>Featured</td>
<td>Y</td>
</tr>
<tr>
<td>Construct Marina at Smith Point Park North</td>
<td>Construct Phase I of improvements to an existing Suffolk County park per the County’s plan. Improvements to include a full-service marina.</td>
<td>$5,400,000</td>
<td>Featured</td>
<td>Y</td>
</tr>
</tbody>
</table>
Strategy: Enhance public access to and uses of the waterfront

This strategy promotes economic vitality, tourism, recreation, quality of life, education, and public health. It would serve residents of the Community and improve its economic resilience by attracting visitors and tourists. This strategy is part of a broader waterfront strategy to create an eco-tourism economy that creates business opportunities tied to the waterfront such as kayak and bicycle rentals, eco-guides, bed and breakfasts, fishing and boating suppliers, and other businesses that support vacationers and second home owners. The waterfront strategy is tied to the economic development strategy for the commercial district and to the revitalization and resiliency improvement strategy for Violet’s Cove. All will connect physically for vehicles, hikers, bikers, and kayakers. All will connect economically as each supports the success of the other. Educational opportunities such as guided kayak and bicycle trips, nature walks, and birding tours will be included.

Economically viable, prosperous communities are more resilient to the impacts of storms as they can quickly deploy capital and other resources. The strategy will also increase social interaction and recreational opportunities for under-represented populations. Waterfront access for passive activities or swimming, wading, fishing, and small boat use can be pursued by those with lower incomes, the undocumented, non-English speakers, youth, and others.

The projects derived from this strategy are essential two phases of the same project. The projects are local, but have regional implications as they would attract and serve visitors and tourists in addition to local residents. The first project phase is estimated to be low cost (less than $500,000) while the second phase is estimated to be high cost (over $1 million).

Table 16. Strategy: Enhance public access to and uses of the waterfront

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct Phase I of Greenway/Blueway Trail</td>
<td>Phase 1 of this project would include the design and construction of phase 1 of a “greenway” and “blueway” trail network.</td>
<td>$231,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Construct Phase II of Greenway/Blueway Trail</td>
<td>Phase II of the Greenway/Blueway project would add 14.3 miles of designated bicycle trail along Mastic Beach and Smith Point of Shirley roadways to connect to other natural and cultural assets of the Community as well as neighboring assets such as the Wertheim Preserve.</td>
<td>$1.7 million</td>
<td>Featured</td>
<td>N</td>
</tr>
</tbody>
</table>
Strategy: Enhance and develop commercial district

The Community’s commercial district is centered on Neighborhood Road and Mastic Road. Like many smaller downtowns, the businesses compete with area big box retail and shopping centers. The population of customers is relatively small and their income lower than the County median. These are the challenges faced by the existing businesses. Strengthening these businesses and attracting new ones is important to the businesses already there, to the Village’s tax base, and to the residents themselves. This strategy promotes economic resilience for Mastic Beach and Smith Point of Shirley. It is part of a broader strategy that would connect the commercial district to the waterfront as discussed above to create an eco-tourism economy that creates business opportunities tied to the waterfront and other businesses that support vacationers and second home owners.

The Committee recognized the need for an economic and market analysis to deliver a strategy for attracting specific businesses to the commercial district. The Committee suggested that such a strategy should focus on businesses that serve eco-tourism and outdoor recreation, and on businesses that serve vacationers and second homeowners. They stressed that the economic and market analysis should identify ways that the commercial district could be enhanced by the opportunities presented by the waterfront. Some suggested that the analysis should also determine other changes that might be needed in Mastic Beach and Smith Point of Shirley that would help attract and retain business.

The project that developed from this strategy is a local project in that it focuses on the Community and specifically on the commercial district and its connection to the waterfront and its recreational and economic assets. It is estimated to be a low cost (less than $500,000) project. The project provides public benefits by providing measures to improve the local economy and raise tax revenues.

**Table 17. Strategy: Enhance and develop commercial district**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic &amp; Market Analysis</td>
<td>The study will identify opportunities for niche businesses and improvements to the business district and broader Community needed to attract investment.</td>
<td>$125,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
</tbody>
</table>
Strategy: Expand emergency shelter options

Many residents did not leave their homes, as there was no local shelter close to their belongings. The schools were not available and the nearest shelter was miles away and occupied by strangers, not their neighbors. Expanding emergency shelter options would help protect residents during and after a storm event or other disaster. It would be especially valuable to the more vulnerable residents of the Community that have few sheltering options during an emergency. Makeshift facilities were established to respond to Superstorm Sandy that were not equipped to meet the needs of the large number of evacuees. A formal, centralized emergency shelter will meet critical needs during a disaster, including the provision of emergency shelter, distribution of food, water and other supplies, and the dissemination of information. This strategy promotes the health and welfare of the residents of Mastic Beach and Smith Point of Shirley. It would not only protect residents during and following an emergency, but also provide needed recreational opportunities at other times.

There is one project, broken out into two phases, derived from this strategy that involves the construction of an emergency shelter that could also serve as a Community recreational facility. The first project phase involves the design and construction of the first portion of the building. The second project phase is the construction of the second half of the emergency shelter. This would be a local project, but could also serve regional residents from outside the immediate NYRRC Mastic Beach and Smith Point of Shirley area. Both project phases are estimated to be high cost projects (more than $1 million). The two-phased project provides public benefits in that it would provide a much needed recreational facility as well as a facility that can shelter residents during and after a future storm event or other disaster.

Table 18. Strategy: Expand emergency shelter options

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and Construct First Phase of an Emergency Shelter/Community Center</td>
<td>Utilize Links property to serve as a Community recreation center regularly and as an emergency shelter during a disaster.</td>
<td>$2,750,000</td>
<td>Featured</td>
<td>Y</td>
</tr>
<tr>
<td>Construct Second Phase of an Emergency Shelter/Community Center</td>
<td>Utilize Links property to serve as a Community recreation center regularly and as an emergency shelter during a disaster.</td>
<td>$2,700,000</td>
<td>Featured</td>
<td>Y</td>
</tr>
</tbody>
</table>
Strategy: Provide inland and coastal flood protection

Much of the Community lies in the extreme and high risk areas. Structures in these areas are highly susceptible to future storm surge and sea level rise. There are few protective measures available other than elevation and relocation for these homes. One such strategy is the construction of berms and elevated roadways that could help stop the surge of storm water into the upland residential districts of the Community, depending on the height of the constructed measures in relation to the height of storm surge.

Flooding in Mastic Beach and Smith Point of Shirley was also due to stormwater runoff and backup of seawater into stormwater drainage systems. It was some of the same low-lying neighborhoods that experienced storm surge that are also subject to roadway flooding from rain events. With rising sea level, some areas flood regularly at higher high tides and during heavy rainfalls. The inventory of the problem areas and existing infrastructure is inadequate. There are numerous ecologically sound strategies for stormwater management – so called green infrastructure - that can be implemented even to protect the high groundwater neighborhoods of this Community.

This strategy addresses the need to reduce the impacts of future storm events and specifically to help protect homes from future storm surge. If storm surge, sea level rise, precipitation, or other factors exceed the design capacity of the constructed measures, homes may still be at risk. There is an opportunity in this Community to elevate homes and employ additional flood-proofing techniques to reduce the likelihood of damage from storm surge. These strategies will protect homeowners and renters some of whom would be considered socially or economically vulnerable.

Four projects recommended by the Committee will address this strategy; two proposed and two featured projects. One proposed project is an engineering evaluation of flood protection infrastructure along the northern edge of Smith Point Park North and has a companion featured project that would involve construction of the protective feature as established by the engineering evaluation. This proposed project is a low cost project (less than $500,000). The companion featured project for Smith Point Park North would be a high cost (over $1 million) project. The other featured project derived from this strategy is a flood protection feasibility analysis for the larger Mastic Beach area. Since Mastic Beach has considerably more shoreline, with homes located close to the water’s edge, this project is anticipated to be much larger in scope and complexity. This featured project is a medium cost ($500,000 to $1 million) project. The other proposed project would begin with an inventory of drainage collection and recharge components. The adequacy of the system to accommodate storm events would be evaluated and recommendations made for improvements. Properties would be identified and acquired where possible to increase stormwater storage and recharge. Some properties could serve a dual function as passive or active parks or playgrounds during dry weather. This local project would be a medium cost ($500,000 to $1 million) and would benefit a number of the low-lying neighborhoods of the Community.
Table 19. Strategy: Provide coastal flood protection

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct Flood Reduction Study of Smith Point of Shirley</td>
<td>Conduct engineering evaluation of measures to reduce flooding for properties north of Suffolk County's Smith Point Park North.</td>
<td>$125,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Prepare Stormwater Management Plan and Construct Improvements</td>
<td>Inventory drainage collection and recharge components. Recommend green infrastructure improvements and property acquisitions for storage and recharge, and possible dual use for parks during dry weather.</td>
<td>$1,000,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Provide Flood Protection For Smith Point of Shirley</td>
<td>After engineering designs are prepared, construct protective measures including an earthen berm across the northern perimeter of Point Park North to help protect the residences to the north from future flooding.</td>
<td>$2,800,000</td>
<td>Featured</td>
<td>N</td>
</tr>
<tr>
<td>Prepare Flood Protection Engineering Feasibility Analysis</td>
<td>Conduct engineering feasibility analysis of coastal flood protection for the Mastic-Shirley peninsula. Evaluate costs, potential benefits, challenges, and best locations for elevated roadways and berms upland of the wetlands to help protect homes in the extreme, high, and moderate risk flood areas. Ensure that the wetlands have space to migrate upland with sea level rise.</td>
<td>$750,000</td>
<td>Featured</td>
<td>N</td>
</tr>
</tbody>
</table>
Strategy: Improve safety and communication during and after a storm event

Communication during and following Superstorm Sandy was poor, as electric power was not restored for several weeks. Without power, the streets were dark. Residents did not feel safe during that time and looting was a concern. Emergency service personnel found it difficult to access some of the homes at night with no street lighting. The Committee also identified the need to expand communication options during and after the storm and other emergencies, as well as to educate the Community about emergency procedures. The Committee and the Village itself recognized the need for additional assistance with disaster recovery. Mastic Beach is a new village, having been incorporated in 2010, with a small staff that has limited experience with disaster recovery, program management, and grant writing.

The communication, preparation, and safety projects developed from this strategy would be especially valuable to the vulnerable segment of the Community as they are more likely to be of limited mobility, be non-English speakers, lack transportation options, and be wary of government authorities. The projects derived from these strategies would provide public benefits by improving emergency preparedness, response, recovery, and safety and increase the likelihood of additional project funding and support.

One project that derives from this strategy is the design and installation of fixed equipment to operate a local emergency radio system on the VHF band that would be utilized by volunteer “block captains” throughout the Community. The block captains would receive information from emergency service providers and other program participants and notify residents of their “blocks” of emergencies, evacuation procedures and routes, and health and social service locations. A second project would be the development of an emergency preparedness plan specific to Mastic Beach and Smith Point of Shirley that would be coordinated with regional plans. The third project to improve safety would be the design and installation of as many as 200 solar street lights would be installed with battery backup. The last project under this strategy is the engagement of a full-time Local Disaster Recovery Manager (LDRM) for two years. That individual would coordinate implementation of recovery and resilience projects and prepare funding applications for additional projects. These are local projects, three of which are low cost (less than $500,000) and one that is moderate ($500,000-$1 million).
### Table 20. Strategy: Improve safety and communication during and after a storm event

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Communication System and Education Program</td>
<td>Design and install fixed equipment to operate local emergency radio system on the VHF band. Equipment includes fixed repeater stations to amplify the signal throughout the Community, installation of an antenna fixed to an existing or newly constructed tower.</td>
<td>$95,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Local Emergency Preparedness Plan</td>
<td>Develop emergency preparedness plan for implementation by the Village and local emergency service providers in coordination with Suffolk County.</td>
<td>$35,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Install Solar Streetlights with Battery Backup</td>
<td>Design and install 200 solar streetlights at key intersections, primary roadways, park entrances, and places used during emergencies.</td>
<td>$600,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Engage Local Disaster Recovery Manager</td>
<td>Engage a full-time Local Disaster Recovery Manager (LDRM) for two years. The LDRM would coordinate implementation of recovery and resilience projects and prepare funding applications for additional projects.</td>
<td>$300,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
</tbody>
</table>
Strategy: Improve evacuation options

Travel into and out of the Mastic-Shirley peninsula is difficult during ordinary rush hours and is especially constrained during emergencies. All travel is by automobile and truck on two primary roadways: William Floyd Parkway and Mastic Road, both of which run north-south in and out of the peninsula. Improved emergency evacuation was identified by the Committee and residents as important. During an emergency evacuation, traffic volumes can increase rapidly causing congestion and even gridlock, as there are only two routes off the peninsula. Traffic accidents at the major intersections of William Floyd Parkway cause significant backups. There are similar backups when the railroad crossing is closed. Residents have argued that an additional railroad crossing would alleviate this condition.

It was also reported that the low-lying portions of Mastic Road flood during heavy rain storms, like that of Hurricane Irene. These low-lying areas are near the heads of several Forge River creeks. The additional concern for this roadway is that these areas will be susceptible to storm surge flooding as sea level rises. Elevating these portions of the roadway could alleviate current rain-induced flooding and make the roadway safer and more reliable for evacuation.

The project derived from this strategy is a regional one in that it provides access to and from the Mastic-Shirley peninsula from area highways. It is estimated to be a high cost ($1 million to $5 million) project. The project provides public benefits by providing measures to improve emergency preparedness, response, and recovery.

**Table 21. Strategy: Improve evacuation options**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevate Portions of Mastic Road</td>
<td>Prepare engineering design for and construct elevated sections of roadway in select, key areas along Mastic Road to ensure its safety and ability to serve as a functional emergency evacuation route during a disaster.</td>
<td>$1,600,000</td>
<td>Featured</td>
<td>Y</td>
</tr>
<tr>
<td>Construct Railroad Crossing at Hawthorne Road</td>
<td>Design and construct an at-grade railroad crossing at Hawthorne Avenue with automatic gates.</td>
<td>$1,400,000</td>
<td>Featured</td>
<td>Y</td>
</tr>
</tbody>
</table>
Strategy: Protect the environment and properties from fuel spills

Both above-ground and buried fuel oil tanks spilled during Superstorm Sandy creating environmental and human health hazards. Buried tanks floated out of the ground as the storm surge passed over. Above-ground tanks broke free of their fuel lines and both spilled their contents. New rules to secure these tanks will help in future storms, but ultimately their replacement with natural gas will be safer for the environment and human health.

The strategy would provide public benefits by replacing the use of fuel oil, which caused environmental damage during Superstorm Sandy and which is currently more expensive than natural gas. Natural gas connections reduce reliance on fuel oil for heating. Additionally, natural gas burns cleaner and is currently less costly than fuel oil. As such, it can help make development in the commercial district more economically feasible. Its lower cost can also help the more economically vulnerable residents of the Community.

The project derived from this strategy is a local project with regional implications. Service would be provided to the NYRCR Mastic Beach and Smith Point of Shirley commercial district, but provision of the service without outside funding would affect regional ratepayers. It is estimated to be a high cost (over $1 million) project.

Table 22. Strategy: Protect the environment and properties from fuel spills

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extend Natural Gas Service</td>
<td>Extension of natural gas mains into the commercial district of Mastic Beach and ultimately to the residential areas is important to the environmental and economic health of the Community. The project would extend National Grid gas mains from their most southerly extension (which is where?) to and through the western end of Neighborhood Road.</td>
<td>$2,800,000</td>
<td>Featured</td>
<td>N</td>
</tr>
</tbody>
</table>
Strategy: Protect the environment and human health from wastewater pollution

This strategy arose from the need to protect both the environment from high nutrient loads and human health from the effects of exposure to untreated wastewater (an issue during Superstorm Sandy). Wastewater is treated in the Community via on-site treatment systems such as the older cesspools and newer septic systems. During Superstorm Sandy, many of these systems were flooded by the storm surge, which caused wastewater to be released into the environment. Even under “normal” conditions, these onsite wastewater systems are inefficient at removing nitrogen. Nitrogen in the wastewater effluent enters groundwater, which flows into the creeks and bays of the Community degrading the water quality of these already impaired waterbodies. Centralized wastewater collection and treatment of these low-lying, high groundwater areas will eliminate untreated wastewater releases during storms. It will also provide far better treatment, reducing the nitrogen concentration in the effluent and thus to the environment.

The commercial district of the Village of Mastic Beach is also unsewered, relying on onsite wastewater systems. Development on these properties is limited by Suffolk County Department of Health Services regulations for wastewater flow. Without sewers, the flow per acre is limited. Consequently, future commercial development along Neighborhood Road and Mastic Road is limited. High flow uses like restaurants and even moderate flow uses such as apartments over small businesses are limited by the County’s regulations. Investment in the development of the downtown will be far more likely when additional uses and density are made possible by sewerage. New development would benefit the public as it would increase economic activity and livability and would increase tax revenues.

Several projects are derived from this strategy. The first project involves the design of a wastewater collection and treatment system that has a high cost (over $1 million). It would follow a sewer feasibility study already underway by the Village and would deliver a “shovel-ready” design. The other projects derived from this strategy involve the construction of a sewer system and a sewer treatment plant, which are all high cost (over $1 million) projects that will require additional funding from the County or State. The Suffolk County Comprehensive Water Resources Management Plan has identified sewer of the Mastic-Shirley peninsula as a high priority. The proposed project will deliver “shovel-ready” designs.
Table 23. **Strategy: Protect the environment and human health from wastewater pollution**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Wastewater Collection and Treatment System</td>
<td>This project would include the preparation of engineering designs and construction documents for a wastewater collection and treatment system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road).</td>
<td>$1,200,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
<tr>
<td>Construct Wastewater Collection System for Central Business District and Low-Lying Residential Area and Construct Wastewater Treatment Plant</td>
<td>Construct wastewater collection system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road) and for the low-lying residential district of Mastic Beach. Construct a wastewater treatment plant of sufficient capacity to accept flow from the commercial district and the low-lying residential area.</td>
<td>$30,000,000</td>
<td>Featured</td>
<td>N</td>
</tr>
</tbody>
</table>
Strategies: Restore and protect wetlands, creeks, and beaches

Mastic Beach and Smith Point of Shirley is fortunate to have many hundreds of acres of tidal and freshwater wetlands along its shoreline, a number of creeks that feed the Bay and Forge River, and several areas that have served as wading and bathing beaches. The Community’s wetlands also helped reduce storm surge velocity during Sandy. These wetlands, creeks, and beaches can not only protect the Community from future storm events but can also be the natural attractions that help stimulate an eco-tourism industry and make the economy more resilient.

Throughout the development of the NYRCR Plan, the Committee stressed the importance of their natural assets, particularly the wetlands, for the long-term sustainability and viability of their Community. Additionally, increased access to and use of the waterfront stimulates tourism and appreciation of the Community’s environmental assets. Healthy wetlands can reduce wave velocity, increase aquatic habitat, and improve water quality. Natural shorelines can increase eco-tourism and help stimulate the local economy. The proposed project that derives from this strategy will restore and protect these valuable assets. Protection in the first phase will reduce future wave damage. Restoration in the second phase will return vegetation damaged during the storm. Beaches that lost sand will be returned to their former profiles.

The proposed project that derives from this strategy is local and has a medium cost ($500,000 to $1 million). It would generate environmental, economic, and flood protection benefits for Mastic Beach.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Proposed or Featured Project</th>
<th>Regional Project (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restore and Protect Selected Wetlands and Replenish Four Beaches</td>
<td>A submerged rock breakwater to reduce wave velocity and retain the sand would protect tidal wetlands damaged by the storm due to the erosive action of waves. The rock structure would be seeded with oysters to function as a “living breakwater.” Invasive and exotic wetland plant species would be replaced with natives. Wetlands denuded by waves and sand scour would be replanted.</td>
<td>$720,000</td>
<td>Proposed</td>
<td>N</td>
</tr>
</tbody>
</table>
Section 4. Implementation - Project Profiles

Community members rebuilding
A. INTRODUCTION

The NYRCR Program has allocated to the Community up to $3 million. The funding is provided through the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant – Disaster Recovery (CDBG-DR) program. While developing projects and actions for inclusion in the NYRCR Plan, Planning Committees took into account cost estimates, cost-benefit analyses, the effectiveness of each project in reducing risk to populations and critical assets, feasibility, and community support. Planning Committees also considered the potential likelihood that a project or action would be eligible for CDBG-DR funding. The projects and actions set forth in the NYRCR Plan are divided into three categories. The order in which the projects and actions are listed in the NYRCR Plan does not necessarily indicate the Community’s prioritization of these projects and actions. Proposed Projects are projects proposed for funding through the Community’s allocation of CDBG-DR funding. Featured Projects are projects and actions that the Planning Committee has identified as important resiliency recommendations and has analyzed in depth, but has not proposed for funding through the NYRCR Program. Additional Resiliency Recommendations (see Section V) are projects and actions that the Planning Committee would like to highlight and that are not categorized as Proposed Projects or Featured Projects. The total cost of Proposed Projects in the NYRCR Plan exceeds the NYCR Community’s CDBG-DR allocation to allow for flexibility if some Proposed Projects cannot be implemented due to environmental review, HUD eligibility, technical feasibility, or other factors.

Implementation of the projects and actions found in the NYRCR Plan are subject to applicable Federal, State, and local laws and regulations, including the Americans with Disabilities Act (ADA). Inclusion of a project or action in the NYRCR Plan does not guarantee that a particular project or action will be eligible for CDBG-DR funding or that it will be implemented.

This section provides a complete Project Profile for each Proposed or Featured Project identified by the NY Rising Community Reconstruction (NYRCR) Planning Committee (Committee) and the NYRCR Mastic Beach and Smith Point of Shirley Community (Community). In addition to providing a detailed description of each project, the profiles include information on two important elements used by the Committee to evaluate the value of each project – a Cost-Benefit Analysis and a Risk Reduction Analysis. Before proceeding to the projects themselves, it is important to understand these two analytical elements of the Project Profiles.
**Cost Benefit Analysis**

A cost-benefit analysis (CBA) evaluates the benefits and costs associated with a project. The CBA provides decision-makers with a framework for comparing different projects (i.e., anticipated cost of implementation against total expected benefits), and determining whether the benefits of a particular project outweigh the costs. More specifically, the value of the CBA is two-fold: (1) to inform the selection of reconstruction measures and projects; and (2) to support grant applications for funding.

Because the NYRCR Program is a Community-driven process, the CBA has focused on identifying project costs and benefits that easily relate to the communities that the NYRCR Planning Committees represent. Community and Committee input -- informed by a true understanding of local conditions, needs and Community values -- plays a crucial role in the selection of projects that are implemented. With this in mind, the CBA has used a mix of both quantitative and qualitative factors in its analysis.

The CBA cannot, however, evaluate costs or benefits with complete certainty; rather, it provides the Community with a practical understanding of the potential estimated costs of project implementation and the potential benefits accrued to the Community with the particular project in place. The costs and benefits used to evaluate projects through the CBA are explained further below.

<table>
<thead>
<tr>
<th>Project Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Profiles include a detailed breakdown of both short-term and long-term anticipated costs, including construction, operation and maintenance costs, as well as overall life-cycle costs.</td>
</tr>
</tbody>
</table>

The cost of implementing a project is just one aspect of the justification for funding these Proposed Projects. Conversely, another important variable is the future costs of not implementing these projects, which could negatively affect the long-term viability of the Community. While these costs are more difficult to quantify, they are no less important to our analysis, and are therefore addressed qualitatively. These costs include:

- Extensive, repetitive damage to personal property (vehicles, residences) and public infrastructure resulting from frequent recurring flooding and future storm events;
- Economic loss to residents and to local and regional employers as a result of the inability to work; and
- Hindrance in the provision of life safety and emergency services resulting in repeated inability to access areas of the Community.
Project Benefits

The types of benefits considered in the CBA include:

- **Risk Reduction**: The extent to which a project reduces the risk of damage or increases the overall resilience of a Community asset from a future storm event (discussed further below under “Risk Reduction Analysis”).

- **Economic Resiliency**: The project’s potential to help minimize economic costs and reduce the time it takes for the local economy to rebound from a storm event. Economic data included, where applicable, an estimate of permanent jobs secured/added; relationship to, and/or furtherance of, Regional Economic Development Plan goals; potential for additional economic activity; and the net effect on local municipal expenditures.

- **Health, Social and Public Safety Services**: Qualitative information was provided on the overall population benefits of improved access to health and social service facilities and public safety services; type and size of socially vulnerable population secured; and degree to which essential health and social service facilities are able to provide services to a Community during a future storm or weather event as a result of the project.

- **Environmental Protection**: Benefits include the protection of crucial environmental assets or high-priority habitat, threatened and endangered species, migration or habitat connectivity; any clean-up resulting from the action; creation of open space or a new recreational asset.

Risk Reduction Analysis

A Risk Reduction Analysis estimates the extent to which Proposed and Featured Projects will reduce flood risk to specific Community assets when the project is in place. (The extent to which a project reduced such risk is also considered as a benefit in the Cost Benefit Analysis -- see “Project Benefits” above.) Risk “reduction” is different from the risk “assessment” in the previous section in a very important way: risk assessment looks at flood risks to Community assets before the project is implemented; risk reduction looks at the potential for reduced risk assuming the project is implemented.

The risk reduction analysis takes into account future environmental conditions. For this risk reduction analysis, projects were evaluated under a 3-foot rise in sea level scenario for their potential to reduce an asset’s level of exposure and/or vulnerability to future storms. This helps communities and decision-makers understand the potential environmental, social, and economic outcomes associated with implementing the project. (For a more detailed discussion of the methodology and factors used in the risk reduction analysis, see Section 5.)
B. PROJECT PROFILES

PROPOSED PROJECT: Construct Phase I of Greenway/Blueway Trail

This project includes the design and construction of phase 1 of a “greenway” and “blueway” trail network. The “greenway” will be a 3.5-mile long designated bicycle trail along Community roadways that will connect downtown to the waterfront and the more resilient Violet’s Cove facility and adjacent marinas (see Figure 4 on page 63). The trail will be a route designated by roadway striping and signage. The bike trail will run along paved roadways from the Neighborhood Road to Bayview Drive and then south to Riviera Drive via Ducky Lane. The trail will turn west onto Hickory Road, south on Cranberry Drive (with a spur to the Town dock at the end) and then west on Violet Road to the Violet’s Cove property. From Violet Road the trail will travel north and then west along Riviera Drive and then north on Laurelton Drive. From Laurelton Drive the bike trail will travel west onto Hickory Road and then north on Lynbrook Drive. From Lynbrook Drive, the trail follows Forest Road west to connect to John’s Neck Road and north to Commack Road. Commack Road connects back to Neighborhood Road. The trail will pass parks, Pattersons Creek, tidal and freshwater wetlands, high marsh, and forested area. It will connect the downtown to the waterfront and scenic natural areas. It will connect to the Violet’s Cove property and proposed restaurant, small boat rentals and three of the five proposed kayak launches, and future water taxi (see related proposed project on page 70). The bike trail will pass through the Mastic Beach downtown and will connect to the existing bike route along Mastic Road and the western part of Neighborhood Road. The first phase of this project would be located entirely within Mastic Beach. The second phase (see related featured project in the following section, page 97) would connect to Smith Point of Shirley with an additional 14.3 miles of trail at a cost of $1.7 million.

The “blueway” water “trail” will be a mapped water route that connects scenic and recreational waterfront attractions including restored beaches and wetlands, Violet’s Cove, the Wertheim Preserve and Carmans River, the Forge River, and the numerous creeks in Mastic Beach and the Forge River.

The route will be mapped electronically and shore side signage will identify launch sites. The launch sites would be located on public properties with access to public roadways. The blueway trail portion would connect to three of the five proposed kayak launches, and future water taxi (see related proposed project on page 70). The bike trail will pass through the Mastic Beach downtown and will connect to the existing bike route along Mastic Road and the western part of Neighborhood Road. The first phase of this project would be located entirely within Mastic Beach. The second phase (see related featured project in the following section, page 97) would connect to Smith Point of Shirley with an additional 14.3 miles of trail at a cost of $1.7 million.
of the project will include the design, permitting, and construction of five kayak launches with signage.

**Estimated Project Costs**

The capital and soft costs to construct phase 1 of the greenway/blueway trail is estimated at $231,000. Roadway striping and kayak launch floats may need replacement every five years at an estimated annual cost of $5,000. The total life cycle costs are estimated at $356,000. Roadway striping costs would be incurred by the Village and float replacement costs by the municipal property owner (Village, Town, or County). The facilities would be operated at no cost to users and therefore the involved municipalities would realize no revenue.

**Project Benefits**

**Economic Resilience**

Mastic Beach and Smith Point of Shirley plans to develop an eco-tourism industry to benefit from its natural resources and proximity to major area recreational attractions including the FINS, the Great South Bay, the Wertheim Preserve, and the William Floyd Estate (a National Register historic site). Bicycling, kayaking and paddle boarding are very popular recreational activities that can draw visitors who might also frequent the businesses of the downtown and stay in local vacation rentals or bed and breakfasts.

The greenway and blueway trails will help stimulate tourism and its associated jobs, one of the goals of the Long Island Regional Economic Development Council (LIREDC) per its Vision Statement: *Produce a new generation of sustainable, well-paying jobs in the legacy sectors of agriculture, aquaculture, fisheries and tourism by expanding export opportunities, infrastructure, recreation facilities, research partnerships, and workforce training* (emphasis added).

Design and construction of the project is expected to create three full time equivalent jobs during construction*. The project could create an equal number of jobs in businesses that will support the initiative such as bicycle and kayak rentals, and food-related businesses.

**Environmental Protection**

The launch sites will be open to the public and will bring ecologically-minded paddlers through the creeks and wetlands of Mastic Beach and Smith Point of Shirley. The success of the blueway trail relies on proper protection and enhancement of the Community’s tidal wetlands. These tidal wetlands are a high-priority habitat of the Long Island South Shore Estuary Reserve that support avian and aquatic wildlife that draws eco-tourists. Restoration and protection of the tidal wetlands is another proposed project.

**Health and Social Benefits**

Bicycling and kayaking are healthy recreational activities for all Community residents including those Community members of limited economic means. All facilities will be public and a kayak rental vendor will be sought. A bicycle shop with rentals available will be a welcome addition to the downtown business community.
Cost Benefit Analysis

The greenway/blueway trail is a low cost, but high value amenity for the Community. It is an important first phase in the development of an eco-tourism economy for this Community. Downtown businesses and businesses that would support the trail (bicycle and kayak rentals, guided green tours, etc.) need the visitation that would come from the initiative. The vacation rental business benefits from attractions, as do existing and future restaurants (such as the proposed Violet’s Cove facility).

Risk Reduction Analysis

This project reduces economic risk to the Community by adding an amenity to draw eco-tourists, summer vacationers, and bicycle and kayak enthusiasts. Businesses that support these types of activities can locate in the commercial zone of the Community. Related businesses such as restaurants and seasonal rentals will also benefit.

General Timeframe for Implementation

This first phase of the Greenway/Blueway Trail is estimated to require twelve months to implement.

Regulatory Requirements Related to Project

The blueway trail launch sites would be located in or adjacent to tidal wetlands and would therefore require a permit from the New York State Department of Environmental Conservation (NYS DEC), the U.S. Army Corps of Engineers (USACE), and the NYS Department of State (NYS DOS) for Coastal Consistency with Coastal Zone Management (CZM) Program policies.

Jurisdiction

The greenway trail would be located on Village-owned roadways. The blueway trail launch sites would be located on Village, Town, and County properties and would therefore require the municipalities’ approvals. Roadway striping would likely be coordinated with or conducted by the Town of Brookhaven. Municipal representatives on the Committee have not indicated that use of these sites for kayak launches poses any problem.
Figure 4: Proposed Greenway and Blueway Trails
**PROPOSED PROJECT: Elevate and Repair**

**Violet’s Cove Building after Acquisition**

**Project Description**

The Village of Mastic Beach anticipates acquiring the Violet’s Cove property from Suffolk County within the next few months. The County has assured the Village that it has right of first refusal over all other potential offers. Acquisition of the property is the first step toward adding an economic development and recreational site to the Community. The site is located on the shores of Narrow Bay and looks out over the Fire Island National Seashore. It is the gateway to Moriches and Bellport Bays and the hundreds of acres of tidal wetlands to the east and west and the beaches of Mastic Beach. A facility of this type will make the Community more attractive to summer vacationers and full-time residents alike. It would then be the only waterfront restaurant and educational facility on the Mastic-Shirley peninsula. It will be one of only two boat launches into Narrow Bay and the only facility outside of the Forge River for transient vessels to berth.

The 4,000 square foot building functioned in the past as a restaurant. The Village plans to repair the structure, make it more resilient, and lease it for use once again as a restaurant. The repairs will correct damage from Sandy and make the structure more resilient to future storms. Space will be made available on the site for an educational program (see subsequent project phase, below). Public access will be provided to the waterfront, boat launch, and berthing facility for transient vessels (see related project). A small boat rentals (e.g., kayaks and paddle boards) facility will also be accommodated. Docking access will be provided for a future water taxi that will connect to Fire Island National Seashore and other places of interest along the south shore. Violet’s Cove will also be a destination spot on the proposed Greenway/Blueway trail (see project profile above) to link to the downtown and other parts of the peninsula.

This project is one of three for Violet’s Cove. The first project is the elevation of the building (on piles) above the base flood elevation (plus appropriate freeboard) and the addition of other improvements to the building. These measures will protect the structure from future storm events and ensure that a valuable economic and recreational asset is preserved and protected.
Elevation of the structure will require specialized pilings that can be installed under an existing structure. Geotechnical borings will be required to determine the appropriate depth for the pilings.

**Estimated Project Costs**

The capital and soft costs to elevate and improve the resiliency of the building is estimated at $1.4 million. The estimate includes engineering and architectural design, permitting, and construction management. Operation and maintenance costs not paid for by the lessee are estimated at $10,000 per year over 25 years. Total life cycle costs are estimated at $1.6 million. The building will be leased to a restaurant operator that will be responsible for regular operation and maintenance costs. Ancillary operations on the site such as a kayak rental facility, or water taxi dock will be run by others under contract to the Village. The Village will realize revenue from leases and other fees, which will reduce its outlay for those maintenance costs that are not the responsibility of the lessee.

**Project Benefits**

**Risk Reduction**

The Violet’s Cove property is located on the waterfront within the 100-year floodplain and is therefore subject to future flooding. The building will be elevated to allow storm surge to pass beneath it and strengthened to resist storm and wind surges. The site could be managed by the Village, which has greater financial resources at its disposal than most private parties. The Village also has the interests of its constituents as its primary motivation. All these factors together will reduce future storm risk and help the facility to continue operating following storm events.

**Economic Resilience**

Development of Violet’s Cove will help stimulate tourism and its associated jobs, one of the goals of the Regional Economic Development Council (*Produce a new generation of sustainable, well-paying jobs in the legacy sectors of agriculture, aquaculture, fisheries, and tourism by expanding export opportunities, infrastructure, recreation facilities, research partnerships, and workforce training*).

The Violet’s Cove project will bring revenue to the local economy and tax revenue to the Village of Mastic Beach. Tourists will be more likely to visit the Community if there is a facility of this type. They will be more likely to frequent a local bed and breakfast and patronize Neighborhood Road and Mastic Road stores. Lease agreements will make the lessee responsible for normal operation and maintenance. The resiliency improvements planned for the facility will reduce future storm-related emergency and recovery costs.

Design and construction of the improvements to the Violet’s Cove structure will create 18 full time equivalent temporary jobs during construction. The restaurant lessee will create permanent jobs for servers, hosts, cooks, office, and maintenance workers.
Cost Benefit Analysis

The Community recognizes the value of a facility of this type to its economy and tax base. Protection of this existing structure through elevation and key building modifications will enable it to serve the Community and its visitors for many years and through future storm events. Putting the structure back into service will generate tax revenue for the Village and will draw visitors and their leisure dollars to the central business district. These improvements will help make the structure attractive to a lessee.

Risk Reduction Analysis

Elevation of the Violet’s Cove building above the base flood elevation with freeboard will reduce future flood impacts. Repairs to the structure will increase its resilience to wind and water impacts. The Village will manage the site to insure that improvements conform to design requirements and that the building is properly maintained.

General Timeframe for Implementation

After acquisition of the property from Suffolk County, the general timeframe would be approximately eighteen months.

Regulatory Requirements Related to Project

The project is located adjacent to tidal wetlands and will require a permit from the NYS DEC, USACE, and the NYS DOS for Coastal Consistency.

Jurisdiction

This project will fall under the jurisdiction of the Village of Mastic Beach after the property is acquired from Suffolk County.
**PROPOSED PROJECT: Construct Resilient Landscape for Violet's Cove after Acquisition**

**Project Description**

The Village of Mastic Beach anticipates acquiring the Violet’s Cove property from Suffolk County within the next few months. Acquisition of the property is the first step toward adding an important economic development and recreational site to the Community. The site is located on the shores of Narrow Bay (part of Moriches Bay) and looks out over the Fire Island National Seashore. It is the gateway to the Bay and the hundreds of acres of tidal wetlands to the east and west and the beaches of Mastic Beach. The 4,000 square foot building functioned in the past as a restaurant. A facility of this type will make the Community more attractive to summer vacationers and full-time residents alike.

The Village will make the building more resilient as part of another proposed project. It will provide public access to the waterfront, boat launch, and a berthing facility for transient vessels (see related project). A small boat rental (e.g., kayaks and paddleboards) facility will also be accommodated. Docking access will be provided for a future water taxi that will connect to Fire Island National Seashore and other places of interest along the south shore. Violet’s Cove will also connect to the proposed greenway/blueway trail (see project profile below) to link to the downtown and other parts of the peninsula.

**CONSTRUCT RESILIENT LANDSCAPE FOR VIOLET’S COVE AFTER ACQUISITION**

**Recovery Support Function:** Economic Development, Natural and Cultural Resources

**Estimated Cost:** $780,000

**Assets Made More Resilient:**

- Violet’s Cove site

**Risk Reduction & Benefits:**

- Increased economic resilience
- Increased recreational opportunities and waterfront access

This project is one of three for Violet’s Cove. This proposed project is the installation of resilient landscaping that will utilize natural and pervious materials. Plant materials will be selected that are resistant to salt water spray and occasional inundation. A gravel (pervious) parking facility will be provided and the shoreline stabilized with native plantings, degradable geotextiles, and rock if necessary. These measures will allow the property to flood during future storm events with minimal damage and to recover quickly. A large palette of materials and plants are available that are resistant to occasional saltwater inundation. Plants and other landscape materials will also be selected based on aesthetic appeal and durability. The naturalized landscaping will be part of the site’s educational components. The appropriate solution to help stabilize the shoreline...
and reduce the site’s exposure and vulnerability to future storm effects will depend on an evaluation of site specific conditions.

**Estimated Project Costs**

The capital and soft costs to elevate and improve the resiliency of the property is estimated at $780,000. The estimate includes engineering and architectural design, permitting, and construction management. The restaurant lessee will be responsible for operation and maintenance costs a portion of the property such as the pervious parking area. The Village will maintain other parts of the site at an estimated cost of $4,000 per year over 25 years. Total life cycle costs to improve and maintain the Violet’s Cove landscape are estimated at $880,000. The Village will realize revenue from leases and other fees, which will offset its outlay for those maintenance costs that are not the responsibility of lessees.

**Project Benefits**

**Risk Reduction**

The Violet’s Cove property is located on the waterfront within the 100-year floodplain and is therefore subject to future flooding. The approach taken by this project is to anticipate occasional flooding of the property and utilize materials and plantings that are resilient. Plant materials will be selected that are resistant to salt water spray and occasional inundation. The shoreline will be stabilized and the quantity of impervious materials minimized. Risk of damage to the site itself will be reduced by all of these measures. The facility could be managed by the Village, which has greater financial resources at its disposal than most private parties.

**Economic Resilience**

Development of Violet’s Cove will help stimulate tourism and its associated jobs, one of the goals of the LIREDC (Produce a new generation of sustainable, well-paying jobs in the legacy sectors of agriculture, aquaculture, fisheries and tourism by expanding export opportunities, infrastructure, recreation facilities, research partnerships and workforce training – emphasis added).

The Violet’s Cove project will bring revenue to the local economy and tax revenue to the Village of Mastic Beach. Tourists will be more likely to visit the Community if there is a facility of this type. They will be more likely to frequent a local bed and breakfast and patronize Neighborhood Road and Mastic Road stores.

Design and construction of the Violet’s Cove landscape improvements will create an estimated 10 temporary jobs for a period of two years or more. Permanent jobs will be created by the restaurant lessee and the Village for workers to maintain the site.

**Health and Social Benefits**

The Violets’ Cove property will provide access to healthy recreational activities for all the residents of Mastic Beach and Smith Point of Shirley. The public facility has a launch for small powered and unpowered boats. It will be a place to access the water for passive or active recreation. A water taxi may ultimately dock at the facility to take visitors to the Fire Island National Seashore (FINS) and other recreational locations. Bicycle trails will connect to other parts of the Mastic-Shirley peninsula and surrounding natural and cultural attractions.
Environmental Protection

Improvements to Violets’ Cove property will include installation of native coastal plantings that are naturally resistant to salt spray and occasional inundation. The natural shoreline by Violet Road and along the southern edge of the property will be protected and enhanced with resilient vegetation and rock if necessary. The property will be open to the public and will be a “launching place” for public and private excursions by kayak, water taxi, or other vessels through the creeks and wetlands of Mastic Beach and Smith Point of Shirley. Protection and enhancement of the Community’s tidal wetlands will be critically important not only to the ecological health of Narrow Bay, but also to the economic success of the Violet’s Cove initiative. These tidal wetlands are a high-priority habitat of the Long Island South Shore Estuary Reserve that support avian and aquatic wildlife that draws eco-tourists.

Cost Benefit Analysis

The Mastic Beach and Smith Point of Shirley Community recognizes the value of a facility of this type to its economy and tax base. Rebuilding the site itself to allow for occasional flooding without sustaining significant damage is critically important to the functioning of the restaurant (another proposed project) and other recreational facilities on the site. The facility will serve the Community and its visitors for many years and through future storm events, will generate tax revenue, and will draw visitors and their leisure dollars to the central business district. These improvements will help make the site attractive to a lessee.

Risk Reduction Analysis

The project will reduce risks to the Violet’s Cove property by reconstructing the property with materials and plantings that are resistant to occasional flooding. Plant materials will resist saltwater spray and occasional inundation. The shoreline will be made more stable. The risk of damage to the site will be reduced.

General Timeframe for Implementation

After acquisition of the property from Suffolk County, this project could be completed in approximately fifteen to eighteen months.

Regulatory Requirements Related to Project

The project is located adjacent to tidal wetlands and will require a permit from the NYS DEC, the USACE, and the NYS DOS for Coastal Consistency.

Jurisdiction

This project will fall under the jurisdiction of the Village of Mastic Beach after the property is acquired from Suffolk County.
**PROPOSED PROJECT:** Construct Resilient Amenities for Violet's Cove after Acquisition

**Project Description**

The Village of Mastic Beach anticipates acquiring the Violet’s Cove property from Suffolk County within the next few months. Acquisition of the property is the first step toward adding an important economic development and recreational site to the Community. The site is located on the shores of Narrow Bay (part of Moriches Bay) and looks out over Fire Island National Seashore. It is the gateway to the Bay and the hundreds of acres of tidal wetlands to the east and west and the beaches of Mastic Beach.

The Village plans to repair the former restaurant to make it more resilient for use once again as a restaurant (see related project). Public access will be provided to the waterfront, small boat and kayak launch, and berthing facility for transient vessels. A small boat rentals (e.g., kayaks and paddle boards) facility will also be accommodated. Docking access will be provided for a future water taxi that will connect to Fire Island National Seashore and other places of interest along the south shore. Violet’s Cove will also connect to the proposed greenway/blueway trail (see proposed project profile) to link to other shoreline attractions, the downtown and other cultural and natural attractions on the peninsula.

This project is one of three for Violet’s Cove. It includes the repair of the waterfront docking and transient boat berthing facilities damaged by the storm to make them more resilient to future storms. Damaged pilings will be made more structurally sound. Floating docks and gangways will be installed to allow them to rise to a higher elevation than usual tidal elevations and to make it possible to move them in advance of more severe storms. The boat launch will be adapted for use by kayaks as part of the proposed blueway trail (see related proposed project). These measures will protect the structures from future storm events and will ensure that a valuable economic and recreational asset is preserved and protected. Making the property accessible from the water and the water accessible from the site will add to its financial success and will bring more visitors to the Mastic Beach and Smith Point of Shirley. A proposed water taxi could deliver and pick up passengers from the facility bound to Fire Island National Seashore (FINS) or other area.

**CONSTRUCT RESILIENT AMENITIES FOR VIOLET’S COVE AFTER ACQUISITION**

**Recovery Support Function:** Economic Development, Natural and Cultural Resources

**Estimated Cost:** $98,000

**Assets Made More Resilient:**

Violet’s Cove

**Risk Reduction & Benefits:**

- Increased economic resilience
- Increased recreational opportunities and waterfront access
destinations. More water-based amenities will make the facility and thereby the Community more attractive to summer vacationers and full time residents alike. Some docking facilities survived Superstorm Sandy because they were constructed to withstand the wave action and the surge. Others survived because they were installed in such a manner that they could be relocated to safer locations.

Space will be set aside for an education center that would focus on local coastal ecology and the role of the extensive wetlands as a storm buffer and as aquatic habitat. A shellfish seed propagation program could be a part of the initiative that could provide hands-on learning. The center could also teach storm preparedness. It could be a satellite of an existing facility like the Seatuck Environmental Center in Islip, or the Wertheim Wildlife Center in Shirley. An appropriate organization like one of these would be sought to develop and operate the facility. The water amenities proposed as part of this project could add to the educational components of the site.

**Estimated Project Costs**

The capital and soft costs to repair and strengthen the berthing facility is estimated at $98,000. The estimate includes engineering and architectural design, permitting, and construction management. Operation and maintenance costs are estimated at $2,500 per year over 25 years. The boat launch, dock, and transient berthing facility will be operated by the Village, the restaurant concessionaire, or a separate contract operator. Ancillary operations on the site such as a kayak and paddleboard rental facility will be run by others under contract to the Village. The Village will realize revenue from leases and other fees, which will reduce its outlay for those maintenance costs that are not the responsibility of a contract operator.

**Project Benefits**

**Risk Reduction**

The Violet’s Cove property is located on the waterfront within the 100-year floodplain and is therefore subject to future flooding. The approach taken by this project is to increase the resilience of the water-based structures by replacing existing damaged components with heavier, more structurally sound and resilient facilities. Floating docks will remain secure even when water levels rise several feet above normal higher high tides. Floating docks will be detachable so that they can be relocated to more protected locations.

**Economic Resilience**

Development of Violet’s Cove will help stimulate tourism and its associated jobs, one of the goals of the LIRED$^+$ *(Produce a new generation of sustainable, well-paying jobs in the legacy sectors of agriculture, aquaculture, fisheries and tourism by expanding export opportunities, infrastructure, recreation facilities, research partnerships and workforce training.)*

The Violet’s Cove project will bring revenue to the local economy and tax revenue to the Village of Mastic Beach. Tourists will be more likely to visit Mastic Beach and Smith Point of Shirley for a facility of this type. They will be more likely to patronize a local bed and breakfast and patronize Neighborhood Road and Mastic Road stores.
Design and construction of the improvements to the Violet’s Cove structure will create one full time equivalent (FTE) temporary job during construction. Seasonal jobs will be created for dock operation and maintenance workers.

**Health and Social Benefits**

The Violets’ Cove property will provide waterfront access for healthy water-based recreational activities for the residents of Mastic Beach and Smith Point of Shirley as well as visitors. The facility has a public launch for small powered and unpowered boats. A water taxi may ultimately dock at the facility to take visitors to Fire Island National Seashore and other recreational locations. Bicycle trails will connect to other parts of the Mastic-Shirley peninsula and surrounding natural and cultural attractions.

**Cost Benefit Analysis**

The Community recognizes the value of a facility of this type to its economy and tax base. Reconstruction and strengthening of the berthing and transient docking facility will enable it to serve the Community and its visitors for many years and through future storm events. Use of the dock by a water taxi could generate revenue for the Village to offset the cost of operation. Putting the facility back into service will draw visitors and their leisure dollars, which will contribute to the local economy. These improvements will help make the overall site attractive to a lessee.

**Risk Reduction Analysis**

Damaged and inadequate water-based structures on the Violet’s Cove property will be replaced with heavier, more structurally sound and resilient facilities. Structures will accommodate rising water levels and wave action. Detachable floating docks can be relocated to more protected locations.

**General Timeframe for Implementation**

After acquisition of the property from Suffolk County, this project is expected to take fifteen to eighteen months.

**Regulatory Requirements Related to Project**

The project is located adjacent to tidal wetlands and will require a permit from the NYS DEC, USACE, and the NYS DOS for Coastal Consistency.

**Jurisdiction**

This project will fall under the jurisdiction of the Village of Mastic Beach after the property is acquired from Suffolk County.
**PROPOSED PROJECT: Prepare Engineering Design for Sewer System**

**Project Description**

This project will include the preparation of engineering designs and construction documents for a wastewater collection and treatment system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road) and a portion of the residential area to the south. The design will include a future build out estimate such that the treatment plant and collection system could be sized to accommodate flow from additional residential connections from the low-lying, high groundwater areas. This is the second phase of the sewering initiative underway by the Village of Mastic Beach. The Village has an engineering consultant under contract that is preparing the map and plan for the sewer district, estimating current and future wastewater flow, and conducting the required State Environmental Quality Review (SEQR). The proposed project will be the preparation of detailed engineering design drawings for the collection system and treatment plant. It will be coordinated with ongoing efforts by Suffolk County and the Town of Brookhaven to develop sewering plans for neighboring communities and identify a location for a regional wastewater treatment plant. The Suffolk County Comprehensive Water Resources Management Plan has identified sewering of the Mastic-Shirley peninsula as a high priority. The proposed project will deliver “shovel-ready” designs.

**PREPARE ENGINEERING DESIGN FOR CENTRAL BUSINESS DISTRICT AND RESIDENTIAL AREA SEWER SYSTEM**

**Recovery Support Function:** Infrastructure, Economic Development, Health, and Social Services

**Estimated Cost:** $1.2 million

**Assets Made More Resilient:**

- Infrastructure

**Risk Reduction & Benefits:**

- Increased economic resilience
- Decreased risk of public health and environmental threats from raw sewage spills from on-site systems
- Improved water quality
- Enhancement of wetlands and marshes

It is possible that rather than designing a stand-alone treatment plant, the firm conducting the design could be tasked with designing a pump station to deliver wastewater to a regional treatment plant operated by the Town or more likely the County. That decision will likely be made soon as the County advances plans for a new regional wastewater treatment plant most likely at the local Town of Brookhaven airport. It is important that the Village of Mastic Beach advance its effort to sewer the downtown now so that it has a design ready either for its own system or to tie into the area efforts underway by the County. The County has indicated a willingness to work with the Village to include it in the sewer district it is currently
forming along the western side of the Forge River. Identification of property or easements required for the collection system or treatment plant will be part of the design effort.

**Estimated Project Costs**

Engineering design and preparation of construction documents is estimated to cost $1.2 million. That estimate represents 8% of an estimated $15 million construction cost.

**Project Benefits**

**Risk Reduction**

This project will constitute a critical step in the process of sewering the commercial district of the Village of Mastic Beach and a portion of the low-lying, high groundwater residential area. The collection and treatment system will be sized to serve most of the residential district south of the downtown. It is that low-lying, high groundwater area that experienced severe problems with backed up and overflowing onsite systems (cesspools and septic systems). Raw sewage was spilled into homes and back yards. Sewering these areas will reduce the very real threat to human health and the environment. The project deliverable will be a “shovel-ready” plan to sewer the commercial district and a portion of the residential district, which will then make it possible to expand the district into the remainder of the low-lying residential area south of Neighborhood Road.

**Economic Resilience**

Development in the commercial district of the Village of Mastic Beach is constrained by Suffolk County’s sanitary regulations that limit the wastewater flow from parcels and hence the development density and intensity of uses.

Sewering makes it possible for property owners to generate a greater volume of wastewater than is permitted when only onsite systems are in place. Initial redevelopment of the downtown can be stimulated by giving developers greater opportunity to secure their investments (lower their risk) with additional density. Sewering makes possible high wastewater flow uses such as restaurants and medical clinics, which will be important to and help diversify a redeveloped downtown.

Sewering will meet one of the goals of the LIREDC’s: *Rebuild and expand infrastructure to improve job access, revitalize downtowns and transit hubs, speed trade, and attract and retain dynamic regional businesses and highly-skilled workers* (emphasis added).

Approximately 15 full time equivalent temporary jobs would be created for this design effort.
Environmental Protection

Moriche’s Bay, into which most Mastic Beach groundwater flows, has been designated as an impaired waterbody by the NYS DEC. The Bay has been severely impacted by excessive nutrients (nitrogen) carried by groundwater from the onsite wastewater systems of the Mastic-Shirley peninsula. Wastewater treatment plants can remove 80-90% of the nitrogen that currently enters groundwater from onsite systems.

Health and Social Benefits

Sewering the downtown will make it more likely that a medical clinic can locate in the commercial district as they typically generate wastewater flows higher than can be accommodated by onsite systems.

Commercial district sewering will also make it possible for new restaurants to locate in the downtown and for existing ones to expand. Sewering of a portion of the low-lying high groundwater areas will eliminate the health risks associated with raw sewage backups and spills during storm events from onsite systems.

Cost Benefit Analysis

The engineering design is a critical step that will generate a “shovel ready” sewering project that can then be funded by other sources. It is also a very important first step in the redevelopment of the commercial district and the area’s economy. Property owners, buyers, and developers need the assurance that sewering will be in place to make needed investments. Funding this step in the
The sewer process will make it possible to maintain the momentum initiated by the Village and to ensure that the engineering designs are in place when funding is secured for the next phase of the project and ultimately for construction.

**Risk Reduction Analysis**

Sewering the commercial district of the Community and a portion of the low-lying, high groundwater residential area is a critical first step toward sewering the remaining low-lying residential areas. Backed up and overflowing onsite wastewater systems (cesspools and septic systems) in those areas spilled raw sewage into homes and backyards. Sewing these areas will reduce the very real threat to human health and the environment.

**General Timeframe for Implementation**

This project will be completed in the intermediate (one to three years) term, as it will follow the Village’s sewering study scheduled for completion in the next few months.

**Regulatory Requirements Related to Project**

Engineering designs will need to conform to generally accepted protocols (e.g., Ten States Standards) and must meet Suffolk County Department of Health Services and NYS DEC requirements.

**Jurisdiction**

Suffolk County Department of Health Services
**PROPOSED PROJECT:** Restore and Protect Selected Wetlands and Replenish Four Beaches

**Project Description**

This project has three components – 1) wetland protection, 2) wetland restoration, and 3) beach replenishment. The wetland protection component will be completed first before wetland restoration efforts are undertaken. This phase of the project will be constructed seaward of the mean high tide line and less than 100 feet offshore. The Village of Mastic Beach owns this area. Tidal wetlands impacted by the storm due to the erosive action of waves will be protected by a submerged rock breakwater to reduce wave velocity and retain the substrate (sand and peat) that anchors the wetland. The rock structure will be seeded with oysters to function as a “living breakwater.”

The second component of this proposed project is the restoration of the tidal wetlands. Invasive and exotic wetland plant species will be replaced with natives. Wetlands denuded by waves and sand scour will be replanted. The area of wetlands to be treated will be based on its condition, value (habitat, wave velocity reduction, water quality, other) and the cost allocation. Tidal wetlands are currently under dual ownership. Tidal wetlands below the mean high tide line are owned by the Village of Mastic Beach. Tidal wetlands and high marsh located landward of the mean high tide line are currently owned by the Mastic Beach Property Owners Association.

The third component of the proposed project is the replenishment of sand lost during the storm by four small beaches along the Mastic Beach shoreline. The Village of Mastic Beach owns that portion of each beach located below the mean high tide line. The portion of each beach located landward of the mean high tide line is currently owned by the Mastic Beach Property Owners Association. Clean beach sand would be trucked in and spread across the denuded portions of each beach out to the mean low tide line.

**RESTORE AND PROTECT SELECTED WETLANDS AND REPLENISH FOUR BEACHES**

**Recovery Support Function:** Natural and Cultural Resources

**Estimated Cost:** $720,000

**Assets Made More Resilient:**

- Wetlands, beaches, and residential assets in extreme and high risk area

**Risk Reduction & Benefits:**

- Decreased wave energy from storm surges
- Improved water quality
- Enhancement of wetlands and marshes
- Restoration of natural shoreline
- Increased access to healthy recreational opportunities
Figure 5: Restore Four Beaches and Wetlands Project

Restore Four Beaches & Wetlands Project
Mastic Beach & Smith Point of Shirley NYRCR
Suffolk County, New York

Asset Class
- Commercial/Economic
- Health/Services/Institutional
- Natural/Cultural/Recreational
- Historic Site
- Residential

Source: Building footprints from Suffolk County IT/GIS Dept.

Village Boundary
Source: Village of Mastic Beach

NYRCR Community Boundary
Source: NYRCR (NY Rising Community Reconstruction) boundary provided by the NYS DOS.

Identified Location for Beach Restoration
Successful tidal wetland restoration depends in part on planting species at the appropriate elevations and on protecting the plantings from wave action and sedimentation. For example, *Spartina* only grows in the upper third of the tidal range. The living rock breakwater will provide that protection. The number and size of the oysters will grow over time, effectively increasing the height and width of the breakwater. This will be important as sea level rises.

**Estimated Project Costs**

The capital and soft costs including design, permitting, and construction management are estimated at $720,000. The project cost is based on the installation of approximately 200 linear feet of living breakwater and the restoration of the wetlands upland of the breakwater. Two hundred cubic yards of sand will be utilized for the replenishment of the four beaches. Sand replenishment every five years adds $130,000 over 25 years.

The length of the living breakwater could be extended and the area of restored wetlands expanded to provide additional restored and protected tidal wetlands. Project costs would be correspondingly higher. The Community has over six miles of shoreline most of which is occupied by tidal wetlands.

**Project Benefits**

**Risk Reduction**

Restoration and protection of tidal wetlands is a recognized measure to increase flood resilience. Although wetlands have a limited role in reducing storm surge, they do serve a vital role in reducing wave action and storm surge velocity. Restoring wetlands lost to the storm will be critically important to the Community. Protecting these same areas with a living breakwater will add additional protection and further reduce risk to the upland Community.

**Economic Resilience**

The important of restored and protected wetland includes their value in protecting upland economic assets and the value of the wetlands as eco-tourism assets. The proposed blueway trail will follow the water side of the wetlands and the proposed greenway trail will follow their upland edge. Both of these trails are attractive to eco-tourists and residents alike when they are healthy, thriving, and protected.

The replenishment of four local beaches is not only important to the residents of the Community, but also to the anticipated eco-tourism economy. Swimming and wading beaches will further enhance the area’s appeal to visitors arriving by car, bicycle, kayak, or water taxi. The provision of additional water-based recreational opportunities will help draw new tourism dollars to the Community. The project is expected to create nine full time equivalent jobs.

**Environmental Protection**

The work proposed in selected tidal wetlands will protect and then restore these ecologically important areas. Groundwater flows from upland areas with onsite wastewater systems has delivered nutrients (nitrogen) that have been shown to reduce root growth in *Spartina* plants, making them more susceptible to wave action related to
storms. The proposed living breakwater will help protect the wetlands from that wave action.

Protection provided by the breakwater is also important even after nitrogen is reduced through sewering, as sea level rise and future storm events will continue to erode the wetlands. Creation of an oyster reef can help stimulate the repopulation of oysters in the Great South Bay as the breakwater oysters spawn and release millions of larvae into the water.

**Health and Social Benefits**

Beach use is an activity with no costs to the users and can provide recreational access for all including socially vulnerable populations.

**Cost Benefit Analysis**

The costs associated with this work are relatively low in comparison to the value of the upland properties that will be afforded additional protection from the wetlands. The eco-tourism value of healthy wetlands can be high. Oysters have intrinsic value and their numbers would likely increase in those portions of the Great South Bay in close proximity to the living breakwater. Failure to restore wetlands and their natural functions could generate high replacement costs for the essential flood protection and ecological services they provide.

**Risk Reduction Analysis**

Healthy expansive tidal wetlands help reduce wave action and storm surge velocity. Restoring wetlands lost to the storm and then protecting those wetlands with a living breakwater will reduce risk to the upland Community.

**General Timeframe for Implementation**

Timing of the project will depend in part on approvals from the regulatory agencies. The breakwater portion of the project is estimated to require 24 months for design, construction, and permitting. Wetland restoration is best conducted after the breakwater is in place to protect newly planted wetlands, and it will require an additional 12 months for construction.

**Regulatory Requirements Related to Project**

Installation of the living breakwater, tidal wetlands restoration, and beach replenishment will require permits from the NYS DEC, USACE, and the NYS DOS for Coastal Consistency.

**Jurisdiction**

Currently, the Village of Mastic Beach is the trustee for the underwater lands along its coastline from the mean high tide line seaward to 100 feet offshore (from the mean high tide line). The Mastic Beach Property Owners Association holds title to the area upland of the high tide line to the Village owned roadway along the coastline. Discussions are underway that may lead to the transfer of title of the upland properties from the Property Owner’s Association to the Village of Mastic Beach.
**PROPOSED PROJECT:** Conduct Flood Protection Study of Smith Point of Shirley

**Project Description**

An engineering and scientific study will be conducted to determine the best structural and non-structural methods to protect the hundreds of homes located north of Suffolk County’s Smith Point Park North. Flooding was experienced along many of the roadways of this part of Shirley. Residents identified the northern edge of the County’s park as a potential location for a flood protection structure such as a berm. The engineering analysis will include topographic surveying to define elevations, field assessments to evaluate existing topography, wetlands, and adjacent residential properties and roadways. The analysis will determine the location and potential height and width of a berm. The study will examine how to tie the berm into other protective measures such as road elevation to provide additional protection given the constraints of the site and adjacent areas. Wetlands and the existing mosquito ditches in the Smith Point North County Park will be evaluated for their potential role in exacerbating flooding in the adjacent residential area. Recommendations for wetland modifications and management strategies will be included in the engineering and scientific study.

**Estimated Project Costs**

The estimated cost for the engineering and scientific study is $125,000.

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**CONDUCT FLOOD PROTECTION STUDY OF SMITH POINT OF SHIRLEY**

**Recovery Support Function:** Infrastructure

**Estimated Cost:** $125,000

**Assets Made More Resilient:**

Smith Point Park North, residential assets in extreme and high risk areas in Smith Point of Shirley

**Risk Reduction & Benefits:**

Reduced flood risk

Decreased risk of public safety threats during storms

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**Project Benefits**

**Risk Reduction**

Many Smith Point of Shirley residents experienced flooding during the storm. Residents indicated that the storm surge traveled north from the Suffolk County Park into the residential neighborhood. Identifying measures to reduce this flooding will reduce the flood risk associated with future storm events.

**Economic Resilience**

The economic resilience of the Smith Point Community is enhanced when adequate flood protection is provided. The value of the homes and the marketability of properties to potential new residents are...
increased when flooding is reduced. The project will create two full time equivalent jobs during the study.

**Environmental Protection**

Some wetland modifications that reduce flooding may also improve the health of wetlands and reduce their susceptibility to storm impacts. Wetland protection and management measures can increase the health of the tidal wetlands and by extension the aquatic organisms that rely on the wetlands.

**Health and Social Benefits**

Reducing the likelihood of flooding also reduces the potential health effects associated with flooded homes and onsite wastewater systems. The need for evacuation is reduced and the impacts on vulnerable members of the Smith Point Community reduced.

**Cost Benefit Analysis**

The cost of this study is low relative to the potential benefits to be derived from the flood protection measures that will come from the study.

**Risk Reduction Analysis**

The study will identify measures to reduce the risk of flooding in the residential area of Smith Point of Shirley that derived in large part from surge that traveled north through Suffolk County’s Smith Point Park North.

**General Timeframe for Implementation**

This proposed project is an immediate term (less than one year) effort. Engineering and scientific evaluation could begin this year (2014) and could be completed in mid-2015.

**Regulatory Requirements Related to Project**

Strategies will be implemented only if they can be approved by the NYS DEC, USACE, and the NYS DOS for Coastal Consistency.

**Jurisdiction**

The Smith Point Park North property is owned by Suffolk County. The adjacent roadways are owned by the Town of Brookhaven and Suffolk County (William Floyd Parkway).
**Proposed Project:** Prepare Economic and Market Analysis

**Project Description**

The Committee recognized the need for an economic and market analysis to identify the potential for attracting specific businesses to the Community. The study will identify opportunities for niche businesses as well as specific types of improvements that would need to be made to the business district and the broader Community in order to attract investment. It will assess parking, traffic, and pedestrian circulation opportunities and challenges for the commercial district. It will focus on the market for and feasibility of attracting businesses that serve eco-tourists and summer vacationers as well as methods to draw eco-tourists and others to the waterfront. The study will also determine how to increase the number of summer vacationers and seasonal renters. Business opportunities will be evaluated including festivals, outdoor events, mobile food vendors, small boat rental companies, bed & breakfasts, and a water taxi to connect waterfront parks, marinas, beaches, and Fire Island National Seashore (FINS). The availability of businesses that serve local needs will be identified. The project will also deliver a branding and marketing campaign with measures to stimulate tourism, attract summer vacationers, and support related businesses identified as viable.

**Estimated Project Costs**

The economic and market analysis is estimated to cost $125,000.

**Project Benefits**

**Risk Reduction**

The storm had a great impact on Community businesses. Business closures reduced tax revenues to the Village. A commercial district with a diverse mix of businesses and a greater overall number of businesses can better survive economic interruptions from storms and downturns in the overall economy. A thriving downtown with businesses that offer a variety of products and services attracts more customers.
Economic Resilience

The local economy suffered from the effects of the storm. Many area residents were displaced and many have not returned, reducing the number of customers for local businesses. Residents that remain have less disposable income due to the expenses they incurred and continue to incur to repair damage to their properties.

Tax revenue to the Village has declined as numerous residents abandoned their homes and businesses have left. It is important to the economic resilience of the Community that it has a stable and prosperous commercial district. This project will identify the most appropriate businesses to attract based on area demographics, disposable income, and existing business competition. The project will also recommend measures to improve the business climate in the Community and incentivize selected businesses to locate in the downtown and deliver a strategy to increase business activity and new development. New businesses will help stabilize the tax base and allow the Village to deliver services that can lower future risks to the Community. The effort will create two FTE jobs\(^\text{i}\).

Environmental Protection

The analysis with include a focus on businesses that cater to eco-tourism clients, outdoor recreation enthusiasts, and summer vacation visitors. These types of customers appreciate the natural environment and value its protection.

Health and Social Benefits

The analysis will include an evaluation of business types that may be especially important to vulnerable populations, such as medical services, neighborhood food stores, and transportation alternatives.

Cost Benefit Analysis

This proposed project is a low cost (less than $500,000) project that could enable and support needed economic developments in the Village of Mastic Beach that will have tremendous benefit to the Community and its long-term sustainability.

Risk Reduction Analysis

Reducing risks to the local economy is critically important to Community and to the Village tax base. Identifying strategies to increase the mix and number of businesses will help Mastic Beach and Smith Point of Shirley survive economic interruptions from storms and economic downturns.

General Timeframe for Implementation

The project can be completed in less than a year from the time implementation begins.

Regulatory Requirements Related to Project

There are no regulatory requirements related to the project.

Jurisdiction

This project falls under the jurisdiction of the Village of Mastic Beach.
**PROPOSED PROJECT:** *Emergency Communication System and Education Program*

**Project Description**

This project will expand communication options during emergencies and provide emergency procedures education in the Community. The project will include the design and installation of the fixed equipment necessary to operate a local emergency radio system on the VHF band. Equipment will include fixed repeater stations to amplify the signal throughout the Community, installation of an antenna fixed to an existing tower (such as the fire department’s tower) or the construction of a new tower for that purpose. Relatively inexpensive transmitters and VHF radio receivers (not part of project costs) will be purchased by volunteer “block captains.” They will be able to receive information from emergency service providers and other program participants and then notify block residents of emergencies, evacuation procedures and routes, as well as health and social service locations. The initiative will include training for block captains and coordination with the Mastic-Moriches-Shirley Community Library’s cell phone based application that was utilized during Superstorm Sandy. English and Spanish language broadcasts will be provided and bilingual “block captains” solicited for blocks with a majority of Spanish speaking residents.

**DEVELOP EMERGENCY COMMUNICATION SYSTEM AND EDUCATION PROGRAM**

**Recovery Support Function:** Community Planning and Capacity Building

**Estimated Cost:** $95,000

**Risk Reduction & Benefits:**
- Improved emergency preparedness, response, and recovery
- Improved outreach to vulnerable populations
- Improved evacuation opportunities
- Decreased risk of public safety threats during storms

**Estimated Project Costs**

Total costs will be $95,000. This project is estimated to cost $75,000 for all fixed communication system components. Receivers are not included in the cost estimate. An additional $20,000 will be required for the educational campaign. Total life cycle costs are estimated at $100,000.
Project Benefits

Risk Reduction

Communication during Superstorm Sandy was extremely poor. Cell phones and landlines did not work. This project will establish a community-based system that can be used during all types of neighborhood, local, and regional emergencies, particularly during future storm events. Risks to human health and safety particularly to vulnerable populations will be reduced.

Economic Resilience

The effort will create one FTE job.

Environmental Protection

Two serious environmental hazards were experienced during and after Superstorm Sandy – backed up and overflowing onsite wastewater systems and spilled fuel oil. A local communication system can be used to summon emergency repair personnel to secure these systems to prevent further environmental impacts.

Health and Social Benefits

Improved and more reliable communication during emergencies will be especially valuable to the Community’s most vulnerable residents. Many of these residents had inadequate or no information before during and after the storm. This communication system will also enable neighbors to help neighbors during other more local or personal emergencies.

Cost Benefit Analysis

This Project is a very low cost project that could increase Community-wide resilience in the event of a future disaster or emergency by enabling an improved, grass-roots communication network across the Community. The project will also involve a bilingual education campaign that will address communication challenges identified by the Spanish-speaking population in Mastic Beach and Smith Point of Shirley, a vulnerable population. The improved communications and preparedness education will lead to avoided emergency response and recovery costs.
Risk Reduction Analysis

Improving local communication with a system that does not rely on cell phones or landlines will reduce risks to human health and well-being. The proposed system will have backup power to drive its transmitters and antennas and will be used during neighborhood, local, and regional emergencies, particularly during future storm events. Risks to all and particularly vulnerable populations will be reduced.

General Timeframe for Implementation

This project could be implemented in less than twelve months from the start of the project’s implementation.

Regulatory Requirements Related to Project

Operators of the transmission equipment will need to be licensed. Coordination will be required with Village and Suffolk County emergency service providers during the establishment and operation of this system. Similarly, the education campaign will include information about available County emergency preparedness and response options.

Jurisdiction

The project falls under the jurisdiction of the Village of Mastic Beach.
**PROPOSED PROJECT: Prepare Emergency Preparedness Plan**

**Project Description**

Residents of the Community expressed a desire to have a local plan for their Community that would make them better prepared for the next storm or other emergency. Many felt that regional efforts were inadequate for their needs. This project will develop a local emergency preparedness plan that can be implemented by the Village and local emergency service providers in coordination with the plan in place by Suffolk County. This plan would be coordinated with the other featured project (installation of an emergency communications system and the training for block captains) and the Mastic-Moriches-Shirley Community Library’s cell phone-based application that was utilized during Superstorm Sandy. The emergency preparedness plan would be delivered in both English and Spanish language versions.

**Estimated Project Costs**

This project is estimated to cost $35,000.

**DEVELOP LOCAL EMERGENCY PREPAREDNESS PLAN**

**Recovery Support Function:** Community Planning and Capacity Building

**Estimated Cost:** $35,000

**Risk Reduction & Benefits:**

- Improved emergency preparedness, response, and recovery
- Improved outreach to vulnerable populations
- Improved evacuation opportunities
- Decreased risk of public safety threats during storms

**Project Benefits**

**Risk Reduction**

An emergency preparedness plan can reduce risks to human health and safety particularly for vulnerable populations. The Committee reported that there were members of Community that did not receive or did not heed the emergency warnings and evacuation requests. They included non-English speakers, the elderly, the poor, and special needs populations. The plan would address the special requirements of these residents.
Environmental Protection

Two serious environmental hazards were experienced during and after Superstorm Sandy – backed up and overflowing onsite wastewater systems and spilled fuel oil. The Plan will address measures to be taken in advance of storms to reduce the likelihood of these hazards occurring thus reducing potential environmental impacts.

Health and Social Benefits

Better planning for emergencies will be especially valuable to the Community’s most vulnerable residents. Many of these residents had inadequate or no information before during and after the storm. A good plan will enable neighbors to help neighbors during other more local or personal emergencies. The requirements of special needs residents will be addressed.

Cost Benefit Analysis

This Project is a very low cost project that could increase Community-wide resilience in the event of a future disaster or emergency by better preparing the Community and reducing future emergency response and recovery costs.

Risk Reduction Analysis

A local emergency preparedness plan will reduce risks to human health and well-being particularly for vulnerable populations as described above.

General Timeframe for Implementation

This project could be implemented in less than twelve months from the start of the project’s implementation.

Regulatory Requirements Related to Project

Coordination will be required with Village and Suffolk County emergency service providers during the preparation of this Plan. Information about available County emergency preparedness and response options will be included.

Jurisdiction

Village of Mastic Beach, Town of Brookhaven, Suffolk County

Post-Superstorm Sandy mobile food/supplies
**PROPOSED PROJECT: Install Solar Streetlights with Battery Backup**

**Project Description**

The Community was without power for several weeks following Superstorm Sandy. Residents did not feel safe during that time and looting was a concern. Emergency service personnel found it difficult to access some of the homes at night with no street lighting.

Streetlights with LED lamps powered by solar photovoltaic cells with battery backup provide roadway and park lighting in other parts of Long Island. Their advantage is that they do not require a connection to the electrical grid and will operate for several days from the battery. This makes this form of lighting ideal for emergencies when electrical grid-based power is unavailable. The lights can also save the municipality tens of thousands of dollars of electrical charges from the utility.

The project includes the engineering design and installation of an estimated 200 streetlights at key intersections, primary roadways, park entrances, and by other places that might be in use during emergencies.

**Estimated Project Costs**

Total construction and soft costs are estimated at $600,000 for 200 assemblies with lamps, poles, support bases, solar PV panels, and batteries. With an annual estimated O&M cost of $2,500, the total life cycle cost is estimated at $662,500.

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**INSTALL SOLAR STREETLIGHTS WITH BATTERY BACKUP**

**Recovery Support Functions:** Infrastructure, Health, and Social Services

**Estimated Cost:** $600,000

**Risk Reduction & Benefits:**

Reduced risks to human health and increased safety

**Project Benefits**

**Risk Reduction**

Evacuation will be made safer at night when streets are illuminated. Safety will be increased during the power outages that invariably occur during and after serious storm events.

**Economic Resilience**

The local economy is made more resilient when the properties are protected. The design and construction effort will create eight FTE jobs.

**Health and Social Benefits**

Roadways that are illuminated are safer, make evacuation at night easier, and increase the ability of emergency service providers to respond to emergency calls at night during power outages.
Cost Benefit Analysis

Benefits are realized from avoided costs that would have been incurred during storm events to rescue residents unable or unwilling to evacuate in the dark. The likelihood of and costs associated with thefts during and after an emergency are also reduced when adequate lighting is provided.

Risk Reduction Analysis

Providing reliable roadway illumination that is independent of the power grid will reduce risks to the personal safety of residents and emergency responders. Safety will be increased during the power outages that invariably occur during and after serious storm events.

General Timeframe for Implementation

This project could be implemented in twelve to eighteen months from the start of the project’s implementation.

Regulatory Requirements Related to Project

No regulatory approvals would be required, as no connection to the power grid would be needed.

Jurisdiction

Most of the involved roadways are under the jurisdiction of the Village of Mastic Beach. Some others are under Town of Brookhaven control.
**PROPOSED PROJECT: Engage Local Disaster Recovery Manager**

**Project Description**

The Village of Mastic Beach is a new village, having been incorporated only in 2010. It has a very small paid staff and limited experience with disaster recovery management, program management, and grant writing.

The project would involve the engagement of a full-time Local Disaster Recovery Manager (LDRM) for two years. The LDRM would be responsible for coordinating the implementation of recovery and resilience projects in Mastic Beach and Smith Point of Shirley. He or she would also prepare funding applications for additional projects as new funding programs are announced.

**Estimated Project Costs**

A full time LDRM employed for two years is estimated to cost $300,000 including benefits.

**Project Benefits**

**Risk Reduction**

A LDRM will also work with the design and construction management firms to help ensure that projects are implemented in a manner that maximizes risk reduction and meets the requirements of the funding source.

**Economic Resilience**

The LDRM can be instrumental in securing additional funding that can be directed toward boosting the local economy, particularly projects that build on the recommendations of the economic and market analysis proposed project. This project will create one full time equivalent job\(^1\) for two years.

**Environmental Protection**

The LDRM will seek additional opportunities for funding wetland protection and restoration projects and stormwater management programs. Possible funding may be available through the NYS Environmental Protection Fund. The LDRM can prepare grant applications to support this type of work.

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\(^1\) Estimated Project Costs: $300,000

Risk Reduction & Benefits:
- Improved management of project implementation
- Procurement of funding for additional recovery and resilience projects
Health and Social Benefits

Funding is likely to be made available to support the health, well-being, and housing of low income and other socially vulnerable populations. A LDRM can monitor the availability of funding for these types of programs and prepare grant applications as they are announced.

Cost Benefit Analysis

The potential benefits to be derived from the work of a Local Disaster Recovery Manager are large. Program funding that exceeds the cost of the LDRM will likely be available during the implementation phase of the reconstruction and resilience effort.

Risk Reduction Analysis

The LDRM will help secure funding for additional risk reduction projects. He or she will work with contracted construction management firms to help ensure that projects meet risk reduction targets established by the funding source.

General Timeframe for Implementation

There is minimal time required to engage a LDRM (less than three months).

Regulatory Requirements Related to Project

No regulatory requirements are associated with this project.
**PROPOSED PROJECT:** Prepare Stormwater Management Plan and Construct Improvements

**Project Description**

Like most Long Island south shore communities, NYRCR Mastic Beach and Smith Point of Shirley experienced flooding due to stormwater runoff and backup of seawater into stormwater drainage systems. A number of the neighborhoods experienced roadway flooding during the storm that extended onto private properties. Some of these areas continue to flood at higher high tides and during heavy rainfalls. Many of the recharge basins are ineffective due to the high groundwater elevation.

The project would begin with an engineering inventory of existing drainage collection and recharge components and would locate via GPS the catch basins, collection piping, recharge basins, and receiving water outfalls. Locations that experience flooding would be solicited from the Village and Town and included in the inventory. The adequacy of the system to accommodate storm events would be evaluated and recommendations made for improvements. Green infrastructure (e.g., bioretention areas, vegetated swales, treatment wetlands, rain gardens) would be utilized for stormwater improvements wherever possible. Outfalls subject to seawater backups would be outfitted with one-way valves. Properties would be identified and acquired where possible to increase stormwater storage and recharge. Some properties could serve a dual function as passive or active parks or playgrounds during dry weather.

**Estimated Project Costs**

The project is estimated to cost $1 million including system inventory, engineering evaluation and design and construction of the most critical improvements. Total life cycle costs are estimated at $1,375,000.

**Project Benefits**

**Risk Reduction**

A properly engineered stormwater management system can eliminate flooding from stormwater runoff in all but the most severe storm events. Risk to public and private assets can be reduced accordingly.
Economic Resilience

The value of public and private properties is preserved or even enhanced when flooding is no longer a concern. The project could be expanded to include a greater number of improvements. It will create 13 FTE jobs\textsuperscript{i}.

Environmental Protection

Green infrastructure techniques are supported by the U.S. Environmental Protection Agency as the preferred approach to stormwater collection and treatment as they protect the environment by providing more “natural” and effective methods of treating stormwater runoff.

Cost Benefit Analysis

Long-term benefits will be derived from the system inventory and recommended and constructed improvements. The project will make it possible for the Village and the Town to address long standing flooding issues that will only become worse as the climate changes. The management plan will generate a number of specific engineered designs that will be constructed and others that will be “shovel ready.”

Risk Reduction Analysis

Improved stormwater collection and recharge will eliminate flooding from stormwater runoff in all but the most severe storm events. The associated risk to public and private assets will be reduced and roadways utilized for evacuation made passable and safer.
General Timeframe for Implementation

Design and construction of numerous stormwater projects can be completed within one to three years of the start of project implementation.

Regulatory Requirements Related to Project

Projects that are located in or adjacent to existing wetlands will require a permit from the NYS DEC and the Town of Brookhaven (if outside the incorporated Village of Mastic Beach.) Acquisition of properties for stormwater storage and recharge will require the consent of the property owner, which could be Suffolk County, as it owns numerous properties in the Village.

Jurisdiction

Most of the area will come under the jurisdiction of the Village of Mastic Beach. Some areas will be the responsibility of the Town of Brookhaven.
FEATURED PROJECT: Construct Phase II of Greenway Trail

Project Description

Phase 1 of this project was described in the Proposed Projects section, on page 60 of this document.

Phase 2 of this project will connect the natural and cultural assets of Mastic Beach and Smith Point of Shirley, including the William Floyd Estate and the Manor of St, George, to the downtown and the more resilient Violet’s Cove facility and adjacent marinas. Figure 4 on page 63 illustrates this project phase’s greenway trail.

The trail will be a route designated by roadway striping and signage. The bike path will require striping for a total of 14.3 miles of an on-road bike path on both sides of the street.

CONSTRUCT PHASE II OF GREENWAY TRAIL

Recovery Support Function: Economic Development, Natural and Cultural Resources

Estimated Cost: $1.7 million

Risk Reduction & Benefits:

Increased economic resilience
Increased recreational opportunities

Estimated Project Costs

Construction is estimated to cost approximately $1.7 million. Roadway striping may need replacement every five years at an estimated annual cost of $75,000. The total life cycle costs are estimated at $1.76 million. Roadway striping costs would be incurred by the Village. The facilities would be operated at no cost to users and therefore the involved municipalities would realize no revenue.
Project Benefits

Economic Resilience

Mastic Beach and Smith Point of Shirley plan to develop an eco-tourism industry to benefit from their natural resources and proximity to major area recreational attractions, including Fire Island National Seashore, the Great South Bay, the Wertheim Preserve, and the William Floyd Estate. Bicycling is a very popular recreational activity that can draw visitors from far away to attractive and accessible locations like Mastic Beach and Smith Point of Shirley. Those visitors will also frequent the businesses of the downtown and stay in local rentals or bed and breakfasts.

The greenway trails will help stimulate tourism and its associated jobs, one of the goals of the Long Island Regional Economic Development Council*: Produce a new generation of sustainable, well-paying jobs in the legacy sectors of agriculture, aquaculture, fisheries and tourism by expanding export opportunities, infrastructure, recreation facilities, research partnerships and workforce training (emphasis added).

Design and construction of the project is expected to create three full time equivalent jobs**. The project could create an equal number of jobs in businesses that will support the initiative, such as bicycle rentals and food-related businesses.

Health and Social Benefits

Bicycling is a healthy recreational activity for all Mastic Beach and Smith Point of Shirley residents including the socially vulnerable. All facilities will be public. A bicycle shop with rentals available will be a welcome addition to the downtown business community.

Cost Benefit Analysis

The Greenway trail is a low cost, high value amenity for Mastic Beach and Smith Point of Shirley. It is an important start to the development of an eco-tourism economy for this community. Downtown businesses and businesses that would support the trail (bicycle rentals, guided green tours, etc.) need the visitation that would come from the initiative. The vacation rental business benefits from attractions as do existing and future restaurants (such as the proposed Violet’s Cove facility).

Risk Reduction Analysis

This project reduces economic risk to the Community by adding an amenity to draw eco-tourists, summer vacationers, and bicycle enthusiasts. Businesses that support these types of activities can locate in the commercial zone of the Community. Related businesses such as restaurants and seasonal rentals will also benefit.

General Timeframe for Implementation

Design, permitting, and construction could be completed in approximately twelve months from the start of project implementation.

Jurisdiction

The greenway trail would be located on Village-owned roadways.
FEATURED PROJECT: Construct Sewer System for Central Business District and Portion of Residential Area

Project Description

This project is the construction of the wastewater collection and treatment system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road) and a portion of the residential area to the south. The construction will follow the preparation of engineering designs completed as a Proposed Project (Phase II). This will be the third phase of the sewering initiative begun (Phase I) by the Village of Mastic Beach. Construction will be coordinated with ongoing efforts by Suffolk County and the Town of Brookhaven to sewer neighboring communities. The Suffolk County Comprehensive Water Resources Management Plan has identified sewerung of the Mastic-Shirley peninsula as a high priority.

It is possible that rather than designing a stand-alone treatment plant, a pump station would be constructed to deliver wastewater to a regional treatment plant operated by the Town or more likely the County. That decision will likely be made soon as the County advances plans for a new regional wastewater treatment plant most likely at the local Town of Brookhaven airport.

CONSTRUCT SEWER SYSTEM FOR CENTRAL BUSINESS DISTRICT AND PORTION OF THE RESIDENTIAL AREA

Recovery Support Function: Infrastructure, Economic Development, Health, and Social Services

Estimated Cost: $25-$30 million

Assets Made More Resilient:

Infrastructure

Risk Reduction & Benefits:

Increased economic resilience
Decreased risk of public health and environmental threats from raw sewage spills
Improved water quality
Enhancement of wetlands and marshes

Estimated Project Costs

Construction is estimated by the Village’s consultant to cost approximately $25-$30 million. Collection system operation and maintenance costs are estimated at $2.5 million over 25 years. Operation and maintenance of the treatment plant is estimated at $20 million over its 25-year life expectancy. Total life cycle costs are estimated at $40-50 million.
Project Benefits

Risk Reduction

A low-lying, high groundwater area that experienced severe problems with backed up and overflowing onsite systems would be sewered. Raw sewage was spilled into homes and back yards. Sewering will reduce the very real threat to human health and the environment.

Economic Resilience

Development in the commercial district of the Village of Mastic Beach is constrained by Suffolk County’s sanitary regulations that limit the wastewater flow from parcels and hence the development density and intensity of uses. Sewering makes it possible for property owners to generate a greater volume of wastewater than is permitted when only onsite systems are in place. Initial redevelopment of the downtown is stimulated by giving developers greater opportunity to secure their investments (lower their risk) with additional density. Sewering makes possible high wastewater flow that uses such as restaurants and medical clinics, which will be important to help diversify a redeveloped downtown.

Sewering will meet one of the goals of the LIRED: Rebuild and expand infrastructure to improve job access, revitalize downtowns and transit hubs, speed trade, and attract and retain dynamic regional businesses and highly-skilled workers (emphasis added). Construction could create as many as 300 FTE jobsxix. Operation and maintenance of the treatment plant would add additional jobs.

Environmental Protection

Moriches Bay, into which most Mastic Beach groundwater flows, has been designated as an impaired waterbody by the NYS Department of Environmental Conservation. The Bay has been severely impacted by excessive nutrients (nitrogen) carried by groundwater from the onsite wastewater systems of the Mastic-Shirley peninsula. Wastewater treatment plants can remove 80-90 percent of the nitrogen that currently enters groundwater from onsite systems.

Health and Social Benefits

Sewering the downtown will make it more likely that a medical clinic can locate in the commercial district as they typically generate wastewater flows higher than can be accommodated by onsite systems. Commercial district sewering will also make it possible for new restaurants to locate in the downtown and for existing ones to expand. Sewering of a portion of the low-lying high groundwater areas will eliminate the health risks associated with raw sewage backups and spills during storm events from onsite systems.

Cost Benefit Analysis

Property owners, buyers, and developers need sewer to make much needed investments in the commercial district of Mastic Beach. Sewering will make possible additional and expanded uses in the downtown.
Risk Reduction Analysis

Sewering the commercial district of the Community and a portion of the low-lying, high groundwater residential area is a critical first step toward sewering the remaining low-lying residential areas. Backed up and overflowing onsite wastewater systems (cesspools and septic systems) in those areas spilled raw sewage into homes and back yards. Sewering these areas will reduce the very real threat to human health and the environment.

General Timeframe for Implementation

This project will be completed in the long term, as it will follow the Village’s sewering study and the engineering design. Construction could begin in five to seven years and be completed approximately two years later.

Regulatory Requirements Related to Project

Construction must meet Suffolk County Department of Health Services and NYS DEC requirements.

Jurisdiction

Town of Brookhaven
**FEATURED PROJECT:** Design and Construct

**Phase One of an Emergency Shelter/Community Center**

**Project Description**

Provision of a local emergency shelter was cited by the Committee as an important need. Many residents needed to evacuate before during and even after the storm, but did not. They remained in their damaged and frequently dangerous homes because there was no emergency shelter in the Community. The schools were not equipped for this, nor did they want to accommodate residents that needed days or even weeks of shelter. The schools are out of the flood zone and had to open quickly after the storm. Residents did not feel comfortable leaving their Community for a shelter – it was important to stay close to their homes.

An engineering and architectural design will be prepared and the first phase of a 10,000 square foot emergency shelter constructed that will function as a Community recreation center during times other than emergencies. The facility will be designed according to the Federal Emergency Management Agency (FEMA) guidelines for emergency shelters and the recreational component modeled after similar dual use facilities elsewhere in the nation. The best location for the facility will be identified. One location that may be available is the Links property located in the unincorporated portion of the Town of Brookhaven just outside the Village of Mastic Beach and south of the William Floyd schools. The facility will be designed for a 10,000 square foot expansion in a second phase.

**DESIGN & CONSTRUCT PHASE ONE OF AN EMERGENCY SHELTER / COMMUNITY CENTER**

**Recovery Support Function:** Community Planning and Capacity Building, Infrastructure

**Estimated Cost:** $2,750,000

**Risk Reduction & Benefits:**

- Improved evacuation and sheltering opportunities
- Decreased risk of public safety threats during storms
- Increased public access to healthy recreational opportunities
- Increased social cohesion

Incorporating recreational components into the proposed facility can be accomplished within FEMA’s hurricane-resistant design guidelines as has been done in numerous other states. Careful coordination will be advisable between the designers and Village, Town, and County emergency service providers to insure that the facility meets all local and regional needs and requirements. Portions of the “Links” property are located out of the 500-year floodplain and may therefore be a suitable site for the facility. Other properties are also available on the Mastic-Shirley peninsula that will meet FEMA’s and others’ (e.g., Red Cross) requirements.
**Estimated Project Costs**

Capital and soft costs are estimated at $2.75 million. The estimate is based on a 10,000 square foot facility at a cost of approximately $250 per square foot plus architecture and engineering design costs and designed to meet stringent FEMA requirements. Operation of the facility will add to its cost. The building will also be designed to be added to in a future second phase.

**Project Benefits**

**Risk Reduction**

A large number of Community residents were forced to evacuate their homes before and immediately after the storm. The nearest emergency shelter was miles away. Food and medical supplies were unavailable to many residents of the Community. An emergency shelter constructed inside the Community will reduce health and safety risks associated with future storm events and other disasters.

**Economic Resilience**

The economic resilience of the Community is enhanced when the emergency needs of its residents are secure. The availability of a Community center that provides recreational facilities can help attract new residents to the Community increasing the market for local businesses and tax revenue to the Village. The design and construction of this project is expected to create 34 full time equivalent jobs. Its operation would create additional jobs.

Operation of the facility would likely be contracted to an entity other than the Village, such as a YMCA or other Community service organization. That organization would hire staff to operate the facility.

**Health and Social Benefits**

A well-designed community center can accommodate the needs of all citizens including the disabled. Modern recreational facilities are typically equipped to account for a wide range of abilities. A community center will be open to all residents regardless of income or other limitations.

**Cost Benefit Analysis**

Many residents of the Community did not evacuate during and after the storm. They did not want to leave the community. There is great value in a local shelter where friends and neighbors also gather during emergencies. The fact that the shelter would operate as a community center during “normal” times makes it additionally beneficial. Special funding may be available through FEMA for emergency shelters.

**Risk Reduction Analysis**

Risks to human health and well-being will be reduced by locating an emergency shelter within the Community. Food and medical supplies will be made available locally. More residents will be willing to relocate to a shelter if it is local and locally run.
General Timeframe for Implementation

This proposed project is an *intermediate* term (one to three years) effort.

Regulatory Requirements Related to Project

Architectural and engineering designs will conform to FEMA requirements for emergency shelters.

Jurisdiction

The jurisdiction cannot be determined until a property is identified.
**FEATURED PROJECT: Design and Construct**

**Phase Two of the Emergency Shelter/Community Center**

**Project Description**

An engineering and architectural design will be prepared for a 10,000 square foot addition to the 10,000 square foot emergency shelter/community center constructed as a phase I featured project (see related featured project). The additional space will also be designed according to Federal Emergency Management Agency (FEMA) guidelines for emergency shelters and the recreational component modeled after similar dual use facilities elsewhere in the nation. FEMA recommends a minimum of 20 square feet of usable space per person. The additional 10,000 square feet will make it possible to shelter several hundred people while also providing amenities and recreational space. A location for the facility will be identified. One candidate site is the Links property in the unincorporated portion of the Town of Brookhaven just outside the Village of Mastic Beach and south of the William Floyd schools. The expansion will make it possible to accommodate a larger number of residents during and after an emergency. It will also add additional community center space and functions.

Incorporating recreational components into the proposed facility can be accomplished within FEMA’s hurricane-resistant design guidelines as has been done in numerous other states. Careful coordination will be advisable between the designers and Village, Town, and County emergency service providers to insure that the facility meets all local and regional needs and requirements. Portions of the “Links” property are located out of the 500-year floodplain and may therefore be a suitable site for the facility. Other properties are also available on the Mastic-Shirley peninsula that will meet FEMA’s and others’ (e.g., Red Cross) requirements.

**Estimated Project Costs**

Capital and soft costs are estimated at $2.7 million. The estimate is based on a 10,000 square foot addition to the facility constructed in phase I of the project at a cost of approximately $250 per square foot plus architecture and engineering design costs and designed to meet stringent FEMA requirements.
Project Benefits

Risk Reduction
A large number of Mastic Beach and Smith Point of Shirley residents were forced to evacuate their homes before and immediately after the storm. The nearest emergency shelter was many miles away. Food and medical supplies were unavailable to many residents of the Community. An emergency shelter constructed inside the Community will reduce health and safety risks associated with future storm events and other disasters.

Economic Resilience
The economic resilience of the Community is enhanced when the emergency needs of its residents are secure. The availability of a community center that provides recreational facilities can help attract new residents to the Community increasing the market for local businesses and tax revenue to the Village. The design and construction of this project is expected to create 34 full time equivalent jobs\(^i\). Its operation and maintenance will add additional jobs. Operation of the facility would likely be contracted to an entity other than the Village, such as a YMCA or other community service organization. That organization would hire staff to operate the facility.

Health and Social Benefits
A well-designed community center can accommodate the needs of all citizens including the disabled. Modern recreational facilities are typically equipped to account for a wide range of abilities. A community center will be open to all residents regardless of income or other limitations.

Cost Benefit Analysis
Many residents of the Community did not evacuate during and after the storm. They did not want to leave the Community. There is great value in a local shelter where friends and neighbors also gather during emergencies. The fact that the shelter would operate as a community center during “normal” times makes it additionally beneficial. Special funding may be available through FEMA for emergency shelters.

Risk Reduction Analysis
Risks to human health and well-being will be reduced by locating an emergency shelter within the Community. Food and medical supplies will be made available locally. More residents will be willing to relocate to a shelter if it is local and locally run.

General Timeframe for Implementation
This proposed project is a long term (more than three years) effort.

Regulatory Requirements Related to Project
Architectural and engineering designs will conform to FEMA requirements for emergency shelters.

Jurisdiction
The jurisdiction cannot be determined until a property is identified.
**FEATURED PROJECT:** Provide Flood Protection for Smith Point of Shirley

**Project Description**

This featured project would be the detailed engineering design and construction that would follow the recommendations of the proposed flood protection study project. It is anticipated that one of the recommendations would be the construction of an earthen berm across the northern perimeter of Suffolk County’s Smith Point Park North to protect the residences to the north from future flooding. Some modifications to the wetlands of the park or its mosquito ditches may be incorporated into the construction project, as could wetland protection methods such as an offshore breakwater or addition of plantings to denuded pannes (un-vegetated portions of the intertidal marsh).

The effectiveness of the berm will depend in part on the elevation of the surge experienced during future storms. An elevation of two feet above the current base flood elevation designated by FEMA (i.e., two feet above current 100-year flood water levels) was selected for cost estimating. Topographic survey will be required to confirm elevations and to determine if additional berming or roadway elevation will be needed to protect the majority of the homes to the north of the berm. The berm will be located in a Suffolk County park adjacent to tidal wetlands.

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**PROVIDE FLOOD PROTECTION FOR SMITH POINT OF SHIRLEY**

**Recovery Support Function:** Infrastructure  
**Estimated Cost:** $2.8 million  
**Assets Made More Resilient:**  
Residential assets in extreme and high risk zones of Smith Point of Shirley  
**Risk Reduction & Benefits:**  
Reduced flood risk  
Decreased risk of public safety threats during storms

**Estimated Project Costs**

The berm and wetland improvements will cost approximately $2.8 million including design, permitting, construction, and construction management. The vegetated berm is estimated to be 3,500 feet long, five foot high with a five-foot wide top and 1:3 side slopes (13,000 cubic yards of material). An allocation of $100,000 is included for wetland modifications and protection.

Operation and maintenance is anticipated to be approximately $125,000 over the 25-year life of the project.
**Project Benefits**

**Risk Reduction**

The berm across the Smith Point North Park property and the wetland improvements could protect many of the several hundred homes of Smith Point of Shirley located north of the park from future flood surge. The value of the homes than will be protected far exceeds the total installed cost of the berm.

**Economic Resilience**

It is important to the resilience of the local economy that existing residents are protected, as they are the consumers of local business products and services. They are also the users of the proposed recreational attractions and improved facilities proposed for Violet’s Cove and Smith Point Park North. The project is expected to create approximately 37 FTE design and construction jobs$^{xi}$.

**Environmental Protection**

Some of the wetland modifications that reduce flooding may also improve the health of wetlands and reduce their susceptibility to storm impacts. Wetland protection and management measures can increase the health of the tidal wetlands and by extension the health and survival of the aquatic organisms that rely on the wetlands.

**Health and Social Benefits**

A berm and other measures can provide increased protection from future flood events, which has obvious health and safety benefits. It also makes it less likely that residents will experience the secondary health effects of exposure to mold and untreated sewage.

**Cost Benefit Analysis**

The value of the homes protected from future storm surge far exceeds the cost of the flood protection structure and wetland modifications and protections. Homes in areas that are vulnerable to future storm surge have experienced a decline in their market value. This proposed project will help protect the market value of Smith Point of Shirley homes.

**Risk Reduction Analysis**

The study will identify measures to reduce the risk of flooding in the residential area of Smith Point of Shirley experienced from the surge that travelled north through Suffolk County’s Smith Point Park North.

**General Timeframe for Implementation**

This project will be implemented in the long term (greater than three years) after the completion of the flood protection study (see proposed project on page 81).

**Regulatory Requirements Related to Project**

Approvals will be required first from the County, and then permits from the NYS DEC, USACE, and the NYS DOS. Approval from the Town of Brookhaven will also be required if some roadway elevation were also required. It is unlikely that elevation of William Floyd Parkway would be required.

**Jurisdiction**

The Smith Point Park North property is owned by Suffolk County. The adjacent roadways are owned by the Town of Brookhaven and Suffolk County (William Floyd Parkway).
FEATURED PROJECT: Construct Marina and Recreational/Educational Facility at Smith Point Park North

Project Description

This project is the design and construction of a new full service marina and recreational and educational facility according to the 2009 Suffolk County updated master plan for Smith Point Park North. The project will be implemented in two phases. Phase I will be the construction of the marina and Phase II the recreation and education facility. The park is located at the southwestern tip of the Mastic-Shirley peninsula where it affords boating access to Bellport Bay, Narrow Bay, and the Fire Island National Seashore. Easy and fast vehicle access to the park is available from the William Floyd Parkway. A parking lot is available today for cars with boat trailers and a boat launch located at the end of the canal. Suffolk County recently dredged the canal where the marina will be located along with the boating channel leading to it. The facility could host larger vessels such as fishing or sightseeing charter boats, a water taxi, and transient vessels from elsewhere on Long Island and the region.

Phase I of the project would include the construction not only of the marina but also the full service marina support building. The recreation and education facility will be constructed in Phase II of the project. The education building would include environmental information about the Great South Bay, Fire Island National Seashore, and the wetlands of Smith Point. The facility could also include a shellfish hatchery operated by the County, the Town of Brookhaven, or a private entity under contract to the County to provide seed clams and oysters for the Bay. The recreational component could include boat rentals, sailing and paddling lessons, fishing and sightseeing excursions, and more.

Estimated Project Costs

The project cost estimates were taken from the County’s 2009 master plan update and escalated to the current year (2014) at three percent. Each phase of the project is high cost (more than $1 million). Phase I is estimated at $5.4 million with design, permitting, construction, and construction management. Phase II is estimated at $4.8 million with design, permitting, construction, and construction management. Operation of the marina, educational and recreational facilities in Phase II would be done by a private entity.
components of the facility would likely be contracted to third parties. Annual operating costs could be $100,000 for each facility over 25 years assuming some revenue generation by the facility in the form of leases, concession, and other fees.

**Project Benefits**

**Risk Reduction**

The facility could easily host marine police vessels, bay constable boats, and commercial marine rescue vessels. These vessels and the personnel that operate them are very important before, during, and after storm events. Numerous boats and their operators had to be rescued during and after Superstorm Sandy. The availability of this facility will be beneficial to marine first responders and the boating Community that they serve.

**Economic Resilience**

A marina and recreational/educational facility at Smith Point Park North will draw not only residents from the Mastic Beach and Smith Point of Shirley Community, but visitors and tourists alike. The site is conveniently located immediately off the William Floyd Parkway. Transient vessels could berth at the marina. Visitors could travel to or from the Mastic Beach downtown on Neighborhood Road by rental or loaner bicycle made available through the marina or bicycle shop. It will be yet another attraction that will draw people to the Community and contribute to its economic redevelopment. Phase I of the project (the marina) is expected to create approximately 67 FTE jobs during its design and construction and more during its operation. Phase II of the project (the recreational/educational center) is expected to create approximately 60 FTE jobs during its design and construction and additional jobs during its operation.

**Environmental Protection**

The educational center will help foster an appreciation of the area’s natural resources and a willingness to engage in its protection and improvement. A shellfish hatchery on site could help repopulate this part of the Great South Bay with clams and oysters.

**Health and Social Benefits**

The availability of outdoor water-based recreation is important to the health and well-being of the residents of the Community, the tri- hamlet area, and the residents of Suffolk County that would frequent the facility. Recreational and educational opportunities will be available to all including the economically, physically, or culturally challenged.

**Cost Benefit Analysis**

The value of the two phases of the project to the Mastic Beach and Smith Point of Shirley Community, the Mastic-Shirley peninsula, and Suffolk County as a whole is substantial. Relatively few public facilities of this type provide access to waterfront recreation and education. The facility can also draw visitors and summer vacationers from around Long Island and the region to the commercial district of Mastic Beach to frequent the outdoor recreation shops that the marketing effort will help attract, to the restaurants of a revitalized downtown and Violet’s Cove. It will also help boost property values in the area, as property owners will have access to a valuable public recreational facility.
Risk Reduction Analysis

The facility will be available to marine emergency and rescue vessels that are important to the safety of the boating public before, during, and after storm events. The facility’s location adjacent to William Floyd Parkway allows for emergency evacuation of individuals rescued by boat.

General Timeframe for Implementation

Each phase of the project will be constructed in the long term (more than three years) as the architectural and engineering design, permitting, approvals, and bidding will require three years.

Regulatory Requirements Related to Project

Approvals will be required from Suffolk County and the National Park Service as the site is located within the boundaries of the Fire Island National Seashore. Permits will also be needed from the NYS DEC, USACE, the NYS DOS, and the Town of Brookhaven.

Jurisdiction

The Smith Point Park North property is owned by Suffolk County.
FEATURED PROJECT: Construct Railroad Crossing at Hawthorne Street

Project Description

This project is the design and construction of an at-grade railroad crossing with automatic gates at Hawthorne Street. Acquisition of two properties and demolition of the two homes is included in the proposed project. Interest in the project derives from the congestion experienced at the only two routes across the railroad from the peninsula – William Floyd Parkway and Mastic Road. This congestion is regularly experienced during rush hours and is made worse during storm events or other events that force the closure of one of the two roadways.

Estimated Project Costs

The project is estimated to cost $1.4 million including acquisition and demolition of two residential properties, engineering design, construction, and construction management. Operation and maintenance is anticipated to be approximately $100,000 over the 25-year life of the project. Life cycle costs are estimated at $1.5 million.

Project Benefits

Risk Reduction

The project will reduce the risk associated with the inadequate capacity of the existing evacuation routes. Routes will be increased from two to three to allow for congestion or blockages on one or two evacuation routes to create more options for residents during storms and other emergency events on the peninsula.
Economic Resilience

Economic resilience is increased when additional through routes are provided to the commercial district from outside the community. Design and construction of the project is expected to generate 17 FTE jobsxi.

Environmental Protection

Additional routes into and out of the Community are valuable during environmental emergencies such as the hazardous material spills (untreated sewage and fuel oil) that occurred during the storm.

Health and Social Benefits

Public health and safety are better protected when adequate evacuation routes are provided for storm events and other emergencies.

Cost Benefit Analysis

Evacuation routes would be increased from two to three during emergencies. Greater options for residents to evacuate will reduce the need for rescues by emergency service providers, an avoided cost.

Risk Reduction Analysis

The project will reduce the risk associated with the inadequate capacity of the existing evacuation routes. Routes will be increased from two to three to allow for congestion or blockages on one or two evacuation routes to create more options for residents during storms and other emergency events on the peninsula.

General Timeframe for Implementation

This project will be implemented in the long term (more than three years).

Regulatory Requirements Related to Project

Approval will be required from the Long Island Railroad (LIRR), the Metropolitan Transportation Authority (MTA), the Town of Brookhaven, and the NYS Department of Transportation (DOT). Additionally, the acquisition of the two private properties is likely required for the project to proceed, though adequate right of way may be available with only easements.

Jurisdiction

The railroad is under the jurisdiction of the Metropolitan Transportation Authority (MTA) and Hawthorne Street is under Town of Brookhaven jurisdiction.
**FEATURED PROJECT:** Extend Natural Gas Service Project Description

Extension of natural gas mains into the commercial district of Mastic Beach and ultimately to the residential areas is important to the environmental health and economic resiliency of the Community. The project will extend National Grid gas mains from their most southerly extension to and through Mastic Road and the western end of Neighborhood Road. Gas will replace the use of the more costly and environmentally hazardous fuel oil. Buried fuel oil tanks floated out of the ground and above-ground tanks toppled during Superstorm Sandy flooding. Fuel oil was spilled causing human and environmental health hazards. Investment in the Mastic Beach commercial district could be accelerated by the availability of less costly energy, particularly for high energy users like restaurants, laundries, and health care clinics.

The project will also evaluate whether extending gas to the residential areas is more cost effective for the company. Gas main extension decisions are based on economic calculations that weigh the installation cost of the mains with the potential increase in revenue from new customers. The cost of gas main extension may be too high for the company without outside funding given the initial size of the customer base.

**EXTEND OF NATURAL GAS SERVICE**

**Recovery Support Functions:** Infrastructure

**Estimated Cost:** $2.8 million

**Assets Made More Resilient:**

Commercial and ultimately residential properties

**Risk Reduction & Benefits:**

- Reduced human and environmental health risks from fuel oil spills
- Decreased cost of energy for businesses and eventually residents

**Estimated Project Costs**

Installation of an eight-inch high-pressure gas main one and a half miles is estimated to cost $2.8 million. This cost does not include individual property connections. There would be additional operation and maintenance costs.

**Project Benefits**

**Risk Reduction**

Many of the properties south of Neighborhood Road experienced fuel spills from their underground and above-ground fuel oil tanks. This human and environmental health hazard will be eliminated when natural gas is supplied.
Economic Resilience

Natural gas is currently less expensive than fuel oil. Development of the commercial district of Mastic Beach is constrained to some extent by the cost of energy. The provision of natural gas, particularly for large consumers of energy such as restaurants and laundries, will benefit even more. Installation of the gas main along Mastic Road and Neighborhood Road will ultimately make it available to the residential property owners throughout the Community as the major cost of main extension will have been paid for with public dollars. The project could create as many as 35 FTE jobs during design and construction.

Environmental Protection

Environmental damage from fuel oil spills will be eliminated.

Health and Social Benefits

Natural gas burns cleaner than fuel oil. Its use will eliminate the hazards of fuel oil spills. Reducing the cost of energy will lower household expenditures for this low to moderate income Community.

Cost Benefit Analysis

The economic, environmental, and public health benefits over the long term are anticipated to outweigh the initial capital costs of installing natural gas. The avoided costs of future public health and environmental hazards from the fuel oil spills are substantial. The future economic development of Mastic Beach will benefit from the provision of natural gas.

Risk Reduction Analysis

Risks to residents and the environment from exposure to fuel oil spills will be reduced.

General Timeframe for Implementation

This project will be implemented in the long term (greater than three years).

Regulatory Requirements Related to Project

Approvals will be required from National Grid, an investor owned company, and the Public Service Commission that regulates utilities. Additional approvals will be required from the owners of the roadway right of way under which the mains will pass. Some of the roadways are owned by the Town and the remainder by the Village.

Jurisdiction

This project falls under multiple jurisdictions, which include the Village of Mastic Beach, the Town of Brookhaven, and National Grid, a private utility company.

Disposal gasoline containers
FEATURED PROJECT: Conduct Flood Protection Engineering Analysis

Project Description

The Community is a low-lying Community where a significant portion of the land mass is in the extreme and high risk area. Measures to reduce risk to flooding generally fall into three types: elevation, relocation, or protective measures. Some property owners are considering elevating their homes, an expensive option in a low to moderate income Community. Others are considering relocating to higher ground through the NY Rising Housing Recovery – Buyout and Acquisition program. Many property owners, however, will remain vulnerable to the next storm-induced flooding. This project will examine the various structural and non-structural measures that could help protect upland properties and critical infrastructure while transitioning to more resilient measures (e.g., new design, elevation, relocation) over time.

This engineering analysis will determine the feasibility of coastal flood protection for the Mastic-Shirley peninsula. It will evaluate the costs, benefits and challenges, and best locations for elevated roadways and berms upland of the Community’s wetlands to protect homes in the extreme, high, and moderate risk areas. Recommended measures will need to accommodate (and not impede) upland wetland migration as sea level rises. It will include mechanisms to provide access over the protective structures to the waterfront for recreational activities. It will consider dual use of elevated roadways for pedestrian, bicycle, and limited vehicular use. The analysis will include recommendations for measures to collect and recharge stormwater runoff and pump it to the Bay where needed.

The engineering analysis will evaluate approximately six miles of roadways north of the wetlands for their suitability as flood barriers. The project will involve detailed engineering and scientific analysis that takes into account stormwater flow, sea level rise, construction challenges, property ownership and easements, and costs.

Estimated Project Costs

The engineering analysis is estimated to cost $750,000.

Project Benefits

Risk Reduction

If the analysis determines that structural flood protection is feasible and cost effective, development could be protected up to a design standard. Structural measures do not fully eliminate risk. Measures must be incorporated into their design to anticipate and mitigate for
conditions encountered if they become overwhelmed in extreme events. Employing multiple, redundant measures is encouraged to reduce this residual risk.

**Economic Resilience**

The local economy is made more resilient when the properties are protected. The project will create an estimated 20 full time equivalent jobs during design and construction.

**Environmental Protection**

The engineering analysis will focus on measures that do not adversely affect the extensive tidal and freshwater wetlands of Mastic Beach and Smith Point of Shirley.

**Health and Social Benefits**

Structural protection can make residents safer. Decreasing the likelihood of future flooding can also reduce the potential health effects of flood-related mold and damaged onsite wastewater systems and fuel oil tanks.

**Cost Benefit Analysis**

The project will help determine a long-term approach for protecting the residents of Mastic Beach and Smith Point of Shirley from the destructive effects of another storm like Superstorm Sandy. The potential benefits from such an engineering study could include risk reduction for upgradient properties up to a design standard.

**Risk Reduction Analysis**

Structural flood protection can deliver risk reduction up to the design standard for hundreds of properties in the Community’s extreme and high risk areas by reducing flooding from storm surge.

**General Timeframe for Implementation**

This project will be implemented in the immediate term (0 to 12 months).

**Regulatory Requirements Related to Project**

There are no approvals required for the study. Consultations with regulatory agencies and involved municipal representatives will be included in the project.

**Jurisdiction**

This project falls under the jurisdiction of the Village of Mastic Beach and the Town of Brookhaven.
FEATURED PROJECT: Elevate Portions of Mastic Road for Emergency Evacuation

Project Description
Low-lying portions of Mastic Road flooded during past storm events. These areas are near the heads of the creeks that are tributaries to the Forge River. The roadway dips in these areas, which makes it more susceptible to storm surge. The same roadway low points tend to accumulate stormwater runoff.

The project includes the engineering design and construction of roadway elevation for those low-lying portions of Mastic Road that flood during storm events. Road sections will be rebuilt at a higher elevation to reduce flooding and make evacuation via Mastic Road safer and swifter. Design of the elevated sections will accommodate access to the adjacent homes and include measures to collect, treat, and discharge stormwater runoff.

Estimated Project Costs
Total construction and soft costs of $1.6 million are based on approximately 3,600 linear feet of elevated roadway. Operation and maintenance costs are estimated at $375,000.

Project Benefits

Economic Resilience
Twenty FTE jobs could be created during design and construction.

Risk Reduction
Evacuation will be made safer by elevating the roadway to eliminate flooding from storm surge and stormwater runoff. Sea level rise will be factored into the design standard to provide additional protection as it will exacerbate storm surge flooding.

Health and Social Benefits
A safer and more reliable evacuation route provides health and safety benefits to all residents that must use this route for evacuation.

ELEVATE PORTIONS OF MASTIC ROAD FOR EMERGENCY EVACUATION
Recovery Support Functions: Community Planning and Capacity Building, Infrastructure
Estimated Cost: $1.6 million
Assets Made More Resilient:
Evacuation roadway
Risk Reduction & Benefits:
Reduced risks associated with evacuation
Cost Benefit Analysis

Benefits are realized from avoided costs that would have been incurred during storm events to rescue residents unable to evacuate the peninsula via a flooded and therefore inaccessible roadway.

Risk Reduction Analysis

Making evacuation routes more reliable and safer will reduce risks to residents during and immediately after a storm or other disaster. Elevating the low points of Mastic Road will eliminate flooding from storm surge and stormwater runoff.

General Timeframe for Implementation

This project will be implemented in the long term (more than three years).

Regulatory Requirements Related to Project

Regulatory agency approval may be required for those portions of the roadway that are in close proximity to the tidal wetlands of the Forge River creeks.

Jurisdiction

Portions of the roadway are under the jurisdiction of the Village of Mastic Beach and others under Town of Brookhaven control.
Section 5. Additional Materials

Mastic Beach Fire Department recovery support1
A. ADDITIONAL RESILIENCY RECOMMENDATIONS

Presented in the following table are Additional Resiliency Recommendations that were identified during the planning process in addition to the Proposed and Featured Projects.

**Table 25. Additional Resiliency Recommendations**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Project Name</th>
<th>Short Description</th>
<th>Estimated Cost</th>
<th>Regional (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in the National Flood Insurance Program’s Community Rating System (CRS)</td>
<td>NFIP - Community Rating System</td>
<td>Apply to the National Flood Insurance Program’s Community Rating System (CRS). The CRS is an incentive program that encourages communities to exceed the minimal Federal requirements for development within floodplains. Activities that can help communities qualify for the CRS include providing public information on flood hazard, flood insurance and ways to reduce flooding; mapping and regulations; flood damage reduction; and flood preparedness.</td>
<td>$35,000</td>
<td>N</td>
</tr>
<tr>
<td>Develop community gardens and establish farmer’s markets</td>
<td>Improve local food access</td>
<td>Improve local food access by identifying parcels that could be developed into community gardens and/or used as locations for regularly scheduled farmers’ markets. The parcels on the west side of Elder Drive between Neighborhood Rd and Commack Rd could dually serve as a location for a public plaza and a farmers’ market. A farmers’ market would bring fresh produce into the community and provide a powerful generator of social and economic life. There are also several sites within the community owned by Suffolk County that could be utilized for community gardens. Work with the school district to investigate the feasibility of a farm-to-school program coordinated with the community garden.</td>
<td>$50,000</td>
<td>N</td>
</tr>
<tr>
<td>Strategy</td>
<td>Project Name</td>
<td>Short Description</td>
<td>Estimated Cost</td>
<td>Regional (Y/N)</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td>----------------</td>
</tr>
<tr>
<td>Expand Medical Services</td>
<td>Expand Medical Services</td>
<td>Expand medical and emergency services by incentivizing additional and closer medical clinics or offices on Mastic Road by offering tax incentives or by leasing Village-acquired property at below market rates.</td>
<td>$150,000</td>
<td>N</td>
</tr>
<tr>
<td>Require Mold Remediation Inspections</td>
<td>Include a requirement for a mold remediation inspection for structures applying for a building permit after flood damage</td>
<td>Include a requirement in the Village Building Code for a mold remediation inspection for property owners applying for a building permit after flood damage. The Village should work closely with the Suffolk County Health Department Service in adopting approved procedures for mold remediation.</td>
<td>$0</td>
<td>N</td>
</tr>
<tr>
<td>Establish Resilient Housing Trust Fund</td>
<td>Resilient Housing Trust Fund</td>
<td>Establish a “Resilient Housing Trust Fund” to help pay for required improvements for income qualified residents. The fund would make loans secured by the property and repaid through Village taxes or at sale through repayment of the lien. Seed funding could be secured from outside sources and possibly through a real estate transfer tax. The program could be run by the Village, Town, County, or a non-governmental entity such as the Community Development Corporation of Long Island or the Long Island Housing Partnership.</td>
<td>$200,000</td>
<td>N</td>
</tr>
<tr>
<td>Strategy</td>
<td>Project Name</td>
<td>Short Description</td>
<td>Estimated Cost</td>
<td>Regional (Y/N)</td>
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</tr>
<tr>
<td>Protect the environment and properties from fuel spills</td>
<td>Amend Building Code regarding Oil Tanks</td>
<td>Perform home heating fuel oil tank inspections and amend the Village code to require oil tanks to be properly secured in conformance with flood and Suffolk County of Department Health Services requirements.</td>
<td>$0</td>
<td>N</td>
</tr>
<tr>
<td>Encourage use of renewable energy</td>
<td>Adopt solar photovoltaics code</td>
<td>Adopt the solar photovoltaics (PV) code developed by LIPA for rapid permitting and develop a code for wind installations to incentivize the use of renewable energy in Mastic Beach and Smith Point of Shirley. The Village could also incentivize the location of a solar energy company in the revitalized downtown (see community planning and economic development sections) by leasing Village-owned space to the company at below market rates. In exchange for the incentive, the company might be required to offer discounted installations or leases to local customers.</td>
<td>$0</td>
<td>N</td>
</tr>
<tr>
<td>Develop community parks, playgrounds and gathering places</td>
<td>Construct Public Plaza</td>
<td>Install a public plaza, with tables and benches, at the two parcels on the West Side of Elder Drive between Neighborhood Rd and Commack Rd.</td>
<td>$150,000</td>
<td>N</td>
</tr>
<tr>
<td>Connect the downtown to the waterfront</td>
<td>Expand Bayview Park</td>
<td>Acquire vacant parcels north and northeast of Pattersquash Creek to expand Bayview Park and commission a Bayview Park master plan for the expansion of Bayview Park. A park master plan would assess potential design and site development alternatives for the expanded Bayview Park, which would connect the Central Business District (downtown) and the waterfront.</td>
<td>$300,000</td>
<td>N</td>
</tr>
</tbody>
</table>
B. MASTER TABLE OF PROJECTS

The following table is a compilation of projects that were identified and considered by the NYRCR Planning Committee (Committee) over the course of the planning process.

**Table 26. Master Project Table**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Project Name</th>
<th>Short Description</th>
<th>Project Category</th>
<th>Estimated Cost</th>
<th>Regional (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance and develop commercial districts</td>
<td>Conduct Economic &amp; Market Analysis</td>
<td>Conduct an economic and market analysis to identify the potential for attracting specific businesses to the Community.</td>
<td>Proposed</td>
<td>$125,000</td>
<td>N</td>
</tr>
<tr>
<td>Develop a Community-wide emergency preparedness plan</td>
<td>Emergency Preparedness Plan</td>
<td>Develop and adopt a Community-wide emergency preparedness plan.</td>
<td>Proposed</td>
<td>$35,000</td>
<td>N</td>
</tr>
<tr>
<td>Protect the environment and human health from wastewater pollution</td>
<td>Design Wastewater Collection and Treatment System</td>
<td>Preparation of engineering designs and construction documents for a wastewater collection and treatment system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road).</td>
<td>Proposed</td>
<td>$1,200,000</td>
<td>N</td>
</tr>
<tr>
<td>Address safety concerns along roadways</td>
<td>Install Solar Street Light with Battery Backup</td>
<td>Improve roadway and street lighting on identified roadways that currently lack sufficient lighting to ensure safety while driving, walking or biking using solar powered streetlights with battery backup units.</td>
<td>Proposed</td>
<td>$600,000</td>
<td>N</td>
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<tr>
<td>Strategy</td>
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<tr>
<td>Improve stormwater management</td>
<td>Prepare Stormwater Management Plan &amp; Construct Improvements</td>
<td>Identify and acquire parcels that could serve as both neighborhood parks/playgrounds and as a storm water storage facility.</td>
<td>Proposed</td>
<td>$1,000,000</td>
<td>N</td>
</tr>
<tr>
<td>Restore and protect wetlands, creeks, and beaches</td>
<td>Restore Four Beaches and Selected Wetlands</td>
<td>Tidal wetlands damaged by the storm due to the erosive action of waves would be protected by a submerged rock breakwater to reduce wave velocity and retain the sand. Four small beaches along the Mastic Beach shoreline that lost sand due to the storm would be replenished.</td>
<td>Proposed</td>
<td>$720,000</td>
<td>N</td>
</tr>
<tr>
<td>Improve communication during and after a storm event</td>
<td>Emergency Communication System and Education Program</td>
<td>This project would expand communication options during emergencies and provide emergency procedures education in Mastic Beach and Smith Point of Shirley. The project would include the design and installation of the fixed equipment necessary to operate a local emergency radio system on the VHF band.</td>
<td>Proposed</td>
<td>$95,000</td>
<td>N</td>
</tr>
<tr>
<td>Install protective infrastructure</td>
<td>Conduct Flood Reduction Study of Smith Point of Shirley</td>
<td>Conduct engineering evaluation of measures to reducing flooding for properties north of Suffolk County's Smith Point Park North.</td>
<td>Proposed</td>
<td>$125,000</td>
<td>N</td>
</tr>
<tr>
<td>Strategy</td>
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<tr>
<td>Enhance public access to and uses of the waterfront</td>
<td>Construct Phase I of Greenway/Blueway Trail</td>
<td>Design and construction of phase 1 of a “greenway” and “blueway” trail network.</td>
<td>Proposed</td>
<td>$231,000</td>
<td>N</td>
</tr>
<tr>
<td>Restore and rebuild waterfront attractions and recreational opportunities</td>
<td>Elevate and Repair Violets Cove Building after Acquisition</td>
<td>Elevate and repair the main building of the Violet’s Cove property after acquisition from Suffolk County.</td>
<td>Proposed</td>
<td>$1,400,000</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Construct Resilient Landscape for Violets Cove Property after Acquisition</td>
<td>Make improvements to the property to make it flood resilient including installation of a naturalized landscape with green infrastructure to survive flooding after acquisition from Suffolk County. Incorporate education.</td>
<td>Proposed</td>
<td>$780,000</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Construct Resilient Amenities for Violet’s Cove Building after Acquisition</td>
<td>Make improvements to the property to allow the temporary docking of transient vessels at the facility after acquisition from Suffolk County. Incorporate education.</td>
<td>Proposed</td>
<td>$98,000</td>
<td>N</td>
</tr>
<tr>
<td>Install protective infrastructure</td>
<td>Provide Flood Protection for Smith Point of Shirley</td>
<td>Engineering designs would be prepared and an earthen berm constructed across the northern perimeter of Suffolk County’s Smith Point Park North to protect the residences to the north from future flooding.</td>
<td>Featured</td>
<td>$2,800,000</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Prepare Flood Protection Engineering Feasibility Analysis</td>
<td>Conduct an engineering analysis of the feasibility of providing coastal flood protection to the Mastic-Shirley peninsula.</td>
<td>Featured</td>
<td>$750,000</td>
<td>N</td>
</tr>
<tr>
<td>Strategy</td>
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<tr>
<td>Protect the environment and properties from fuel spills</td>
<td>Extend Natural Gas Service</td>
<td>Work with National Grid, the local gas utility, to extend natural gas mains to the commercial districts in Mastic Beach and ultimately to the residential areas.</td>
<td>Featured</td>
<td>$2,800,000</td>
<td>N</td>
</tr>
<tr>
<td>Expand emergency shelter options</td>
<td>Design and Construct First Phase of an Emergency Shelter/Community Center</td>
<td>Utilize Links property to serve as a community recreation center regularly and as an emergency shelter during a disaster.</td>
<td>Featured</td>
<td>$2,750,000</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Design and Construct Second Phase of an Emergency Shelter/Community Center</td>
<td>Utilize Links property to serve as a community recreation center regularly and as an emergency shelter during a disaster.</td>
<td>Featured</td>
<td>$2,700,000</td>
<td>N</td>
</tr>
<tr>
<td>Restore and rebuild waterfront attractions and recreational opportunities</td>
<td>Construct Active Recreational Facility at Smith Point Park North</td>
<td>Construct Phase II of improvements to an existing Suffolk County park per the County’s plan. Improvements to include an active recreational facility</td>
<td>Featured</td>
<td>$4,800,000</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Construct Marina at Smith Point Park North</td>
<td>Construct Phase I of improvements to an existing Suffolk County park per the County’s plan. Improvements to include a full-service marina.</td>
<td>Featured</td>
<td>$5,400,000</td>
<td>N</td>
</tr>
<tr>
<td>Enhance public access to and uses of the waterfront</td>
<td>Construct Phase II of Greenway/Blueway Trail</td>
<td>Design and construct phase 2 of a “greenway” trail network.</td>
<td>Featured</td>
<td>$1,700,000</td>
<td>N</td>
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</tbody>
</table>
### Table 26 (cont’d)

<table>
<thead>
<tr>
<th>Strategy</th>
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</thead>
<tbody>
<tr>
<td>Protect the environment and human health from wastewater pollution</td>
<td>Construct Sewer System for Central Business District and portions of residential district</td>
<td>Construct wastewater collection system for the commercial district of Mastic Beach (Neighborhood Road and Mastic Road). Construct a wastewater treatment plant of sufficient capacity to accept flow from the commercial district and the low-lying residential area.</td>
<td>Featured</td>
<td>$25,000,000 to $30,000,000</td>
<td>N</td>
</tr>
<tr>
<td>Improve evacuation options</td>
<td>Elevate Portions of Mastic Road</td>
<td>Prepare engineering design for and construct elevated sections of roadway in select, key areas along Mastic Road to ensure its safety and ability to serve as a functional emergency evacuation route during a disaster.</td>
<td>Featured</td>
<td>$1,600,000</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>Construct Railroad Crossing at Hawthorne Road</td>
<td>Design and construct an at-grade railroad crossing at Hawthorne Avenue with automatic gates.</td>
<td>Featured</td>
<td>$1,400,000</td>
<td>N</td>
</tr>
<tr>
<td>Develop community gardens and establish farmer’s markets</td>
<td>Improve local food access</td>
<td>Improve local food access by identifying parcels that could be developed into community gardens and/or used as locations for regularly scheduled farmers’ markets.</td>
<td>Additional</td>
<td>$50,000</td>
<td>N</td>
</tr>
<tr>
<td>Participate in the National Flood Insurance Program’s (NFIP) Community Rating System (CRS)</td>
<td>NFIP - Community Rating System</td>
<td>Apply to the National Flood Insurance Program’s Community Rating System (CRS).</td>
<td>Additional</td>
<td>$35,000</td>
<td>N</td>
</tr>
<tr>
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<tr>
<td>Expand medical and emergency services</td>
<td>Expand Medical Services</td>
<td>Expand medical and emergency services by incentivizing additional and closer medical clinics or offices on Mastic Road by offering tax incentives or by leasing Village-acquired property at below market rates.</td>
<td>Additional</td>
<td>$150,000</td>
<td>N</td>
</tr>
<tr>
<td>Provide procedures and standards for mold remediation</td>
<td>Require Mold Remediation Inspections</td>
<td>Include a requirement in the Village Building Code for a mold remediation inspection for property owners applying for a building permit after flood damage. The Village should work closely with the Suffolk County Health Department Service in adopting approved procedures for mold remediation.</td>
<td>Additional</td>
<td>No cost</td>
<td>N</td>
</tr>
<tr>
<td>Establish Resilient Housing Trust Fund</td>
<td>Resilient Housing Trust Fund</td>
<td>Establish a “Resilient Housing Trust Fund” to help pay for required improvements for income qualified residents.</td>
<td>Additional</td>
<td>$200,000</td>
<td>N</td>
</tr>
<tr>
<td>Protect the environment and properties from fuel spills</td>
<td>Amend Building Code regarding Oil Tanks</td>
<td>Perform home heating fuel oil tank inspections and amend the Village code to require oil tanks to be properly secured in conformance with flood and Suffolk County of Department Health Services requirements.</td>
<td>Additional</td>
<td>No cost</td>
<td>N</td>
</tr>
<tr>
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<tr>
<td>Encourage use of renewable energy</td>
<td>Adopt solar photovoltaics code</td>
<td>Adopt the solar photovoltaics (PV) code developed by LIPA for rapid permitting and develop a code for wind installations to incentivize the use of renewable energy in Mastic Beach and Smith Point of Shirley.</td>
<td>Additional</td>
<td>No cost</td>
<td>N</td>
</tr>
<tr>
<td>Develop community parks, playgrounds and gathering places</td>
<td>Construct Public Plaza</td>
<td>Install a public plaza, with tables and benches, at the two parcels on the West Side of Elder Drive between Neighborhood Rd and Commack Rd.</td>
<td>Additional</td>
<td>$150,000</td>
<td>N</td>
</tr>
<tr>
<td>Connect the downtown to the waterfront</td>
<td>Expand Bayview Park</td>
<td>Acquire vacant parcels north and northeast of Pattersquash Creek to expand Bayview Park and commission a Bayview Park master plan for the expansion of Bayview Park.</td>
<td>Additional</td>
<td>$300,000</td>
<td>N</td>
</tr>
</tbody>
</table>
C. PUBLIC ENGAGEMENT PROCESS

Governor Cuomo has been a strong proponent of bottom-up, Community-driven planning; in other words, the real “experts” are the residents of the communities that have been confronted first-hand by these natural disasters. A critical component, therefore, of the NYRCR Program is the exchange of information between the NYRCR Consultant Team, the Committee, and the public to identify appropriate projects, strategies, and solutions that are likely to carry Community support. The public in this case is defined as area residents, employees, civic groups, neighborhood and homeowner associations, environmental and other interest groups, business interests, governmental agencies, educational, medical, religious, and other institutions, the media, elected/appointed officials, as well as other stakeholders who express interest in the process. The approach taken to engage the public in the NYRCR process had the following components:

- Reached out to groups that might normally be under-represented in a planning study, such as minorities, non-English speaking residents, low-income residents, seniors, youth, and the disabled.

The Committee utilized a number of dissemination techniques to achieve a thorough, responsive, open, and transparent communication process.

Committee Meetings

All Committee Meetings were open to the public, with meeting dates and times posted on the NYCR website (http://www.stormrecovery.ny.gov/nyrcr). For each Committee Meeting, notifications were sent and meeting materials were prepared. They included agendas, sign-in sheets, minutes, comment log, PowerPoint presentations, graphics/boards, and handouts. The Public was invited to comment on the work of the Committee by filling out a comment form available at each Committee Meeting. As of March 15, 2014, the Committee had held 10 meetings, not including subcommittee meetings. Subcommittees were created to focus on sectors important to the Community, such as economic development and Infrastructure.

Public Engagement

While the Committee represents the interests of many, it was important to provide opportunities for the public to participate in the development of the Plan. While the primary vehicle was public engagement events, additional outreach opportunities for comment
were provided at different venues in the NYRCR Mastic Beach and Smith Point of Shirley Community and through the NYRCR website.

**Public Engagement Events**

Each public engagement event included a presentation of work done to date and an opportunity for attendees to provide feedback. The NYRCR Consultant Team provided the following for each event: public notice (including press releases, announcements, individual mailings, and other appropriate means), outreach to underserved communities and displaced stakeholders, information gathering from those attending, and the collection and inclusion of feedback into the ongoing planning process.

A summary of each public outreach session is available in hard copy and electronically. Public engagement events were scheduled to coincide with major milestones. A good public involvement process educates, or brings people along, during the development of the Plan, so when it is time to implement the Plan, the public and the elected decision-makers have had an opportunity to participate in the decision-making process. Members of the public who were informed and engaged in the process were more likely to support a recommended course of action. Event materials were available in English and in Spanish.

Presentation materials were developed for each event that illustrated the key points of the information presented using plain language, graphics, and simulations. These were available following the event on the NYRCR website for download. An annotated summary of events was prepared and available for public distribution. The process included a series of four public engagement events:

- To define the Community Vision and solicit initial input on the asset inventory and assessment of risk to Community assets;
- To solicit input from the public concerning the content of the Conceptual Plan;
- To confirm projects and implementation frameworks; and
- To present the investment and action strategies and the Final Plan

Outreach for public engagement events included: posting on State NYRCR webpage and other electronic media; ads in weekly print media when time and budget allows; flyers and posters at strategic locations throughout the Community including libraries, community centers, and other centers of activity; e-mails and/or texts to lists available from chambers, civics, school districts, churches, synagogues, American Legion, Veterans of Foreign Wars (VFW), American Association of Retired Persons (AARP,) Hibernians, and other Community leaders. Outreach also included requests to Community organizations to post information on their websites. Phone calls were made to elected officials and other key players in the local residential and business community and calls to each Committee member to assist them with their outreach effort (e.g., calls/e-mails to their contacts and announcements at their events).
Each event was formatted as an open house that the public could attend during any part of the allotted two to three hours. Stations were positioned around the room for the various topics. Committee members, municipal representatives, State planners and the NYRCR Consultant Team were present at each station to provide opportunity for the community to exchange ideas in a comfortable setting. This structure provided an opportunity for each attendee to work within their own schedule and comment on all or some of the specific aspects of the process in a meaningful way.

As the project progressed, the public was presented with maps, a geographic scope, Community assets, risk to assets, and a vision statement, needs and opportunities, strategies and projects that had been vetted and/or created by the Committee. The desired outcome of each public engagement event was to obtain the public’s reactions and feedback to the Committee’s work in order to incorporate their input. Comments were compiled by the NYRCR Consultant Team and provided to the Committee in a clear and comprehensive manner at follow-up Committee meetings. The Committee reviewed the public’s feedback and incorporated it into the NYRCR Plan. The fourth public engagement event is planned for after the release of this Plan. The following summarizes the total participation for each of the public, in-person events:

- Event #1, Tuesday, September 17, 2013 – 98 participants
- Event #2, Tuesday, November 13, 2013 – 140 participants
- Event #3, Tuesday, February 12, 2014 - 62 participants
- The fourth Public Engagement Event will occur in Spring 2014 to present this NYRCR Plan to the public

### Expert Sessions

A Power (Electric/Gas) Resiliency Education Session was held on Tuesday, December 17, 2013 at the West Islip Community Center on Higbie Lane. Over 30 members from the various Suffolk County NYRCR Planning Committees attended. The education session focused on National Grid/LIPA (operated by PSEG Long Island as of January 1, 2014) lessons learned post-Superstorm Sandy as well as current and future hardening projects/initiatives that are being undertaken by the utilities within the County. Committee members who attended stated that the session was valuable in understanding how hardening infrastructure or raising a road can affect the utilities below the road. Other Committee members indicated that it was valuable to meet other Suffolk NYRCR Committee Members from adjacent Communities.

A Flooding and Erosion Protection Education Session was held on January 21, 2014 at the West Islip Fire Department, 309 Union Boulevard in West Islip. The Nature Conservancy provided information about wetlands restoration and the NYS DEC discussed the permitting requirements and thresholds for approval for various types of projects being considered by the Committees. A Sea Grant representative gave a presentation about natural shoreline treatments and also noted that Long Island’s coastline is home to a dynamic variety of habitats that supports a range of plants and animals, some of which are endangered and threatened. NY Sea Grant stressed the interplay between the natural and built environments that converge at the “living edge.”
Online Meetings

After seeing the success of the online meetings with the NYRCR Fire Island Community, the other Suffolk County NYCR Communities utilized an online meeting format to accompany the third public engagement event. The overall format for the online events provided a digital open house that could be attended at any time 24 hours a day, seven days a week for a ten-day timeframe.

The Online Public Meeting provided identical stations to the in-person meeting. Respondents were asked to identify their Community and were able to view the Planning process and comment on all of the materials provided. The Online Meetings provided valuable comments that were summarized for the Committee’s review and consideration in the planning process. There were 33 respondents to the online meeting survey for NYRCR Mastic Beach and Smith Point of Shirley.

Other Considerations

Although the events were advertised as events for the NYRCR program, there were attending Community members who were more interested in assistance with individual property concerns. To accommodate these individuals, at each public engagement event tables were available in a separate area for State, Federal Emergency Management Agency (FEMA), and non-governmental organization (NGO) staff from the various intake centers to provide individual assistance. These Community members were subsequently encouraged to participate in the NYRCR planning process.

Website

The NYCR website will serve as a repository for downloadable versions of all public information, event, and event notifications. Posted materials include an overview of the planning process, reports, maps, and documents, summaries of public engagement events, notices of public engagement events, and contact information. The website includes an area to accept public comment, as well as a section for Frequently Asked Questions (FAQs). All materials and information on the website is kept up to date. The address is http://www.stormrecovery.ny.gov/nyrcr

Print and Broadcast Media

Study information was also disseminated through selected local, print, radio, and TV media to keep the Community informed and to respond to media inquiries. A particular effort was made to include publications, radio, and TV stations that targeted traditionally underrepresented populations.

Outreach Techniques for Receiving Input

An important component of the outreach program was to understand public sentiment and to be able to answer questions and address public concerns. Several methods were provided for the public to make comments and ask questions. The NYRCR Consultant Team used these comments to enhance and improve the NYRCR plan. The team documented all comments received and added them to the record. Comments were also reviewed by the Committee.
NYRCR Staff Communication

The NYRCR staff is available to directly answer specific questions and receive comments. The primary contact for the NYRCR Mastic Beach and Smith Point of Shirley Community is the NYRCR Suffolk County Regional Lead.

E-Mail

E-mail comments and requests for information can be sent to info@stormrecovery.ny.gov. This email address is prominently displayed on the website so that it is widely disseminated and available for public use. The NYRCR Consultant Team incorporated input and/or responded, as appropriate based on guidance from the State. The team worked with NYS to post comments or questions (with responses) that appeared repeatedly to the FAQ page on the State’s website.

Comment Forms

Comment forms were available at Committee meetings and public engagement events and on the State’s website to provide an opportunity for the public to contribute their thoughts, which were then passed along to the Committee and the NYRCR Consultant Team.

Requests for Information

All requests for information were acknowledged by the NYRCR Consultant Team within a week with a letter or email accompanied by the materials requested or by a referral to the State’s website where the material can be downloaded. If a response to the request required more than a week, the individual making the request would be contacted with an estimate of the anticipated delivery date. An offer was always made to provide further assistance should it be necessary.
D. COMMUNITY ASSET INVENTORY

The NYCR Consultant Team used the asset inventory compiled as part of the NYCR Conceptual Plan as a baseline in which to identify assets that may potentially be inputted into the Risk Assessment Tool. The pre-screening was designed to advance assets that were either:

- Situated in Extreme and High Risk Zones
- Critical Assets (FEMA-critical) in Moderate Risk Zones
- Locally-significant Community identified (High Community Value) in Moderate Risk Zones
- Assets with High Community Value in Non Risk Areas
- Life safety services

The asset inventory included in the draft NYCR Conceptual Plan was based both on Community identified assets and State identified assets. The assets catalogued in the Conceptual Plan included basic data such as Community, asset name and type, asset category, as well as risk area and asset class. As an initial data management step, the NYCR Consultant Team consolidated all Community identified assets and State identified assets into one database.

Assets filtered out include those that fell outside of extreme, high, or moderate risk areas or were non-critical assets located in moderate risk areas. As previously mentioned, Committee-identified or locally significant high value assets were also included.

Group Like Assets

Similar assets were grouped as a single asset to the maximum extent possible because these assets would likely experience the same effects from storm events and have similar vulnerabilities. Examples included:

- Walkway network or electric infrastructure with similar construction and exposure
- Residential neighborhoods or business districts by risk area

In the event that a building or parcel spanned multiple risk areas, the “worst-case or more at-risk” risk area was used for the purposes of analysis.

Determining Community Value

The value that a Community places on an asset may differ by Community and/or region. As a result, the NYCR Consultant Team worked in consultation with State to determine a suitable identification methodology for NYCR Communities. Although, the “Community value” field in the Risk Assessment Tool did not directly affect risk, it was useful in terms of identifying locally-significant assets as determined by each respective NYCR Committee and Community.

The NYCR Consultant Team engaged their respective NYCR Committees in preliminary “pilot” Community value identification exercises throughout the course of the planning process. During a Committee Meeting held on December 18, 2013, the Committee participated in a Community Value and Critical Asset pilot exercise.
During this exercise, a Critical Assets Worksheet containing roughly 24 asset classes was distributed to the Committee to complete. The contents of critical asset classes were developed using a collaborative approach with the Committee. Similarly, asset classes were also presented at the second Public Engagement Meeting (November 13, 2013) in order to solicit verbal commentary from the public on the Community value placed on assets and its importance relative to the resilience of the locality. The various asset classes included a number of functions ranging from life safety services to residential housing and infrastructure. The purpose of this exercise was to get the Committee to think about each asset class and its importance relative to the resiliency of Fire Island. Committee members were presented with worksheets with asset value definitions (see below) and then asked to identify each asset class as high, medium, or low value.

*High Value Community Assets* are those that are so significant in the support of that Community’s day to day function that the loss of that asset or extended lack of functioning would create severe impacts to the Community’s long-term health and well-being or result in the loss of life or injury to residents, employees, or visitors.

*Medium Value Community Assets* are those that are important to the functioning of that Community’s day to day life and that the loss of that asset or extended lack of functioning would cause hardship to the Community’s well-being but whose function could be replaced or duplicated in a mid-term time frame without significant burden to a Community’s long-term health.

*Low Value Community Assets* are those that play a role in the functioning of a Community’s day to day life, but whose loss could be managed and overcome with in a Community without substantial impact to that Community’s functioning. These assets can be started, replaced, or temporarily duplicated in a short-term period with limited burden to a Community’s long-term health.

The NYRCR Consultant Team tabulated Committee responses that included:

- **Low Value Assets** (4): Schools, Village Buildings, Religious Institutions, Stick Docks
- **Medium Value Assets** (11): Electric and Gas Infrastructure, Parks and Recreation Facilities, Secondary Roads, Neighborhood Rd Business Area, Mastic Road Business Area, Mastic, Moriches, Shirley Community Library, Marinas, Creeks and Canals, Wetlands, Telephone/Cellular Communications Infrastructure, Great South Bay, Historic Buildings,

The purpose of this exercise was to have the Committee identify the “highest” value assets that could help factor into the development and selection of projects and actions to make assets more resilient.
Using the Risk Assessment Tool

The dual purpose of the Risk Assessment Tool was: (1) to provide risk information as a means to identify management measures; and (2) to provide a standardized risk assessment process for the NYRCR Program.

Most of the risk assessment tool fields were populated using GIS data or the asset inventory information. Two important aspects to the tool are how to accurately determine the exposure and vulnerability scores.

Hazard Score

The hazard score was automatically populated in the Risk Assessment Tool. The hazard score is based on the likelihood an event will occur and the magnitude (destructive capacity) of the event. This risk assessment assigned a hazard score of 3 for each asset based on the likelihood of a 100-year event occurring within a 100-year planning timeframe. The likelihood of a storm of this magnitude occurring within 100 years is 63.4%, or about as likely as not. Hazard scores may range from 1 to 5 depending on whether a higher magnitude (e.g., 500-year event) or a lower magnitude (e.g., 10-year event) is used for the analysis.

Exposure Score

The exposure score was automatically populated in the Risk Assessment Tool based on the asset’s risk area and landscape attribute information. Grouped assets based on similar exposure were given the same exposure score. Data that informed the exposure score included a review of Coastal Erosion Hazard Area (CEHA) maps, aerial imagery, and site reconnaissance as well as a reliance on local knowledge and input from the Project Manager and/or Committee.

Vulnerability Score

The vulnerability score of each asset was determined using the State guidance (based on Table 3: Vulnerability Based on Impact on Service or Function of Community Assets contained in Guidance for Community Reconstruction Zone Plans) as well as local background knowledge of how assets responded in previous storm events. Vulnerability generally pertains to length of time that a resource is out of service or a reduction in service capacity.\textsuperscript{xiv}
Risk Score Range

After populating Risk Assessment Tool with attribute information (basic data/hazard area/exposure/vulnerability, etc.) a Risk Score was automatically generated. The Risk Score relied on experience as a predictor of future risk and included some subjective analysis. For a 100-year event, the Risk Score ranges from Residual (less than 6) to Moderate (6 to 23) to High (24 to 53) to Severe (54 or greater). After populating the Risk Assessment Tool with attribute information (basic data/hazard area/exposure/vulnerability, etc.) a Risk Score was automatically generated. The Risk Score relied on experience as a predictor of future risk and included some subjective analysis.

The table below presents Community assets and their corresponding risk scores for Mastic Beach and Smith Point of Shirley.
## Risk Assessment Tool

### Asset Information

<table>
<thead>
<tr>
<th>Asset</th>
<th>Risk Area</th>
<th>Asset Class</th>
<th>Asset Sub-category</th>
<th>Socially Vulnerable Populations</th>
<th>Critical Facility</th>
<th>Community Value</th>
<th>Breach Rate (ft/year)</th>
<th>Waterline Erosion Frequency</th>
<th>Shoreline Erosion, not protected by anticipated natural processes or infrastructure</th>
<th>Waterline Erosion, not protected by anticipated natural processes or infrastructure</th>
<th>Asset on Coastal Barrier Island or Flooded Wetland</th>
<th>Landscape Attribute Score</th>
<th>Risk Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manor of St. George Park</td>
<td>Extreme</td>
<td>Natural and Cultural</td>
<td>Historic Landmarks and Facilities</td>
<td>Yes, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2.5</td>
<td>4.50</td>
</tr>
<tr>
<td>Violet's Cove</td>
<td>Extreme</td>
<td>Economic</td>
<td>Marina/Water Based Business</td>
<td>Yes, Locally Significant</td>
<td>High</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, FEMA</td>
<td>2.5</td>
<td>4.50</td>
</tr>
<tr>
<td>Mastic Beach Fire Dept Headquarters - Station</td>
<td>Moderate</td>
<td>Health and Social Services</td>
<td>Emergency Operations</td>
<td>Yes, FEMA</td>
<td>High</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2</td>
<td>2.50</td>
</tr>
<tr>
<td>Mastic Beach Yacht Club</td>
<td>Moderate</td>
<td>Economic</td>
<td>Marina/Water Based Business</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2</td>
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<tr>
<td>MBPOA Clubhouse</td>
<td>Moderate</td>
<td>Natural and Cultural</td>
<td>Community Centers</td>
<td>Yes, Locally Significant</td>
<td>Medium</td>
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<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
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<tr>
<td>Mastic Beach Fire Station</td>
<td>Moderate</td>
<td>Health and Social Services</td>
<td>Emergency Operations</td>
<td>Yes, FEMA</td>
<td>High</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, FEMA</td>
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<td>William Floyd Estate</td>
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<td>Historic Landmarks and Facilities</td>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes, FEMA</td>
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</tr>
<tr>
<td>Osprey Point Private Marina</td>
<td>Extreme</td>
<td>Economic</td>
<td>Marina/Water Based Business</td>
<td>No, Locally Significant</td>
<td>Medium</td>
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<td>No, Locally Significant</td>
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<tr>
<td>Osprey Park</td>
<td>Moderate</td>
<td>Natural and Cultural</td>
<td>Parks and Recreation</td>
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<td>Drinking Water Well</td>
<td>Moderate</td>
<td>Infrastructure Systems</td>
<td>Water Supply</td>
<td>Yes, FEMA</td>
<td>High</td>
<td>No</td>
<td>No</td>
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<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
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</tr>
<tr>
<td>Residential Housing - Extreme</td>
<td>Extreme</td>
<td>Housing</td>
<td>Single-Family Residence</td>
<td>No, Locally Significant</td>
<td>High</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
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<td>4.50</td>
</tr>
<tr>
<td>Residential Housing - High Risk</td>
<td>High</td>
<td>Housing</td>
<td>Single-Family Residence</td>
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<td>Residential Housing - Moderate Risk</td>
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<td>Housing</td>
<td>Single-Family Residence</td>
<td>No, Locally Significant</td>
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<td>Neighborhood Rd Commercial District</td>
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<td>Economic</td>
<td>Downtown Center</td>
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<td>No</td>
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<td>Yes</td>
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<td>Natural and Cultural</td>
<td>Parks and Recreation</td>
<td>Yes, Locally Significant</td>
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<td>Yes</td>
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<td>No, Locally Significant</td>
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<td>4.50</td>
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<tr>
<td>MBPOA Marina #3</td>
<td>Extreme</td>
<td>Economic</td>
<td>Marina/Water Based Business</td>
<td>No, Locally Significant</td>
<td>Medium</td>
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<td>Yes</td>
<td>Yes</td>
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<td>MBPOA Marina #5</td>
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<td>Marina/Water Based Business</td>
<td>No, Locally Significant</td>
<td>Medium</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2.5</td>
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<tr>
<td>MBPOA Stick Docks</td>
<td>Extreme</td>
<td>Infrastructure Systems</td>
<td>Navigable waterways</td>
<td>Low, No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2.5</td>
<td>4.50</td>
</tr>
<tr>
<td>Johns Neck Creek</td>
<td>Extreme</td>
<td>Natural and Cultural</td>
<td>Water Bodies</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
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</tr>
<tr>
<td>Pattersquash Creek</td>
<td>Extreme</td>
<td>Natural and Cultural</td>
<td>Water Bodies</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
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<td>No, Locally Significant</td>
<td>2</td>
<td>4.00</td>
</tr>
<tr>
<td>Lawrence Creek</td>
<td>Extreme</td>
<td>Natural and Cultural</td>
<td>Water Bodies</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2</td>
<td>4.00</td>
</tr>
<tr>
<td>William Floyd Parkway</td>
<td>Extreme</td>
<td>Infrastructure Systems</td>
<td>Transportation</td>
<td>No, Locally Significant</td>
<td>High</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2.5</td>
<td>4.50</td>
</tr>
<tr>
<td>Mastic Road</td>
<td>Moderate</td>
<td>Infrastructure Systems</td>
<td>Transportation</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2</td>
<td>3.00</td>
</tr>
<tr>
<td>Smith Point County North Park (undeveloped)</td>
<td>Extreme</td>
<td>Natural and Cultural</td>
<td>Parks and Recreation</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2</td>
<td>4.00</td>
</tr>
<tr>
<td>Johns Neck and other Tidal Wetlands</td>
<td>Extreme</td>
<td>Natural and Cultural</td>
<td>Wetlands and marshes</td>
<td>No, Locally Significant</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No, Locally Significant</td>
<td>2</td>
<td>4.00</td>
</tr>
</tbody>
</table>
E. GLOSSARY

Acronyms
AARP - American Association of Retired Persons
CBA - Cost-benefit analysis
CDBG-DR - Community Development Block Grant – Disaster Recovery
CDP - Census Designated Place
CZM – Coastal Zone Management
CEHA - Coastal Erosion Hazard Area
EMS - Emergency Medical Services
FEMA - Federal Emergency Management Agency
FINS - Fire Island National Seashore
FTE - Full-time equivalent
GIS - Geographic Information Systems
LIRR - Long Island Rail Road
NFIP - National Flood Insurance Program
NGO - Non-governmental organization
NYRCR - NY Rising Community Reconstruction
NYS DEC - New York State Department of Environmental Conservation
NYS DOS - New York State Department of State
NYS DOT - New York State Department of Transportation
USACE - U.S. Army Corps of Engineers
VFW - Veterans of Foreign Wars

Terms
Asset - Places or entities where economic, environmental, and social functions of the Community occur.
Asset Inventory - Completing an inventory of the Community’s social, economic, and natural resource assets that have been, or will be, affected by coastal or riverine hazards.
Community Vision - The overall goal of the Community throughout the NYRCR planning process.
Conceptual Plan - A snapshot of the current thoughts of the Community and Planning Committee. The plans will evolve as Communities analyze the risk to their assets, their needs and opportunities, the potential costs and benefits of projects and actions, and their priorities.
Exposure - Local landscape characteristics that tend to increase or decrease storm effects.
Geographic scope - The planning area identified by the Community and State guidelines where assets are most at risk; where future construction or reconstruction of existing development should be encouraged or discourage; or where key investment to improve the local economy can be instituted.
**Hazard** - The likelihood and magnitude of anticipated hazard events.

**Implementation Schedule** - Preparing an implementation schedule of the actions needed to implement the strategies.

**Need** - Services that were damaged or rendered inoperable by Superstorm Sandy as well as methods and operations that failed to work during the storm event or experienced insufficient capacity to respond effectively.

**Needs and Opportunities Assessment** - Determining needs and opportunities to improve local economic growth and enhance resilience to future storms.

**Opportunity** - Additional resiliency benefits, whether economic, environmental, social or cultural, that may be achieved through the integration of new methods, procedures and materials into the normal course of rebuilding.

**Public Engagement** - Offering opportunities for public input and involvement at key milestones in the planning process.

**Resilience** - The ability of a system to absorb impacts while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt.

**Risk** - The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.

**Risk Area** - Geographic areas at risk from coastal hazards according to differences in the exposure of the landscape.

**Risk Assessment** - Assessing risk to key Community assets based on the three factors contributing to risk: hazard, exposure, and vulnerability.

**Risk Assessment Tool** - Evaluation of risk based on the formula: Hazard x Exposure x Vulnerability

**Risk Score** - The result of the risk assessment tool evaluation

**Strategy** - A specific way or ways to address the needs and realize opportunities presented by the Committee.

**Strategies for Investment and Action** - Developing strategies and the projects and actions needed to implement the strategies; identifying potential costs and benefits of chosen projects and actions, as well as potential funding sources.

**Vulnerability** - The capacity of an asset to return to service after an event.
F. END NOTES

i All photos in this document are provided courtesy of the Mastic-Moriches-Shirley-Community Library and used by permission, except as noted.


iii As reported by Suffolk County Legislator Kate Browning

iv NY Rising Recovery Resources Center http://www.stormrecovery.ny.gov/resources


vii NY Rising Community Reconstruction Program. NYRCR Program Guidance to Firms, Project Evaluation, December 30, 2013. p.3

viii These costs could relate to reduced emergency and recovery expenditures in the future less implementation costs for the life of the project.

ix Socially vulnerable population may be derived from the following criteria: poverty/low income, immigrant status, education level, institutionalization, renter-occupied household status, single senior-citizen household status.

x The LIRED Vision Statement is provided in all LIRED documents, e.g. http://regionalcouncils.ny.gov/2013-2013-1078-1066-12-35.pdf page 4

xi The full time equivalent position is calculated by assuming half the construction cost is labor-related and applying an average of $40,000 per job. The $40,000 salary is based on the Bureau of Labor Statistics’ May 2012 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates for Nassau-Suffolk, NY Metropolitan Division for Construction and Extraction Occupations (http://www.bls.gov/oes/current/oes_35004.htm#47-0000).

xii Photo provided by Cameron Engineering

xiii Photo provided by Cameron Engineering

xiv Vulnerability criteria was classified based on State guidance as follows:

- **Insignificant (1): limited interruption** in service/short-term reduction in service
- **Minor (2):** service *loss for up to 1 week/*longer-term reduction in service
- **Moderate (3):** service loss of *more than 1 week up to 1 month*
- **Significant (4):** service loss for *more than 1 month/*permanent reduction in capacity
- **Major (5): permanent loss** of service/asset