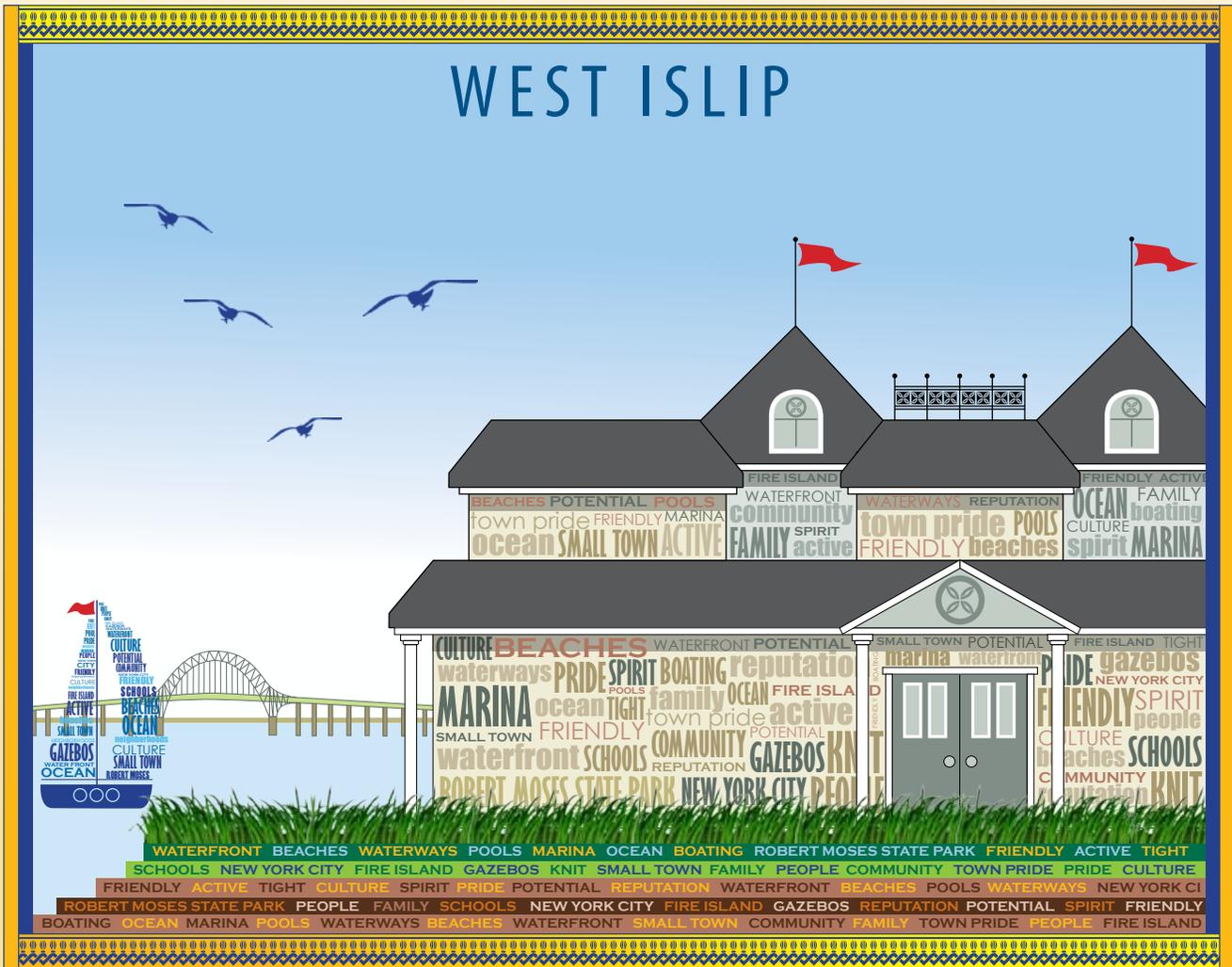


NY Rising Community Reconstruction Program



NY Rising Community Reconstruction Plan



MARCH 2014



West Islip NY Rising Community Reconstruction Plan

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This document was developed by the NY Rising Community Reconstruction (NYRCR) West Islip Planning Committee as part of the NYRCR Program within the Governor's Office of Storm Recovery. The NYRCR Program is supported by New York State (NYS) Homes and Community Renewal, NYS Department of State, and NYS Department of Transportation. The document was prepared by the following consulting firms: Jacobs and Cameron Engineering & Associates, LLP.

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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

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 NYRCR 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

¹ Five of the 102 localities in the program—Niagara, Herkimer, Oneida, Madison, and Montgomery Counties—are not funded through the CDBG-DR program.



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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. NYRCR Communities are also eligible for additional funds through the program's NY Rising to the Top Competition, which evaluates NYRCR 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 NYRCR Community in each category will be allocated an additional \$3 million of implementation funding. The NYRCR 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 NYRCR 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 NYRCR Communities. The SARTs review projects with an eye toward regulatory and permitting needs, policy objectives, and preexisting agency funding sources. The NYRCR 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 NYRCR Planning Committees, passionately committed to realizing brighter, more resilient futures for their communities.

The NYRCR Plan

This NYRCR Plan is an important step toward rebuilding a more resilient community. Each NYRCR 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



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comprehensive reconstruction and resiliency strategies, and identified projects and implementation actions to help fulfill those strategies.

The projects and actions set forth in this NYRCR Plan are divided into three categories. The order in which the projects and actions are listed in this NYRCR Plan does not necessarily indicate the NYRCR Community's prioritization of these projects and actions. **Proposed Projects** are projects proposed for funding through a NYRCR 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** 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 NYRCR 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 NYRCR Ethics Handbook and Code of Conduct.

NYRCR West Islip is eligible for up to \$3.1 million in CDBG-DR implementation funds.

While developing projects for inclusion in this 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. 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.

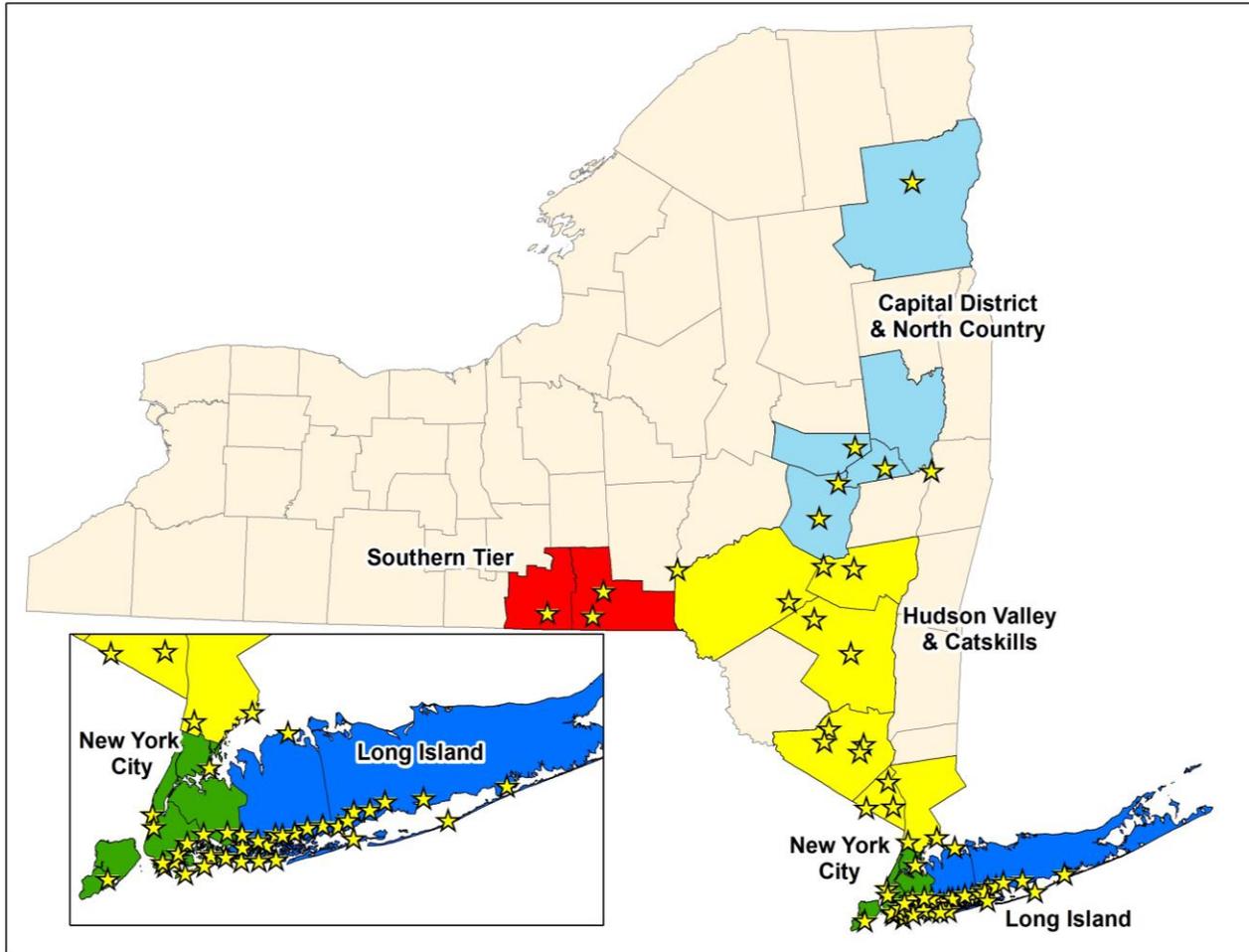
The total cost of Proposed Projects in this NYRCR Plan exceeds the NYRCR Community's CDBG-DR allocation to allow for flexibility if some Proposed Projects cannot be implemented due to environmental review, HUD eligibility, technical feasibility, or other factors. Implementation of the projects and actions found in this 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 this NYRCR 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 NYRCR Plan will become a reality helping New York not only to rebuild, but also to build back better.



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NYRCR Communities



Note: map includes those NYRCR Communities funded through the CDBG-DR program, including the NYRCR Communities announced in January 2014. More info. on NYRCR Program at: www.stormrecovery.ny.gov/nyrcr



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Executive Summary

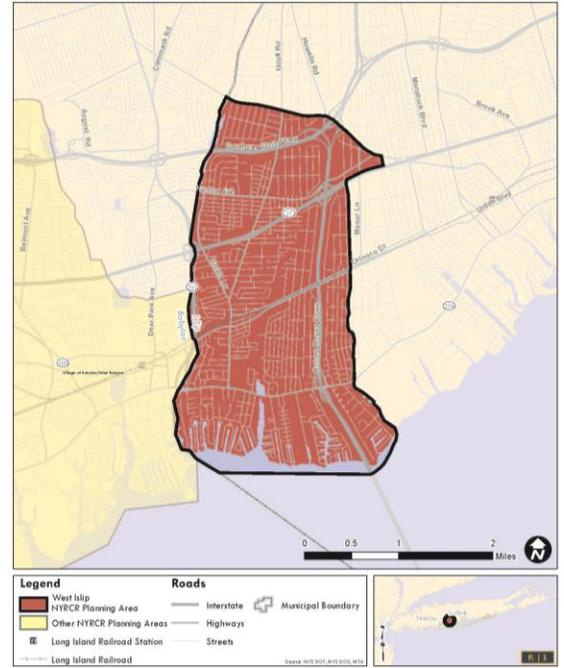
The NY Rising Community Reconstruction (NYRCR) West Islip Community (Community) is located in Suffolk County in the Town of Islip on Long Island’s South Shore. With miles of canals, sweeping views of Fire Island and Jones Beach Island, and easy access to the beach over the Robert Moses Causeway, West Islip is considered a gateway to Long Island’s rich natural and cultural resources. Superstorm Sandy’s devastating storm surge, however, also drew attention to the vulnerability of this coastal hamlet’s location and put the Community’s resiliency to the test.

As part of the ongoing recovery from Superstorm Sandy, the NYRCR West Islip Committee (Committee) took on the responsibility of developing a plan that laid the groundwork for the Community’s “better, stronger,” more resilient future. The Committee was comprised of a cross-section of the Community including local residents, leaders of local business and community organizations, and municipal representatives. With Community members throughout West Islip involved through public engagement, and with the help of New York State, the Committee has produced a pragmatic recovery and resiliency plan.

Overview

The NYRCR West Islip Community is one of eight NYRCR Communities identified within Suffolk County. West Islip is a hamlet and Census Designated Place (CDP) with a population of 28,335 people on the South Shore of Long Island. The Hamlet is bordered by Sampawams Creek and the Town of Babylon to the west and Town of Islip communities of Baywood and West Bay Shore to the north and east, respectively. The Great South Bay borders West Islip's southern shoreline. Jones Beach Island and Fire Island, barrier islands that help provide protection to West Islip from wave action and storm surge, are situated to the south across the Great South Bay. Up to \$3.1 million has been allocated for resiliency projects within this Community.

Since the 1700s, West Islip’s land area has been developed into plantations for farming, fishing, and lumbering, later into estates of wealthy landowners from New York City, and after World War II, into the suburban neighborhoods that can be seen today. Today West Islip is perfectly situated between the suburban comforts and conveniences of Long Island and the recreational amenities of the Great South Bay and



Geographic Scope of NYRCR West Islip planning area. (Map: Jacobs)

“That is West Islip: a community that helps one another, that comes together on a moment's notice and gives back like no other. A community with an abundance of pride, and that can recover and rebuild in the wake of disaster.”

—Lynn Luttenberger, NYRCR West Islip Committee Member



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the barrier beaches. Residents take full advantage of their location on the Great South Bay. Many residents enjoy fishing and boating activities and keep their boats docked in the West Islip Marina's public slips or in back yard slips on finger canals. And the oft-photographed Robert Moses Causeway is the perfect frame for a spectacular sunset. The features that make West Islip so appealing as a place to live and play—bayfront property, proximity to the ocean, and dense, suburban-style development—are also what make it so vulnerable to both regular and large-scale flood events.

On October 29, 2012, Superstorm Sandy swept out of the darkened skies with unexpected speed and savagery and her immense waves and storm surge quickly overwhelmed West Islip's canals, creeks, and shoreline protections. Many members of the Community shared that their homes and those of their neighbors were flooded with up to five feet of water. Floodwaters lifted cars off streets and boats off moorings and pushed them into homes. The Sequams neighborhood is a particularly low-lying area of West Islip and although it was equipped with two stormwater drainage pumps, floodwaters inundated the pumps' electrical controls, leaving them inoperable throughout the storm.

Residents also faced major health and safety risks. Backups from the sewer system leaking fuel from disconnected, leaking oil tanks contaminated the already foul floodwaters in and around homes. Wind gusts knocked down many trees, which in turn disrupted power lines, leaving thousands without electricity or heat, some reportedly as long as two weeks. At night, when no streetlights illuminated the roadways, residents feared for their safety and property. Looting took place by both land and water with thieves maneuvering boats up to evacuated houses.

In the wake of the storm, neighbors united to provide meals and lodging to those whose homes were too severely damaged to occupy, and donated time, labor, clothing and goods, and money to kick-start the recovery. A "rapid building assessment" conducted by the Town of Islip immediately after Superstorm Sandy estimated that in West Islip, the storm caused over \$23 million in damages to homes.

These documented effects, combined with the first-hand experiences shared by the Committee and residents at multiple well-attended public engagement events led to the identification of several critical issues facing the Community related to its recovery from Superstorm Sandy as well as future resiliency needs. These issues are indicative of the severe

"Anticipation, fear, despair, hopelessness, courage, and hope is the only way to describe the events leading up to, during, and after Superstorm Sandy . . . I will never forget the sight of neighbors rowing out of their homes or entire families leaving with nothing and no place to go. Or the National Guard trying to safeguard our homes from whatever was left from looters. Many of our residents have been able to return to their homes and some never will."

—Maria Figalora, NYRCR West Islip Committee Member



A dumpster filled with damaged materials and goods from West Islip residents' homes.

(Photo Credit: NYRCR Committee Member)



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damage that the Community has suffered during Superstorm Sandy as well as the recurring flooding and resiliency issues that happen on a regular basis. These issues also served to define needs, opportunities, strategies, and eventually projects that would help make the Community more resilient and sustainable. Critical issues included:

- Families need to be able to return to their homes quickly and to feel secure that they can make their homes more protected against future storms.
- Residents need streets that do not flood with every nor'easter, hard rain, or even very high tide.
- Residents need to feel reassured that communication systems will hold up to future storms, that procedures are in place to relay storm information, and that local governmental and non-governmental organizations are prepared for future emergencies.
- Residents want to see the public and private utilities taking measures to protect the infrastructure that is critical in the aftermath of an event—electric, gas, and communications—from floods and hurricane winds.
- The Community would like to know that recovery programs are supporting local businesses, which provide goods and services to West Islip residents and contribute to the local economy's resiliency.
- The Community has a large stake in the safety of Good Samaritan Hospital and Our Lady of Consolation's facilities to ensure that their operations continue in future storm events and that their vulnerable populations are protected¹.
- Residents are strongly in favor of sustainability, as long as progress respects and maintains West Islip's historic and cultural assets.
- The Community supports a strong regional focus on strengthening the beaches and dunes of the barrier islands that protect West Islip and the entire South Shore of Long Island.

NY Rising: A Community-Driven Process

The Community's goal is for a "better, stronger" West Islip. During many Committee meetings as well as Public Engagement Events, Committee members and the public drew on their own experiences and on input from their neighbors to formulate a future vision of a more resilient future in West Islip. The Community vision statement represents a consensus assessment of the direction towards which this Community



Flooding of residential streets and properties in West Islip in March 2013. Flooding has become a frequent occurrence in the lowest-lying neighborhoods.

(Photo Credit: NYRCR Committee Member)



A local business display welcomes visitors in downtown West Islip.

(Photo Credit: Jacobs)



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wishes to move. The NYRCR Committee and residents together developed a vision statement that reflects the philosophy to be embraced in order to create a safe and resilient community 10-, 20-, and 50-years in the future. All strategies and projects identified were measured against the Community vision statement (shown at right) to ensure that recommended actions would not detract from the Community's ability to achieve its desired goals.

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 were 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). 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 was then passed along to the Committee.

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 process that informed the development of this NYRCR Plan. Three well-attended, open-house style events were held during the development of the plan and a fourth will present this final document. Across the eight NYRCR Communities in Suffolk County, thousands of participants attended Committee meetings and Public Engagement Events. In conjunction with the third Public Engagement Event, the public was additionally encouraged to complete a web-based survey to gauge public opinion on the Proposed Projects. Special efforts were also taken to reach out to younger members of the community, who were invited to participate in a web-based "Next Generation" survey to gather feedback on Proposed Projects that would likely affect their futures in the Community.

NYRCR Final Plan: A Blueprint for Resiliency

An asset inventory was conducted for the Community to identify assets, both built and natural, which are critical to the safety, resiliency, and character of the Hamlet. 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 needs and opportunities were developed. For every need or opportunity, potential strategies were generated.

COMMUNITY VISION STATEMENT:

West Islip is a tight-knit community where multiple generations of families reside amongst a protected and resilient coastal environment. The Community enjoys the active and thriving waterfront amenities for recreation and tourism, which are healthy and robust due to a longtime commitment to careful study and maintenance of the natural resources and manmade shoreline structures. The investment in a well-defined commercial corridor sustains an array of businesses that are supported by proud local residents and visitors alike.



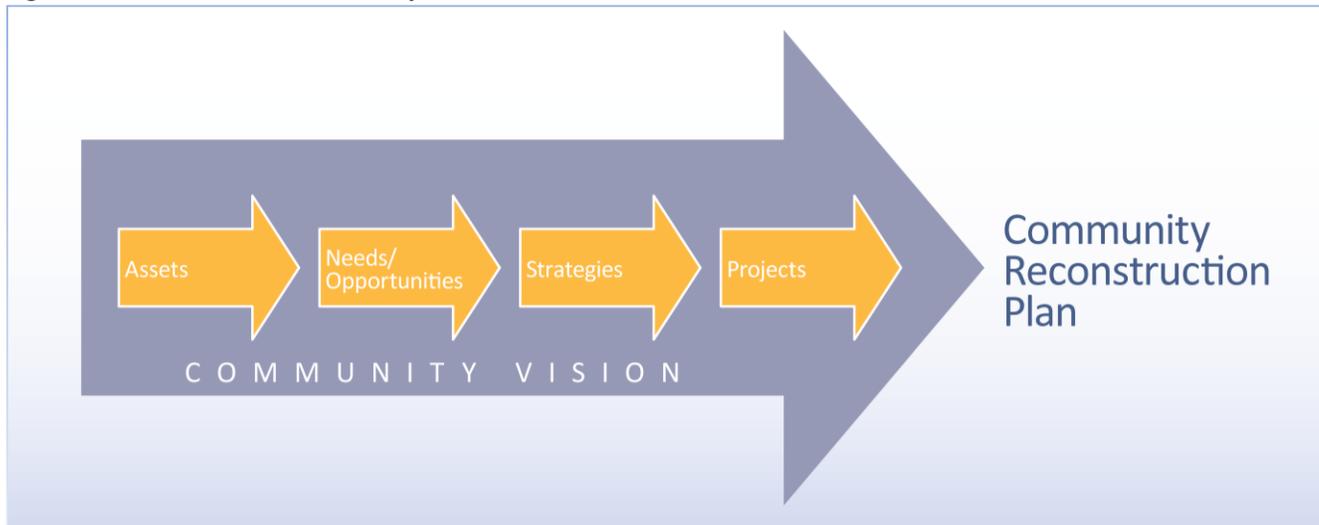
Boats moored in the West Islip Marina, a public marina that was damaged in Superstorm Sandy. (Photo Credit: Jacobs)



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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. The Committee revised and improved these strategies, and gradually defined their scopes into projects (see Figure ES-1).

Figure ES-1: What is a Community Reconstruction Plan?



The list of projects spanned an array of methodologies and timeframes, from preparedness to retrofits, from immediate procedural improvements to long-range capital investment programs. Three tiers of projects were identified: Proposed Projects, Featured Projects, and Additional Resiliency Recommendations. Proposed Projects are projects proposed for funding through the NYRCR Community's allocation of CDBG-DR funding.



A boy stands on what remains of Magoon Landing's dock in West Islip.

(Photo Credit: NYRCR Committee Member)



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Featured Projects are innovative projects where an initial study or discrete first phase of the project is proposed for CDBG-DR funding or other identified funding. Additional Resiliency Recommendations are projects that the Committee would like to highlight, but which the Community will pursue independently or through other funding sources. It is important to note that there is no priority order or ranking of projects aside from the project tier.

Table ES-1 below presents NYRCR West Islip’s Proposed and Featured Projects by strategy. In the months and years to follow, many of the projects and actions outlined in this NYRCR Plan will become a reality helping New York not only to rebuild, but also to build back better.

Table ES-1: NYRCR West Gilgo to Captree Proposed and Featured Projects		
Strategy	Project Name	Project Category
Increase awareness of and access to resources for hazard mitigation, preparedness and response to reduce risk.	Enhanced Electronic Mapping/ Emergency Management System	Proposed
	Recovery Manager/Grant Specialist	Proposed
Expand local resources and alternatives for residents likely to be impacted by future flooding and other storm-related risks to remove themselves from harm’s way.	Designated Parking for Flood Events	Proposed
	Local Drop-In/Distribution Center	Proposed
Improve the Community’s natural and engineered stormwater management and flood control systems to mitigate flood risk and improve water quality.	Community-Wide Drainage Plan and Phase I Improvements	Proposed
	Long-Term Flood Reduction Program - Phase II Improvements	Featured
	Long-Term Flood Reduction Program - Pump Stations	Proposed
	Long-Term Flood Reduction Program - Rehabilitation of Willetts Creek	Proposed
Increase the attractiveness and appeal of downtown West Islip to business owners and consumers alike to strengthen the local economy.	Downtown Revitalization Plan and Related Activities	Proposed
	Downtown Revitalization Streetscape Improvements	Featured
Increase public awareness of post-event healthcare resources and options.	Post-Event Health Services for Vulnerable Populations	Proposed
Increase access to recreational and natural resource amenities and programs.	West Islip Marina and Beach	Featured
Create incentives for homeowners to implement residential resiliency upgrades to reduce future risk to life and property.	Resilient Housing Assistance	Featured
	Resilient Housing Policy	Featured



Section I: Community Overview

The Local Perspective

Who do we want to be?

This might seem an odd question to introduce a plan—a plea, really—to protect West Islip from another disaster like Superstorm Sandy. After the horror of watching their homes fill with water and rescuers struggling to reach them through sewage-fouled rivers that only hours before were quiet streets, after returning to soaking furniture and mud-stained memories, it might be reasonable if their only question were "What do we do now?" Reasonable perhaps after \$23 million of damage and hundreds of homes destroyed, but wrong for the Hamlet's long term resiliency. Maria Figalora, a member of the NY Rising Community Reconstruction (NYRCR) West Islip Committee (Committee), ponders, "Can we make ourselves less vulnerable without making ourselves less the West Islip that we love?"

"Sandy wasn't just another storm that roared ashore," said Lynn Luttenberger, an NYRCR West Islip Committee member. "She brought with her a whole host of other challenges never before seen with long-term effects that we are still dealing with today." Those challenges include almost every issue that the residents have ever confronted as a community—and some that they never have. Everything from stopping the flooding that frustrates West Islip during "normal" high tides and storms to strengthening the downtown, from restoring flood-easing wetlands that have been damaged more by development than by the storm, to offering more opportunities—especially for the youth—to enjoy the wonderful waterfront.

Beyond any specific "how-to" strategy, the transformational heart of West Islip's post-storm effort is the seriousness that they have brought to a collective self-appraisal. Its residents *know* West Islip: the roots run deep (West Islip existed well before the suburban explosion, with commerce between Colonists and Native Americans) and the views are brilliant. The sight of the barrier beaches across the Great South Bay can be inspiring, and the oft-photographed Robert Moses Causeway is the perfect frame for a spectacular sunset. Nothing that happened on the harrowing night of October 29, 2012, altered West Islip's basic demographic and social narrative.



A banner hanging in downtown West Islip displays the iconic Robert Moses Causeway Bridge.



Boating is a popular local pastime for West Islip residents.



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But Superstorm Sandy changed West Islip—or at least planted a seed for change—in deep and fundamental ways. It is a shift in thinking, perhaps driven by a new sense of vulnerability and responsibility that gives more focus and intensity to the search for solutions. "My fondest desire," said Maria Figalora, a member of the Committee, "would be to see our peaceful waterfront community of West Islip rebuilt better, stronger and much more resilient for the future."

A Community United

As dispiriting an experience as Superstorm Sandy was for so many of them, West Islip residents learned something positive about the character of their neighbors. "What helped us through this crisis was the incredible support of our friends and neighbors in this tight-knit community," said Sandra Galian, Committee member. "People helped us sift through our belongings, did our salt water soaked laundry, provided us with hot food, showers, shelter and loaned a sympathetic ear." Residents were especially grateful for the bravery and skill of West Islip's emergency first-responders. "The men and women of West Islip put their own safety aside to get to those in need," said Mrs. Luttenberger. "But that is West Islip: a community that helps one another, that comes together on a moment's notice and gives back like no other. A community with an abundance of pride, and that can recover and rebuild in the wake of disaster."

A Resilient Future, Better and Stronger

Achieving such a "better, stronger" vision for West Islip means thinking beyond the "now and narrow" and looking at "the bigger picture." It means fortifying not just manmade defenses, such as bulkheads, but restoring and nurturing natural barriers, such as marshes and wetlands. It also means thinking beyond the Hamlet boundaries to create regional alliances for more effective policies on stormwater management, transportation, communication, housing, and energy. The alternative is to fear, shun, and try to manipulate and control Willetts Creek, the Great South Bay, and other shoreline assets, rather than embracing them for their naturally protective attributes. And for a coastal community, where the water is what defines it, that is no way to live.

Overall, the NYRCR West Islip Community's (Community) experiences during and after Superstorm Sandy have persuaded residents to embrace the philosophy that guides the NY Rising efforts throughout the State. Communities are most successful with recovery and long-term sustainability when they blend traditional stabilization and repair actions with a holistic, long-range, forward-looking view of resiliency and economic development. The NYRCR West Islip strategies and



A view of West Islip Beach, a popular summertime hangout for residents.



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projects developed with the Community reflect the Committee's desire to address the needs of the present as quickly as possible without squandering the opportunities to reshape the future.

Perhaps the most ambitious proposals—improving the natural and engineered infrastructure that can slow a tidal surge or mitigate flooding—may be the most critical. And the Community feels an urgency to get started now, however expensive and long they will take to complete. West Islip needs to address its vulnerabilities not just to protect against the savage surges of super storms but the flooding that is common in West Islip after a mere heavy rain. And it must be accomplished in a way that protects environmental and cultural assets.

The Community recognizes that the changes and adaptations they seek will not be easy; however, tremendous knowledge and experience has been gained through "trial by Sandy" and from the process of engaging with neighbors and partners at the Town, County, and State levels. The Committee hopes that the West Islip Community, which has come together to help its neighbors, stays together to complete these changes. "It has been my privilege to be part of the NY Rising Community Reconstruction Program to help with the rebuilding and refortification of West Islip," said Mrs. Luttenberger, echoing the sentiments of many in the Community. "We worked hard to present projects that protect our neighborhoods by securing our wetlands, cleaning our creeks and waterways to allow the water to flow in and out, assisting our residents with evacuation and shelter, and helping our local businesses thrive. If we accomplish all this, I believe our Hamlet will be able to sustain itself for generations to come."

Who do we want to be? In the wake of Superstorm Sandy the answer is simple: a West Islip that is smarter, stronger, and striving to change, but no less caring for the individuals who make up this solid Community.

Historic Context

An Algonquin-speaking Long Island tribe, the Secatogues, originally occupied most of West Islip. The first white landowners, Thomas and Richard Willets, purchased the majority of West Islip in 1692, and by 1775 all of West Islip's land area had been purchased from the Secatogues.ⁱⁱ The land was developed into plantations for farming, fishing, and lumbering, and later into estates of wealthy landowners from New York City. The estates typically extended from South Country Road (now known as Montauk Highway) to the Great South Bay. Many less wealthy residents settled in the area to work on the estates.



The ball fields on Beach Drive display the West Islip Lions logo.



Finger canal leading to Great South Bay.



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The estate owners began to sell their sweeping bayside properties in the 1920s to move to the North Shore. After World War II, population and associated development in West Islip exploded and most of the housing that can be seen today was developed between 1950 and 1970.

Present Day

Today, West Islip is a hamlet and Census Designated Place (CDP)ⁱⁱⁱ on the South Shore of Long Island in Suffolk County, New York. The Hamlet is bordered by Sampawams Creek and the Town of Babylon to the west and Town of Islip communities of Baywood and West Bay Shore to the north and east, respectively. The Great South Bay borders West Islip's southern shoreline. Jones Beach Island and Fire Island, barrier islands that help provide protection to West Islip from wave action and storm surge, are situated to the south across the Great South Bay. The 2010 U.S Census indicates that West Islip had a population of 28,335 people^{iv} in 6.33 square milesⁱⁱⁱ for a population density of 4,477 people per square mile.

West Islip is mainly a bedroom community to employment centers in New York City and elsewhere in Long Island. In 2010, the U.S. Census recorded the median household income to be \$99,343 and the median value of an owner-occupied housing unit to be \$442,000.^{iv}

Among West Islip's many assets is Good Samaritan Hospital Medical Center, a 537-bed facility that serves several communities along Long Island's South Shore. It is both a significant healthcare resource for the community and a major employer of residents.

Residents take full advantage of their location on the Great South Bay. Many residents enjoy fishing and boating activities and keep their boats docked in the West Islip Marina's public slips or in back yard slips on finger canals. For residents whose homes are not directly on the canals or the bay, West Islip offers ample recreational opportunities at the West Islip Beach and Marina, Babylon Yacht Club, deeded and association docking, and Casamento Park.



A mural on a business in downtown West Islip.



Long Island Railroad (LIRR) tracks as viewed from Higbie Lane. The LIRR is a major transportation asset for West Islip commuters.



A. Geographic Scope of the NYRCR Plan

Designating a geographic scope for the NYRCR West Islip Community was a crucial responsibility for the Committee, and they executed it as an early order of business. This laid the groundwork for every other aspect of the NYRCR Program by developing the places and parameters that informed the extent of the planning effort.

Naturally, Community assets most likely to be at risk during a severe coastal storm, and which should clearly be included in the geographic scope, are typically located near the shoreline; one need only look at Sandy's devastating impacts in West Islip's neighborhoods below Montauk Highway for evidence to support that assumption. Looking to the future, however, the Community was also urged to define the geographic scope of the NYRCR Plan to include areas not only where assets are most at risk but where future construction or reconstruction of existing development should be encouraged; or where key investment to improve the local economy can be instituted. By identifying more resilient areas for future development, the process outlined in this NYRCR Plan pays the dividend of guiding local officials when preparing municipal comprehensive plans as well as making other local regulatory decisions.

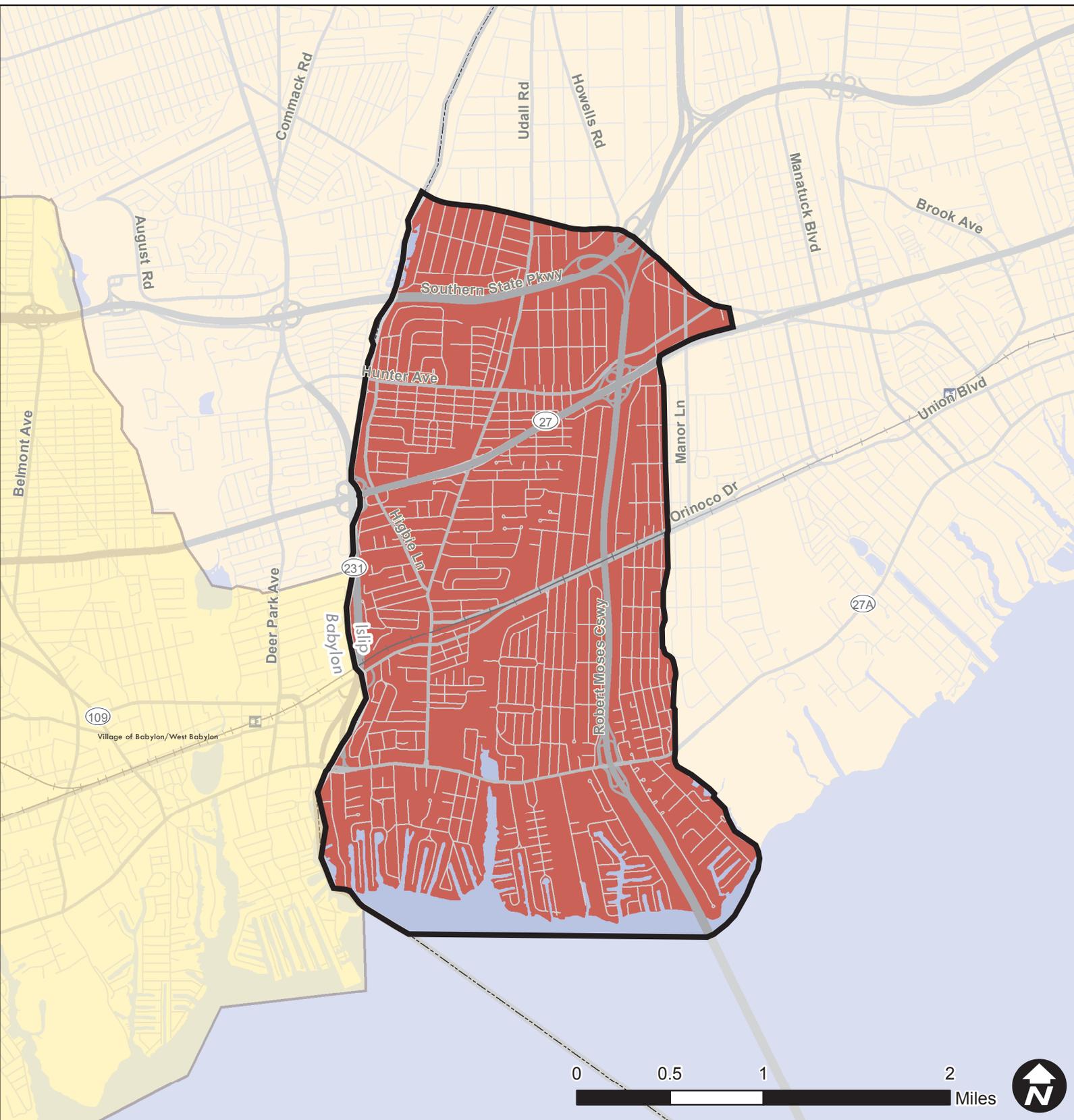
West Islip's geographic scope for NYRCR West Islip aligns with the Hamlet's boundaries, which also align with the U.S. Census' boundaries for the West Islip CDP. While the majority of damages from Superstorm Sandy were concentrated in the southern third of West Islip's boundaries, the Community did not want to exclude facilities further north that could potentially be utilized for future resiliency purposes, such as post-event drop-in centers. The Community also wished to include critical roadways that served as evacuation routes.

West Islip is located within the Town of Islip, a town that includes several other NYRCR Communities, including part of Captree Island, part of Fire Island, Bay Shore, West Sayville, and Oakdale. The map below illustrates NYRCR West Islip's location in the context of the other NYRCR Communities in Suffolk County.



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Figure 1: NYRCR Planning Area Location



Legend

- West Islip NYRCR Planning Area
- Other NYRCR Planning Areas
- Long Island Railroad Station
- Long Island Railroad

Roads

- Interstate
- Highways
- Streets
- Municipal Boundary



Source: NYS DOT, NYS DOS, MTA



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Demographic Overview

With the exception of data on ethnicity and race, all demographic data depicted below reflects data from the 2008-2012 U.S. Census Bureau American Community Survey (ACS) at the CDP level. Demographic data relating to ethnicity and race were derived from the 2010 Decennial Census to provide the most recent data available in those categories. The CDP level was selected because the availability and detail of current Census data vary by geographic location and level of analysis (CDP, Census Tract, Census Block, etc.). The CDP level provided a uniform level of data detail and reporting period.

NYRCR West Islip General Demographics

The age of the population in NYRCR West Islip shows a suburban distribution among the Census age groups, with approximately 26% ages one to 17 years old, 16% ages 18 to 34 years old, 35% between 35 and 54 years old, and 25% over 55 years old.^v The Community is 96% White, 1% African American, 2% Asian, and the remainder classified as 0.6% other and 1.1% two or more races. Five percent of the population is Latino or Hispanic. The residents report that the majority in the Community (nearly 98%) either speak English as the only language at home or rate their English proficiency as “very good.”^{iv}

Income and Poverty

The Community includes a diverse range of individual wage earners. About half (48%) of individuals earn less than \$35,000, while 24% earn \$75,000 or more. Although a large percentage of individuals (18%) earns less than \$10,000, a small percentage of individuals (4%) is under 150% of the poverty level.^v

Employment and Journey to Work

Seventy percent of residents in NYRCR West Islip work within Suffolk County, and the remaining residents work outside of Suffolk County within New York State. About 88% of workers drive alone to work or carpool. The next largest means of travel to work is by rail at 6%. The percentage of zero-car households is less than 1%, with 48% percent having three or more vehicles. While workers residing in the Community are employed in a diverse array of industries, 60% of workers are employed in four industries: educational services, health care and social assistance (26%); retail (12%); information, finance, insurance, and real estate (11%); and professional services (scientific, management, and administrative services) (11%).^v



A clock tower in quaint downtown West Islip.



Creating a bikable and walkable downtown is a long-term goal for West Islip residents.



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Housing

In NYRCR West Islip, most housing units (95%) are owner-occupied and 5% are renter-occupied. Of the total housing units in the CDP, or 8,841, 98% are occupied and 2% is vacant. Zero percent of rental housing is vacant. It should be noted that these figures were obtained from the U.S. Census Bureau's 2008-2012 ACS and may not fully represent the occupancy of homes that are currently under construction for repairs and/or mitigation measures following Superstorm Sandy. The mean household size is 3.08 persons per household.^v

Guidance and Insight from Demographic Analysis

The demographic analysis indicates that educational and health care facilities are critically important to the Community. Not only are they important public facilities that provide necessary services, they also serve as major employers. The importance to the Community of ensuring the resiliency of these facilities is therefore a goal strongly supported by analysis of the Census data.

Since most of the Community's workers commute by car, resilient roadway infrastructure for evacuation purposes as well as a means to travel to places of employment is important. Nevertheless, opportunities to create, improve, and increase the resiliency of the pedestrian, bicycle, and transit networks should not be overlooked.

Lastly, analysis of housing type and occupancy data suggests that resiliency of the housing stock is of vital importance. There are few renter-occupied units in West Islip and 100% of them are occupied, indicating a relatively low residential turnover. In the event of a catastrophic event, the loss of homes will result in displaced households with few relocation options within their Community. Consequently, analysis of the Census data strongly suggests that programs and incentives to protect and preserve the existing housing supply be recognized in the NYRCR Plan.



B. Description of Storm Damage

On Friday, October 19, 2012 a tropical depression formed in the Caribbean and in six hours intensified into a tropical storm. This 18th named storm of 2012 was designated Tropical Storm Sandy. By the following Wednesday on October 24 the storm's maximum sustained winds had increased to 74 mph and Tropical Storm Sandy was upgraded to a hurricane.

After passing through the Caribbean including Jamaica, Cuba, and the Bahamas, and fluctuating between a Category 1 and Category 2 hurricane, on Saturday, October 27, Hurricane Sandy turned north toward the U.S. coast. The storm made landfall around 8:00 pm on Monday, October 29 near Atlantic City, New Jersey. The winds had decreased below the threshold for a Category 1 hurricane and meteorologists and the press christened this near hurricane as "Superstorm Sandy."

Superstorm Sandy's historically unprecedented track approached New Jersey and New York from the east; storms typically approach from the south.^{vi} As a result, the track of Superstorm Sandy resulted in a worst-case scenario for storm surge and inundation for coastal regions from New Jersey north to Connecticut, including New York City and Long Island. The storm surge came ashore near the time of high tide along the Atlantic Coast and during a full moon when tides are strongest. These factors combined for record tide levels. The storm surge in New York Harbor reached almost 14 feet at the Battery. Forty-five miles away, on the south shore of Suffolk County in Islip, the storm surge reached nearly eight feet.^{vii} This was on top of the morning tide that had already inundated West Islip's bay front shore and had yet to retreat.

In addition to the triple threat of the storm surge, the coinciding high tide, and the full moon, other factors combined to create the devastation that resulted from Superstorm Sandy. Nearby maximum wind gusts ranged from 79 mph in East Farmingdale to 90 mph at Long Island MacArthur Airport in Islip. On the southward facing shores of Long Island, the storm surge was accompanied by fiercely destructive wave action. An off-shore buoy located 15 nautical miles southeast of Breezy Point on the Rockaway Peninsula reported a wave height of 32.5 feet (the largest since record keeping began).

The devastation along the mid-Atlantic seaboard was unprecedented. Many lives were lost and estimates of damage range from 50 to 100



Sequams neighborhood in West Islip on the day after Superstorm Sandy made landfall.



The view from a second story window of Superstorm Sandy's flood inundation.



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billion dollars. On the local level, along Long Island's South Shore, damage was also substantial.

The impact of Superstorm Sandy was tremendous in the small coastal hamlet of West Islip. Nearly every home and structure south of Montauk Highway took on water, with the most significant damages occurring closest to the Great South Bay where the elevation of the land slopes down toward the water. A "rapid building assessment" conducted by the Town of Islip immediately after Superstorm Sandy estimated that in West Islip, the storm caused over \$23 million in damages to homes.^{viii}

Much of NYRCR West Islip was built up in the mid-20th century when the standard was typified by single-family homes built at grade, many with basements. Partially as a result of this at-grade construction, throughout the planning process, many members of the Community shared that their homes and those of their neighbors were flooded with up to five feet of water. Floodwaters lifted cars off streets and boats off moorings and pushed them into homes. Some residents who did not heed the mandatory evacuation order issued by the Town Supervisor had to be evacuated by boat.

Community members recalled the stench of fuel oil as outside oil tanks broke loose and spilled their contents. This problem was particularly evident in the southwestern Sequams neighborhood of West Islip, where fuel tanks from the Babylon Fishing Station, which sits across the canal from Sequams, became dislodged and contaminated floodwaters. Sequams is a particularly low-lying area and although it is equipped with two stormwater drainage pumps, floodwaters inundated the pumps' electrical controls, leaving them temporarily inoperable until the Department of Public Works could implement stopgap measures. Residents also faced major health risks from the contents of West Islip's sanitary sewer system as the flooded system backed up into homes and contaminated floodwaters.

Wind gusts knocked down many trees, which in turn disrupted power lines, leaving thousands without electricity or heat. Despite the deployment of Long Island Power Authority's repair crews, thousands of residents were left without power for several days after the storm, some reportedly as long as two weeks. Superstorm Sandy was followed by snow and freezing temperatures and Community members told of further distress trying to keep from freezing in their damp, flooded homes. The nor'easter that chased Superstorm Sandy resulted in homes taking on water again, leaving residents to recover from a "second

"The devastation from the storm was beyond comprehension. We were crushed to see the mud, oil, seaweed and water that wrecked our belongings, furniture, sentimental items from our deceased parents, baby photos of our children, a wedding video. Things we can never replace. While we were grateful we were physically safe, our home—part of the foundation of our stability—was destroyed. Being displaced for the past 17 months has required us to create a "new normal". We've migrated... living in five different arrangements due to lack of available of housing."

—Sandra Galian, NYRCR West Islip
Committee Member



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punch” from Mother Nature. At night, when no streetlights illuminated the roadways, residents feared for their safety and property. Looting took place by both land and water with thieves maneuvering boats up to evacuated houses.

In desperation, some families used barbeque grills and kerosene heaters for heat, increasing the risk of fire and carbon monoxide poisoning. Those who were more prepared had generators, but gasoline shortages resulted in long lines and rationing. Although many residents in high flood risk areas had professional grade water pumps, the inundation was too severe for the equipment to handle.

In the wake of the storm, neighbors united to provide meals and lodging to those whose homes were too severely damaged to occupy, and donated time, labor, clothing and goods, and money to kick-start the recovery. The impacts of Superstorm Sandy were unprecedented for residents in West Islip, and the Committee and the Community have been eager to plan for a more resilient future.



Flooding of the streets and homes in the Sequams neighborhood of West Islip.



C. Critical Issues

The Community has expressed concern for a variety of recovery issues to protect the life and safety of Community members from future storms events and to strengthen the local economy and its ability to recover following a disruptive disaster event. Some significant and widespread issues include:

- Families need to be able to return to their homes quickly and to feel secure that they can make their homes more protected against future storms.
- Residents need streets that do not flood with every nor'easter, hard rain, or even very high tide.
- Residents need to feel reassured that communication systems will hold up to future storms, that procedures are in place to relay storm information, and that local governmental and non-governmental organizations are prepared for future emergencies.
- Residents want to see the public and private utilities taking measures to protect the infrastructure that is critical in the aftermath of an event—electric, gas, and communications—from floods and hurricane winds.
- The Community would like to know that recovery programs are supporting local businesses, which provide goods and services to West Islip residents and contribute to the local economy's resiliency.
- The Community has a large stake in the safety of Good Samaritan Hospital and Our Lady of Consolation's facilities to ensure that their operations continue in future storm events and that their vulnerable populations are protected.
- Residents are strongly in favor of sustainability, as long as progress respects and maintains West Islip's historic and cultural assets.
- The Community supports a strong regional focus on strengthening the beaches and dunes of the barrier islands that protect West Islip and the entire South Shore of Long Island.



Members of the Community review planning materials at a public engagement event.



D. Community Vision

The development of a Community vision statement was a critical early step for the NYRCR West Islip Committee because the vision would serve as a bellwether throughout the remainder of the planning process. All strategies and projects identified later were checked against the Community vision to ensure that recommended actions would not detract from the Community achieving its desired goals.

The Committee members were asked to imagine their communities 10-, 20-, and 50- years in the future and envision what it would look like to be safe and resilient. The Committee was asked to suggest ideas, words, and phrases that illustrate their Community's livability, uniqueness and appeal, aspects that could be improved, and those that should be preserved. The Committee's ideas were then distilled into a cohesive statement. Members of the public were also invited to reflect on their current and future Community and contribute to the Community Vision. Combining the Committee's ideas and the public's feedback, the vision statement for NYRCR West Islip is as follows:

West Islip is a tight-knit community where multiple generations of families reside amongst a protected and resilient coastal environment. The Community enjoys the active and thriving waterfront amenities for recreation and tourism, which are healthy and robust due to a longtime commitment to careful study and maintenance of the natural resources and manmade shoreline structures. The investment in a well-defined commercial corridor sustains an array of businesses that are supported by proud local residents and visitors alike.

Based on this vision statement, short-term, medium, and long-term goals for the Community are outlined below:

Short-Term Goals:

- Improve understanding of risk, preparedness, and resiliency for residents.
- Ensure communication of risk and emergency response to the public.
- Enhance recreational opportunities for West Islip youth population.



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Medium-Term Goals:

- Protect vulnerable populations, particularly the elderly and disabled, before, during, and after emergencies.
- Cultivate relationships between West Islip and Good Samaritan Hospital.
- Remove debris from choke points along creek corridors. Clean out the choked creek corridors.
- Maintain the cultural connection to the waterfront, giving people of all ages access and opportunities to enjoy and learn from the bay.
- Provide residents with knowledge and awareness linking their behavior to the health of Great South Bay.
- Preserve historically significant landmarks in West Islip, such as the LaGrange.

Long-Term Goals:

- Build up and maintain the barrier island beaches and dunes, which protect the mainland from wave action and storm surge.
- Improve the water quality in the Great South Bay so that wetlands and wildlife can thrive once again.
- Reduce flooding of residential streets.
- Support WIFLs! Enhance the opportunities and attractiveness of West Islip across generations. (West Islip for Life, or WIFLs, (pronounced “whiffles”) is a term of endearment for residents who love their Community and can’t imagine living elsewhere.)
- Improve downtown West Islip as a destination for residents and visitors to shop and dine.

E. Relationship to Regional Plans

To better understand the planning environment and the work done to date within the Community, it was paramount to understand the context and interrelated issues that occur on both the local level and across Suffolk County and Long Island. A review of pertinent plans, studies, and reports was conducted to understand the baseline condition as well as to imagine the desired future condition.

Review of Relevant Existing Plans and Studies

Many plans and studies have been prepared at the regional, County, and local levels that address the above issues and concerns and encompass the West Islip Community. At the regional level, broad findings and strategies are made that generally do not address the

"We made the decision not to evacuate. Nothing could have prepared us for the devastation that followed . . . The waves were the highest waves I ever saw, so high that I thought the house would be consumed . . ."

— Maria Figalora, NYRCR West Islip Committee Member



Community members attend a public engagement event where Committee Co-Chairs presented the Committee’s work to date.



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Community in a specific manner but for which policies and actions can affect the region and its communities. At the local level, specific plans can have a more direct effect on the day-to-day lives of residents and the future of the Community.

The following plans, listed in chronological order, have been identified and reviewed:

- Town of Islip Comprehensive Plan—Community Identity, West Islip, April 1979
- Long Island South Shore Estuary Reserve Comprehensive Management Plan, 2001
- Shopping Center and Downtowns, Suffolk County, New York, May 2006
- Suffolk County Demographic, Economic and Development Trends, November 2008
- Land Available for Development and Population Analysis Western Suffolk Country, October 2009
- Long Island Regional Planning Council's Long Island 2035 Visioning Initiative Final Report, December 2009
- Suffolk County Comprehensive Plan 2035, August 2011
- 1979 Town of Islip Comprehensive Plan Update, 2011
- Long Island Index's 2012 Profile Report, 2012
- Long Island Regional Economic Development Council, The Strategic Economic Development Plan for Nassau and Suffolk Counties 2013 Update, September 2013
- Suffolk County Department of Health, Comprehensive Water Resources Management Plan, January 2014

Planning information that relates specifically to the Community was scarce given that West Islip is a hamlet with limited planning capacity and resources. However, a few highlights exist. The *1979 Comprehensive Plan Update*,^x written in 2011, indicates that although the Town of Islip has grown by over 13,000 people from 2000 to 2010, mainly in the Hamlet of Brentwood, the Hamlet of West Islip has seen a decrease in the population. An understanding of the cause of the population decrease is important. The *Suffolk County Comprehensive Plan 2035*,^x prepared in 2011, indicates that Suffolk County's overall population is aging with fewer school-aged children, and that the fastest-growing segment of the population being persons aged 65 and over. The population is also gaining in diversity. These findings are significant to the Committee because they may indicate the need to expand options within the West Islip housing stock to accommodate an



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aging population. It may also indicate that young families are not able to or choosing not to move to West Islip, possibly due to affordability.

The original *Comprehensive Plan for the Town of Islip from 1979*^{xi} is a telling document because many of the planning and economic issues discussed continue to be relevant to the Community today. The reasons that residents loved West Islip in 1979—“Spacious living, privacy, a quality school system, proximity to the Long Island Railroad and highways”—are still true today. With regard to housing and affordability, West Islip’s lack of housing options is a long-time trend: “its growing population of older citizens may suffer hardships from excessive housing costs relative to income and from the high degree of auto dependency evident in suburbia. The young adult population . . . who have grown up in West Islip find themselves with similar constraints.” In addition, the Higbie Lane/Union Boulevard commercial area has been recognized for decades as having great potential as a hamlet center but is too auto-focused and in need of street-scape improvements: “although there is a large concentration of businesses, the area is not conducive to pedestrian traffic.”

The *Shopping Center and Downtowns*^{xii} report from 2006 indicates that West Islip’s Central Business District (CBD) at Higbie Lane and the Long Island Rail Road (LIRR) tracks is comprised of 20 stores on four acres of land and contains approximately 28,000 square feet of commercial space. Although there is no anchor store, in 2005 there was a 0% vacancy rate. West Islip also has 127 shopping center storefronts, and a relatively low shopping center vacancy rate of 6%. This is relevant to the Committee who expressed that West Islip residents want a vibrant and walkable downtown. The 0% vacancy rate in the CBD indicates that the issue is not necessarily a lack of interest and use by consumers; in fact, the CBD can likely absorb a greater intensity of commercial land uses. As the 1979 Town of Islip Comprehensive Plan points out, the problem may be that the current street design of the CBD is not conducive to the kind of walkable and bikable downtown desired by today’s Community; relatively simple streetscape investments could change and enhance the entire identity of the downtown commercial area.

Additional plans relating to available, developable land and desirable types of development provide further insight into West Islip’s potential future downtown identity. The Long Island Index’s *2012 Profile Report*^{xiii} asks the following question: “With so few acres left to develop, with housing construction slowing and many highways at capacity, has Long Island ‘maxed-out’ at its current numbers of population and jobs?” The report goes on to suggest that Long Island can continue to grow and

The reasons that residents loved West Islip in 1979—“Spacious living, privacy, a quality school system, proximity to the Long Island Railroad and highways”—are still true today.

— Town of Islip Department of Planning and Development, *Town of Islip Comprehensive Plan—Community Identity West Islip*, April 1979.



Residents love to support the locally owned businesses in downtown West Islip.



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prosper by adding housing and jobs in downtowns such as West Islip's. Downtowns close to transportation can be made into vibrant mixed-income, mixed-use communities attractive for both younger families and empty-nesters. This idea is relevant to West Islip as a strategy to attract consumers and businesses to the downtown while opening options to retain young and aging West Islip residents. The *Land Available for Development and Population Analysis Western Suffolk County*^{xiv} report indicates that West Islip has approximately five acres of developable land zoned commercial and 22 acres of vacant developable land zoned residential. The locations of these opportunity properties should be investigated for potential incorporation into a downtown revitalization plan.

The *Long Island South Shore Estuary Reserve Comprehensive Management Plan*^{xv} from 2001 includes the Great South Bay and the other bays that are part of the estuary that lies between much of mainland Long Island and the barrier beach. The plan includes recommendations for management of the estuary in a holistic manner. The plan addresses "improving water quality, restoring and protecting living resources, expanding public use and enjoyment, sustaining the estuary-related economy and increasing public education, outreach and stewardship . . ." This perspective is very relevant to West Islip as a bay-front community that is inextricably tied to the estuary both economically and environmentally.

The *Comprehensive Water Resources Management Plan*^{xvi} was developed by Suffolk County Department of Health for the purpose of updating a similar study that was done in 1987, the antecedent of which was the Long Island 208 Study (1978). The study involved the collection and testing of extensive groundwater samples as well as the mapping of land uses and build-out projections. The study reports that elevating levels of nitrogen in the Great South Bay have contributed to several measures of environmental deterioration including "degradation of our protective natural infrastructure—wetlands and seagrass beds that act as wave and storm surge buffers." The report contains startling evidence that the tidal wetlands and seagrass that help to attenuate wave action and minimize shoreline erosion for West Islip and improve water quality in the Great South Bay, are being lost at a rapid rate: there was an 18-36% loss of tidal wetlands between 1974 and 2001 according to the New York State Department of Environmental Conservation (NYS DEC) and the New York State Seagrass Taskforce estimates that the acreage containing seagrass in Long Island's bays and harbors has shrunk by 90% since 1930.



Nitrogen can cause negative impacts on surface and groundwater quality and often comes from unmaintained onsite wastewater treatment systems. While West Islip is sewered and potential for nitrogen loading is reduced, the NYRCR West Islip Community, however, recognizes their contribution of nitrogen and other pollutants to the degradation of surface and groundwater quality. The Committee has therefore recommended several projects that would help to curb pollutants in stormwater runoff and thereby help to restore natural resource areas, including its creeks and wetland areas.

The report also delves into groundwater and surface water quality and implications for drinking water sources. Since NYRCR West Islip residents rely on groundwater as their sole source of drinking water, the quality and quantity of groundwater water is critical. Although the report states the concentrations of several contaminants have increased since 1987, “Suffolk County’s groundwater supply remains for the most part, a high quality source of potable water.”

Potential Regional Issues and Concerns

Long Island spans over 118 miles from New York Harbor to Montauk Point and has a maximum width of approximately 23 miles between the Long Island Sound to the north and the Atlantic Ocean to the south. Long Island, the 11th largest island in the nation, has a land area of over 1,400 square miles and is larger than the state of Rhode Island. Due to its island geography, many of the communities and counties within the Island share similar challenges as well as opportunities related to the natural environment, physical infrastructure, and other built systems. Additionally, it is important to understand the cause and effect relationship that occurs on the Island. Discussions with the eight Suffolk County NYRCR Communities revealed several issue areas that are common across the South Shore and in the barrier islands. These planning topics are reiterated in the Long Island Regional Planning Council’s *Long Island 2035 Visioning Initiative Final Report*^{xvii}. Potential Island-wide issues are expanded upon below.

Natural Environment: Long Island has 1,180 miles of shoreline fronting the Atlantic Ocean, Long Island Sound, and many lakes, bays, inlets and canals. Approximately one-fifth of Long Island’s land is protected from development by Federal, State, County, or municipal entities. About half of this land represents over 800 public parks on Long Island ranging from small community playgrounds, such as West Islip Marina and Beach, to larger parks like Gardiners County Park.^{xvixvii} The continued



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protection of Long Island's water supply from sole source aquifers is also a significant regional issue.

Developable Land Supply: Almost two-thirds of Long Island's land surface is developed with buildings, pavement and other manmade structures. This condition in combination with the large amount of protected/preserved land results in a limited supply of available vacant land to accommodate new housing or economic development activities. To achieve development goals of providing housing for young families and aging households, West Islip should seek opportunities for redevelopment of underutilized parcels outside of areas that may upland from hazardous coastal areas.

Water Quality: Long Island's aquifers receive their fresh water from precipitation that percolates into the ground and is recharged into the groundwater system. The greatest threat to the quality of this water is development (residential, commercial, and industrial) in sensitive areas that would impede the absorption of precipitation and add pollutants to the excess runoff.^{xvixvii} Nonpoint source pollution, such as contaminated stormwater runoff typically contains fertilizer and pesticides, oil and other automobile fluid, as well as animal and pet waste. This type of pollution is carried into surface waters, such as West Islip's Creeks, Lake Capri, and the finger canals, and alters the chemistry of large bodies of water, such as the Great South Bay. The Great South Bay is a significant and diverse habitat comprised of features such as barrier beaches and islands, wetlands, and marsh islands. Additionally, the bay is a key component of local economic and recreational activities, such as fishing and crabbing, which rely on the health and stability of the bay ecology.

Utilities: Electricity and the susceptibility of the power grid are both national and regional issues of concern. Long Island's Regional Economic Development Council (REDC) *Strategic Economic Development Plan for Nassau and Suffolk Counties 2013 Update*^{xviii} has similarly stressed the importance of addressing utility vulnerabilities that currently exist across the Island. More specifically, one of the longest-lasting impacts of Superstorm Sandy was the vulnerability of Long Island's electric power grid that left West Islip residents without power for up to two weeks. The focus of many resiliency initiatives is autonomous control capabilities that when employed would make Long Island's grid more resilient during weather events and able to recover more quickly in the aftermath.

Climate Change: Long Island is vulnerable to rising sea levels, especially as this may affect storm surges. Flooding generated by major weather



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events, 100-year storms, or just a heavy downpour, causing damage to residences and property, have been occurring with greater frequency. According to a report prepared by Columbia University, the City University of New York, and Cornell University, sea level is anticipated to increase by two to five inches in the New York City and Long Island region by the 2020s and by 12 to 23 inches by 2080.^{xix} Should polar icecaps melt rapidly, climate models project that sea levels will rise even more. As a result, climate change is a significant island-wide issue.

Emergency Preparedness: Emergency preparedness projects are important to improve the overall safety of Long Island residents, including maintenance of evacuation route access and improvements to the communication capability for a multi-jurisdictional response during emergency events. Another regional consideration is the reliability and resiliency of the distribution of gasoline, natural gas and diesel fuels after emergency events.



Residents expressed the desire to pass down the strong local traditions of boating, crabbing, and fishing.



Section II: Assessment of Risk and Needs

A. Description of Community Assets and Assessment of Risk

One critical element of a successful NY Rising Community Reconstruction (NYRCR) Plan is ensuring that the NYRCR Community's social, economic, and natural resource assets and systems that were impacted by Superstorm Sandy are more resilient against future storms. Assets that have been or may be affected by future storms were identified to help determine whether reconstruction strategies and implementation actions will effectively reduce risk to all aspects of the Community.

Assets include critical facilities and infrastructure where a Community's economic, environmental, and social functions, including public services, occur. Examples of assets include facilities such as West Islip's schools; medical facilities like Good Samaritan Hospital; emergency and public safety services including fire and police protection; and natural, cultural, and recreational resources such as West Islip's creeks and West Islip Beach. Assets also include critical infrastructure such as transportation roadways, mass transit, utility networks, and stormwater systems required to support essential Community functions.

The purpose of the inventory is to create a comprehensive description of the assets within or servicing the NYRCR 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 and provides the basis for examining assets in more detailed risk mapping and assessment.

Assets were initially identified based on their location within three geographic areas at risk to storm inundation and sea level rise:

- Extreme Risk Area: Assets located in the extreme risk area that 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 located outside of the Extreme Risk Area that are currently at occasional risk of inundation or at future risk from sea level rise;



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- 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.

The complete inventory (included in Section V, “Additional Materials”) provides more detail 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 Committee identified the assets’ value as high, medium, or low.

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 sever 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: 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.

Low: Asset(s) that play a role in the functioning of a community’s day to day life, but whose loss could be managed and overcome within 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.

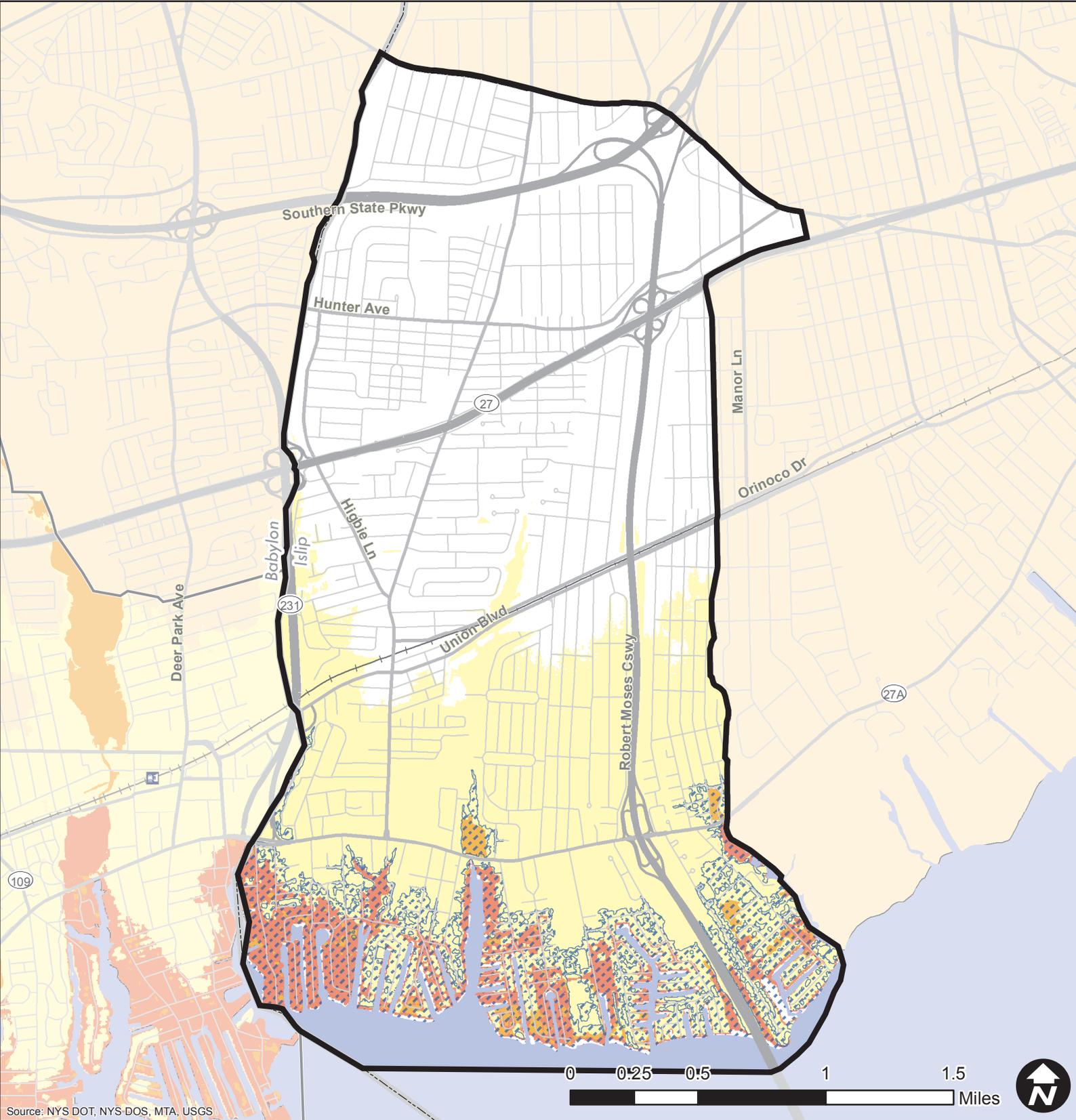
As part of the complete inventory, contributing landscape attributes and physical features of the asset that influence the severity of storm impacts were also categorized. For example, assets that are located near shorelines absent of wide beaches and protective vegetation are at increased risk of flooding. Specific features of the asset that are at risk (e.g. mechanical equipment below flood elevation) were also recorded in the inventory to help guide the selection of appropriate strategies and projects for risk reduction.

Figure 2 illustrates the NYRCR West Islip risk areas as well as the extent of flood inundation during Superstorm Sandy.



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Figure 2: Risk Area and Hurricane Inundation



Source: NYS DOT, NYS-DOS, MTA, USGS

Legend		Roads		Risk Area	
	West Islip NYRCR Planning Area		Interstate		Extreme
	Other NYRCR Planning Areas		Highways		High
	Long Island Railroad Station		Municipal Boundary		Moderate
	Long Island Railroad				Hurricane Inundation





The Community assets and their corresponding risk areas, identified by the Committee and Community at large, are presented in the following tables. The complete asset inventory, including landscape attributes, vulnerability scores and other risk factors, is found in Section V, “Additional Materials.”

i. Description of Community Assets

An overview of the NYRCR Community assets for each asset class is provided below. Over 200 assets were originally catalogued based on this initial level of review. The asset classifications, which include facilities, places, and systems, are as follows:

- Natural and Cultural Resources
- Health and Social Services (Life Safety, Administration, and Education)
- Infrastructure Systems (Transportation and Utilities)
- Housing
- Economic

Natural and Cultural Resources

Natural and Cultural Resources include natural habitats, wetlands and marshes, recreation facilities, parks, open spaces, religious establishments, libraries, museums, historic landmarks, and performing arts venues.

The South Shore of Long Island has historically been and continues to be a natural and recreational resource. Intact and ecologically stable natural resources are vital components to the resiliency of coastal areas, such as West Islip. Their degradation or removal disrupts the natural storm surge buffering capacity of coastal zones and places inland resources at greater risk during storm events. In NYRCR West Islip the coastline has been almost entirely developed, but areas of natural resources still remain, primarily confined to wetlands associated with Willetts Creek, Trues Creek, and Sampawams Creek. These resources are located in all three risk areas. The Community identified stretches of beaches along the southeastern coast of West Islip. One particular stretch is the West Islip Beach and Marina at the end of Beach Drive, located in the Extreme Risk Area.

One park, Gardiners County Park, is located on the eastern boundary of NYRCR West Islip in the Extreme Risk Area. Another park that is significant to the Community, Casamento Park, is located outside of the risk areas.



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Health and Social Services: Life Safety

Life Safety includes fire protection, police services, hospitals, and emergency operations facilities. There are five emergency operations facilities in Suffolk County, two of which are found along the South Shore of Long Island: the Babylon Town Civil Defense facility is located directly north of the Village of Lindenhurst NYRCR Community and the Islip Public Safety facility is located between the NYRCR West Islip and the Oakdale/West Sayville areas. These facilities coordinate life safety services during an emergency.

The Suffolk County Police Department provides police protection for West Islip with stations in West Babylon and Bay Shore. West Islip has two fire stations, both of which are located outside of the risk areas (see Table 1).



The protection of critical facilities, such as the West Islip Fire Station on Union Boulevard, is a public safety and resiliency issue.

Table 2: Fire Stations

Asset	Risk Area(s)*	Community Value
West Islip Fire Station 1	N/A	High
West Islip HQ Fire Station	N/A	High

*N/A – Not applicable as asset is located outside of Risk Area

West Islip contains Good Samaritan Hospital Medical Center, which provides medical services to NYRCR West Islip and the surrounding areas. The facility is located within the moderate risk area (see Table 2) and although the floodwaters on Beach Drive lapped at the hospital’s property edge, the hospital and its access points did not severely flood. The hospital continued operations throughout and after the storm. West Islip is also served by Our Lady of Consolation Nursing & Rehabilitative Care Center, a 450-bed care center. Located adjacent to Good Samaritan Hospital on Beach Drive closer to the Bay, Our Lady of Consolation’s facility administrators evacuated 60 first-floor residents with help from the West Islip Fire Department in preparation for Superstorm Sandy, as well as relocated all critical services from the first floor and otherwise sheltered in place.

Table 3: Hospitals and Care Facilities

Asset	Risk Area(s)	Community Value
Good Samaritan Hospital Medical Center	Moderate	High
Our Lady of Consolation	Extreme	High



Good Samaritan Hospital Medical Center located on Montauk Highway is a regional health service facility and a major local employer.



Three outpatient healthcare clinics are located in the Community, including a kidney dialysis center and an outpatient physical therapy center located outside the risk area, and one outpatient radiology center located in the moderate risk area (see Table 3). It is particularly important that the dialysis center be located outside of risk areas because dialysis treatment is an ongoing and frequent need for diabetic patients that should not be disrupted due to flooding or other hazards.

Table 4: Extension Clinics

Asset	Risk Area(s)*	Community Value
Good Samaritan Hospital Med Center – Radiological Storage	Moderate	High
Good Samaritan Hospital at Chronic Dialysis Center	N/A	High
Saint Francis Hospital (Medical – Nuclear Cardiology)	Moderate	High

*N/A – Not applicable as asset is located outside of Risk Area

Health and Social Services: Administration and Education

Administration and Education Community assets serve a variety of public functions, from treatment facilities to general purpose shelters in public schools, from post offices to town halls. During a storm event, some of these facilities may potentially serve as disaster response and recovery centers and vital sources of information. It is important to identify these facilities for future disaster management and preparedness planning as they may serve as future locations from which to deliver goods and services to storm impacted residents. According to the Suffolk County Office of Emergency Management, West Islip does not currently have any emergency shelters. In the aftermath of Superstorm Sandy, residents were directed to Brentwood.

One Office for Persons with Developmental Disabilities (OPWDD) location is present in NYRCR West Islip in the moderate risk area near Montauk Highway (see Table 4). These types of facilities provide care and training for residents with developmental disabilities and it is preferred for them to be located outside of risk areas to prevent unnecessary risk to clients.

Table 5: NYS OPWDD State and Voluntary Program Locations

Asset	Risk Area(s)	Community Value
NYS OPWDD Intermediate Care Facility	Moderate	High



Our Lady of Consolation Nursing and Rehabilitative Care Center located on Beach Drive evacuated 60 first-floor residents before Superstorm Sandy.



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The West Islip post office is located in the center of the Community near the Long Island Rail Road (LIRR) rail line within a non-risk area (Table 5).

Table 6: Post Offices

Asset	Risk Area(s)*	Community Value
West Islip Post Office	N/A	Medium

*N/A – Not applicable as asset is located outside of Risk Area

There are twelve schools in West Islip, six of which are in non-risk areas (see Table 6). The remaining six schools are located in the moderate risk area near the LIRR rail line or Montauk Highway. No schools currently serve as shelter locations in West Islip, but the Community is interested in exploring the potential use of one of these facilities after future storm events.

Table 7: Schools

Asset	Risk Area(s)*	Community Value
Bayview School	Moderate	Medium
Paul E. Kirdahy Elementary School at Captree (The Bridges Academy)	Moderate	Medium
Saint John the Baptist High School	Moderate	Medium
Paul J. Bellew Elementary School	Moderate	Medium
West Islip High School	Moderate	Medium
Beach Street Middle School	Moderate	Medium
Udall Middle School	N/A	Medium
Manetuck School	N/A	Medium
Oquenock School	N/A	Medium
Our Lady of Lourdes School	N/A	Medium
Paumanok School	N/A	Medium
Westbrook School	N/A	Medium

*N/A – Not applicable as asset is located outside of Risk Area

Infrastructure: Transportation

Assets in this category include transportation infrastructure and related facilities. Major roadways extending east-west through West Islip include the Southern State Parkway, Sunrise Highway (SR 27), Union Boulevard, and Montauk Highway (SR 27A). All of Union Boulevard and



West Islip Public Library as well as several educational facilities border Willetts Creek, which flooded during Superstorm Sandy.



the majority of Montauk Highway run through the moderate risk area; a portion of Montauk Highway between Barberry Road and Hall Street is classified as a high risk area. Major roadways that run north-south include the Robert Moses Causeway, Udall Road, and Hibgie Lane, each of which serves as an evacuation route. All of Udall Road is located outside of the risk areas, while the southern sections of Hibgie Lane and the Robert Moses Causeway are located in the moderate risk areas until approximately Union Boulevard, when they extend northward out of the risk areas.

While there is no train station in West Islip (the nearest station is in neighboring Babylon), LIRR’s Babylon Yard is on the western boundary the Community adjacent to the railroad tracks. One grade crossing (gate-protected) is located just east of Babylon Yard at Hibgie Lane and along the LIRR right-of-way. Other transportation assets include the Wagstaff Heliport, which is a helicopter pad that is privately owned and reserved for private use, and the New York State Department of Transportation (NYS DOT) salt storage facility at the Robert Moses Causeway (see Tables 7 and 8).

Table 8: Heliports

Asset	Risk Assessment Area(s)	Community Value
Wagstaff Heliport (Open)	Extreme	High

Table 9: NYS DOT Facilities

Asset	Risk Area(s)	Community Value
Robert Moses Causeway (Salt Shed)	Moderate	Medium

Infrastructure: Utilities

A variety of utility properties providing water supply, communications, flood control and rail support are situated within the moderate risk area of NYRCR West Islip (see Table 9). Two flood control properties are located in the extreme risk area of the Sequams neighborhood. They are the drainage pump stations on Eaton Lane and Sequams Lane Center. These assets are critical to flood control on these streets, particularly given the low elevation of the neighborhood and the frequency of flooding. Water, electric, and gas distribution systems are found throughout the risk areas as they serve all of West Islip’s residences, but due to security issues, this data was unavailable and therefore was not mapped.



Table 10: Infrastructure Resources

Asset	Risk Area(s)	Community Value
2 flood control properties	Extreme	High
1 microwave tower	Moderate	Medium
1 water treatment plant	Moderate	High
1 drinking water well	Moderate	High
1 rail support facility	Moderate	Medium

Housing

An estimated 489 and 110 single-family structures are located within the extreme and high risk assessment areas, respectively, of NYRCR West Islip. These areas also include seven multi-family structures (see Table 10). Nearly 4,000 residential structures, primarily single-family residences (3,886 homes) are found within the moderate risk area. All of the at-risk residential structures in the extreme and high risk areas are located south of Montauk Highway while a majority of those in the moderate risk assessment area are situated north of Montauk Highway.



Flooding in the aftermath of Superstorm Sandy in the Sequams neighborhood.

Table 11: Housing Resources

Asset	Risk Area(s)	Community Value
489 single-family, 7 multi-family structures	Extreme	High
110 single-family structures	High	High
3,886 single-family, 34 two-three-family, 24 multi-family structures	Moderate	High

Economic Centers

Almost all of the at-risk commercial properties in the Community, or 77 out of 80, are located in a moderate risk area, primarily along Montauk Highway with the remainder located adjacent to and south of the Montauk Branch of the LIRR track (see Table 11). There is one commercial property in both the extreme and high risk areas and one industrial property in the extreme risk area.

Table 12: Economic Resources

Asset	Risk Area(s)	Community Value
1 commercial property	Extreme	Medium
1 commercial property	High	Medium
77 commercial, 1 industrial properties	Moderate	Medium



Downtown West Islip’s small businesses on Higbie Lane are ideally sized and situated for walkability.



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 identify projects and understand measures to help restore and protect its assets at greatest flood risk while also ensuring appropriate long-term economic growth.

A standardized risk assessment tool^{xx} was used to assist the NYRCR West Islip Committee to assess and quantify the risk to their assets, and later, to test whether various projects are effective at reducing risk. 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 for input into the risk assessment tool included:

- Assets situated in extreme and high risk areas
- Assets designated by FEMA as “FEMA-critical”^{xxi} in moderate risk areas
- Locally-significant community identified assets (High Community Value) in moderate risk areas
- Assets with High Community Value located outside of the extreme, high, or moderate risk areas
- Assets providing critical life safety services

In addition, assets in close proximity with similar functions and vulnerable characteristics were grouped as a single asset to the maximum extent possible because these assets would likely experience the same effects from storm events. For example, residential neighborhoods with similar construction were combined by risk area.

For each asset, or group of assets, that was advanced through the risk assessment tool, a risk score was produced based on three contributing factors to an asset’s overall risk:^{xx}

Hazard x Exposure x Vulnerability = Risk

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, an asset located in an extreme risk area experiences hazards with greater frequency and intensity than assets in a high or moderate risk area. This risk assessment uses the “100-year” flood event, which has a 1% chance of occurrence in any given year, as the baseline event.

- **Exposure:** The variability of local topographic and shoreline features which tend to increase or decrease 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, on a rocky shoreline, or 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 by the capacity of an asset to return to service after a storm. 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 to be significantly vulnerable.

The final risk scores provide the Community with a general sense of which assets are at greatest risk and where projects and management measures are needed to adapt assets to future storms and environmental changes. The list of assets advanced through the risk assessment tool, and their corresponding risk scores, are provided in Section V, “Additional Materials.”

NYRCR West Islip Risk Assessment Results

The Figure 3 and Table 12 illustrate NYRCR West Islip’s assessment of risk to assets and systems. The identification number on the table corresponds to the ID number shown on the map. The table is also color coded by risk level and an overview follows. Assets were placed into the following risk categories, based upon their risk scores.

- **Severe Risk** assets are shown in red in the table and map. Assets at Severe Risk have both very high exposure and very

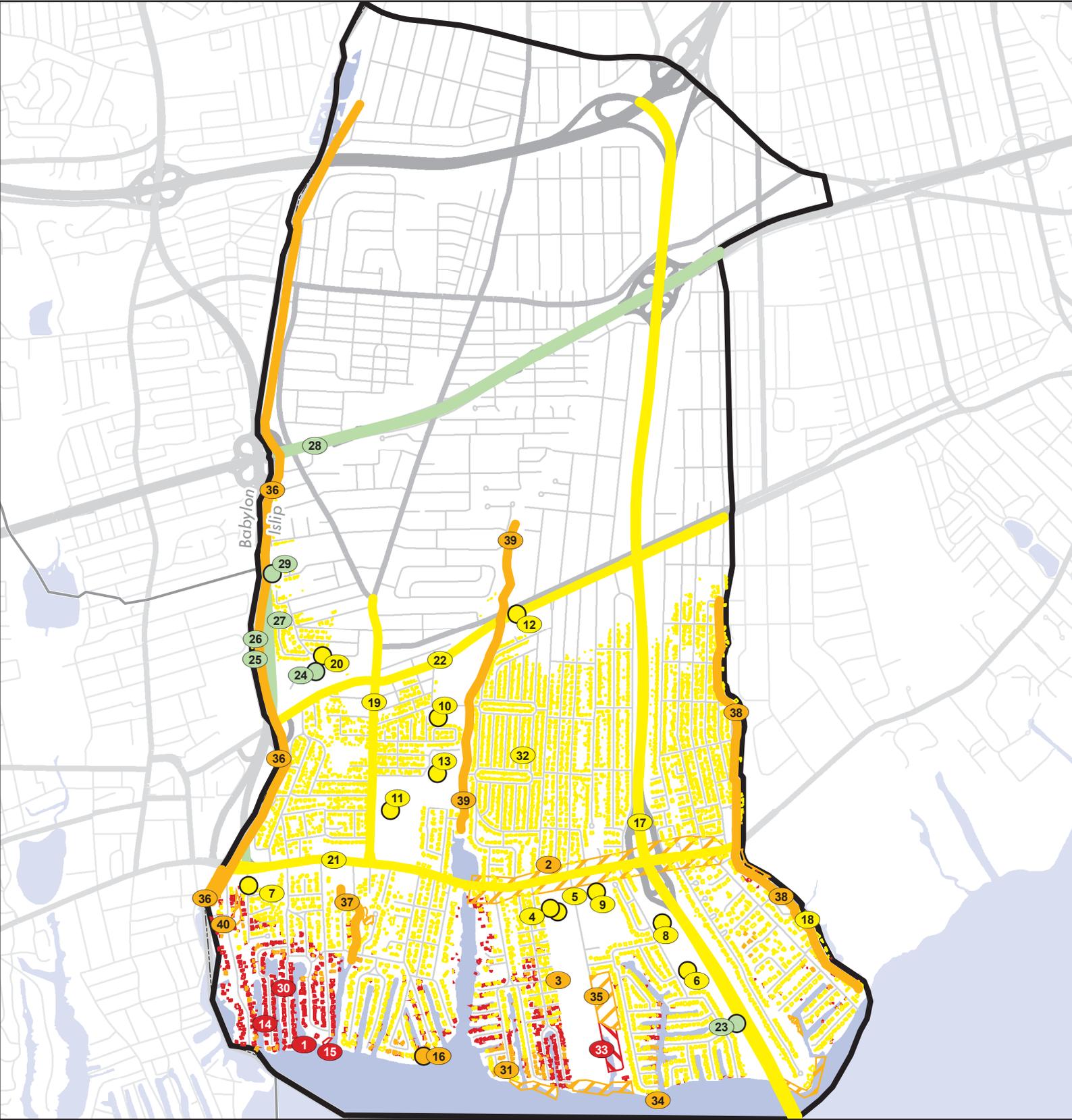


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high vulnerability to storm effects, which could represent that the asset is in a dangerous situation or location.

- **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.
- **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.

The asset inventory catalogued approximately 40 assets, which were carried through for analysis in the Risk Assessment Tool. Generally, but not in all instances, the risk assessment tool showed that risk dissipates the further upland an asset is from the water. Some assets were included that are not located within the risk areas because the Community identified them as having a High Community Value, such as Sunrise Highway. Risk score classifications ranged from residual risk, such as at the LIRR Babylon Yard, to severe risk at the Eaton Lane pump station.



		Severe Risk		West Islip NYRCR Planning Area
		High Risk		Other NYRCR Planning Areas
		Moderate Risk		Municipal Boundary
		Residual Risk		

0 0.25 0.5 Miles

Nassau Suffolk

Source: NYS DOT, NYS DOS, MTA



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Table 13: Risk to Assets and Systems

Asset Class	ID #	Asset Name
Economic	1	Babylon Yacht Club
Health and Social Services	2	Medical and Commercial District
	3	Our Lady of Consolation
	4	Good Samaritan Hospital Medical Center - Radiological Storage
	5	Good Samaritan Hospital Medical Center
	6	Bayview School
	7	NYS OPWDD Intermediate Care Facility
	8	Paul E. Kirdahy Elementary School at Captree (The Bridges Academy)
	9	Saint John the Baptist High School
	10	Beach St Middle School
	11	Paul J. Bellew Elementary School
	12	Saint Francis Hospital (Medical - Nuclear Cardiology)
	13	West Islip High School
	Infrastructure Systems	14
15		Pump-Out Station - Eaton Lane
16		Wagstaff Heliport
17		Robert Moses Cswy
18		Sanitary Sewer Lift Station
19		Higbie Ln
20		LIRR Microwave Tower
21		Montauk Hwy
22		Union Blvd
23		Department of Transportation
24		Babylon Yard (LIRR)
25		Lilco - Babylon
26		Marketspan Gas Corp - Babylon
27		State Hwy 231
28		State Hwy 27 Sunrise Hwy
29		Suffolk County Water Authority - Treatment Plant and Well
Housing	30	Residential Housing - Extreme Risk Area
	31	Residential Housing - High Risk Area
	32	Residential Housing - Moderate Risk Area
Natural and Cultural Resources	33	West Islip Town Beach and Marina Park
	34	Beach
	35	Beach Dr. Fields
	36	Sampawams Creek
	37	Skookwams Creek
	38	Trues Creek
	39	Willetts Creek
	40	Freshwater Wetland
Risk Range Key		Severe Risk
		High Risk
		Moderate Risk
		Residual Risk



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In general, the area south of Montauk Highway has a high concentration of severe, high, and moderate risk assets. This area is predominantly comprised of residential properties, many of which back onto canals and are subject to persistent, recurring flooding during both major storms and typical seasonal weather and high tides. Throughout the course of the planning process, the susceptibility of this area was raised by West Islip residents at the Public Engagement Events and by members of the Committee at Committee meetings. The risk to residential properties south of Montauk Highway and the need to adequately address this risk was of great concern to the Committee. This anecdotal evidence was validated through the risk assessment analysis as resources situated south of Montauk Highway with adjacencies to the canals and those towards the Great South Bay generally scored in the severe or high risk range. Also contributing to the high risk scores of several assets was the vulnerability of the power infrastructure and the lack of electricity service for as much as two weeks following Superstorm Sandy. A combination of more resilient construction techniques (e.g. elevation of housing and utilities), combined with improvements to the power infrastructure, would greatly reduce risk to these assets.

One notable exception was Good Samaritan Hospital with a moderate risk score. Though the facility is located south of Montauk Highway, the hospital carried out exceptionally well-planned and well-practiced emergency response procedures and therefore did not suspend operations. They were back to standard operating procedures within a short time. The Community was fortunate that Superstorm Sandy did not bring heavy rains for West Islip, which could have more significantly disrupted the hospital's operations. This facility is classified as FEMA-critical and was assessed by the Community as having High Community Value. Given the High Community Value of the hospital, its FEMA-critical classification, and future risk of sea level rise, the hospital's moderate risk score should not lead the Community to dismiss potential resiliency measures for the hospital and its access routes.

Assets with the highest risk scores in the severe range include the drainage pump stations on Sequams Lane Center and Eaton Lane, residential housing in the extreme risk area, West Islip Beach and Marina, and Babylon Yacht Club. Typically this is a result of being located in the extreme risk area; directly on or near the bay or finger canals; with the waterline frequently at shore defenses; and often with shoreline stabilization structures that are deteriorating or not built to anticipated sea level rise conditions. In addition, these assets south of Montauk Highway are typically located on land that was previously



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wetlands and subsequently filled for development; the result of this legacy is that the soils are typically less stable and structures built here tend to settle over time, reducing structural integrity and increasing potential for flooding. Of these assets that are severely at risk, the two pump stations are considered FEMA-critical. Based on the Community's valuation of asset types, the pump stations and the residential housing are considered to be of High Community Value.

The scoring of these assets helped to inform, focus and provide context for the development of needs and opportunities and the types of resiliency strategies and management measures considered by the Committee.



A high rescue vehicle can be critical in evacuation situations when roads are too flooded to be traversed. The Community hopes to reduce flooding and improve residents' preparedness to avoid such situations.



B. Assessment of Needs and Opportunities

The NYRCR West Islip Committee identified needs and opportunities based on the Community's reconstruction and economic growth goals, risk to Community assets, existing plans and studies, and the Community's overall vision for its future.

During a disaster, many things can go wrong, including communications breakdowns, equipment failure, infrastructure damage and more. The term "need" is used here to illustrate infrastructure and 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.

Thinking through what took place during the storm event, as well as the damages that ensued, provided the Committee with insights as to the inherent resiliency of those structures, procedures, and operations. This assessment process led to a frank discussion of Community needs and included recognition of changing climate patterns and the economic and practical necessity of factoring resiliency and adaptive capacity into recovery 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 as to create a Community that is stronger and more resilient to future storms. Resilient communities tend to have redundant infrastructure and communication systems, robust social and civic institutions, diverse and flexible adaptation strategies, and collaborative public and private partnerships.

Throughout this plan, strategies and projects are categorized and discussed in terms of their Recovery Support Function (RSF). President Barack Obama established six RSFs in 2011 through the "National Disaster Recovery Framework (NDRF)." An RSF is an operational or coordinating structure defined by the federal government for the purpose of delivering recovery assistance to State, local and tribal governments.



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The six RSFs are listed and defined below.

- **Community Planning and Capacity Building:** The Community's ability both to 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:** The restoration, and potential expansion of public health programs, health care facilities and essential social services, especially for vulnerable populations on the Island.
- **Housing:** An assessment of local housing conditions and associated risk levels is critical as communities continue to rebuild.
- **Infrastructure:** Investments in infrastructure can be effective both in rebuilding capabilities lost during the storm and in reducing future risks to critical assets.
- **Natural and Cultural Resources:** The rehabilitation, management and protection of the natural and cultural resources that define the Community's physical and human character. Natural resources include aspects of a community's underlying ecological habitat such as ground and surface waters, streams and creeks, woodlands, wetlands and open marsh, beaches, and dunes. Cultural resources may include historic properties and places that are part of that community's identity and social life.



A Community member provides feedback on needs and opportunities at a public engagement event.

The Committee and Community identified several needs and opportunities through the NYRCR planning process that fall under the RSFs.

Community Planning and Capacity Building

The Community would benefit from increased education and awareness related to risk mitigation and management, disaster preparedness, and recovery resources. 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 and some had to be rescued during the storm, putting themselves and rescue workers in peril. In the aftermath only a minority knew how to access critical response and recovery resources.



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Upon reflection, the Community realized both the need to create awareness throughout West Islip using low- and high-tech means, and the need for more local recovery resources. Furthermore, the risk assessment revealed the criticality of roadways for evacuation purposes, particularly for residents below Montauk Highway and in the Sequams neighborhood.

In addition, the Community experienced an extremely difficult time following Superstorm Sandy, including two weeks without electricity (or heat), and several cold winter months of clean up to piece their broken houses and lives back together. The Community recognized the need for a centrally located public facility to serve as a drop-in center where residents would reliably find the basic necessities of electricity, heat, and water. This need led to the opportunity to make an existing public facility more resilient with backup power.

Economic Development

NYRCR West Islip is situated between two strong downtown business districts in Babylon and Bay Shore, and the Community feels that its potential is often overlooked for investment by business owners and public works programs. The Community has a long-term vision for a quaint, welcoming, and walkable commercial district that is distinctly West Islip's. This need was also viewed as an opportunity after the Committee viewed the risk assessment map and saw that West Islip's central business district is located just outside of the risk areas. The Community would benefit from the strategic input of public investment into the revitalization of its downtown commercial district to create a catalyst for attracting consumers and a variety of new businesses.

Health and Social Services

The Community holds a deep appreciation for Good Samaritan Hospital, both for the services and employment that it offers on a daily basis and for the medical center's continuation of services during and after Superstorm Sandy. However, the storm was so devastating to the Community that they expressed the need to provide increased access to mental and physical health care in the weeks and months following a major event. Similarly, while the emergency service entities responded expertly and tirelessly, the Community expressed that additional resources could have been assigned to patrolling the evacuated neighborhoods for increased safety and security. Both of these needs relate strongly to the large presence of residential housing assets below Montauk Highway and the low-lying roadways that serve them that fall, according to the risk assessment tool, in the severe and high risk ranges. The residents in these locations suffered through both the physical



A strong downtown that supports a robust local economy is a long-term goal of the Community.



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damages to their personal property and the mental anguish of the daunting recovery in the months since.

Housing

The need for more resilient housing construction was a major and ongoing theme throughout the recovery planning process. Approximately 14% of the housing stock in NYRCR West Islip was constructed before 1950; 66% between 1950 and 1970; and 20% from 1970 to the present.^{xxii} Generally speaking, the older the housing stock, the more likely it is to be in need of renovations, and the less likely it is to be constructed to today's wind and flood resistance standards. It is reasonable to infer that most pre-1970 housing, or 80% of the entire housing stock, could benefit from some degree of modernization to be more resilient to floods and wind storms. Residents recognize the need to encourage the elevation of homes in high risk areas. They also perceive an opportunity to encourage additional hazard mitigation measures, such as elevation of fuel tanks, roof strapping, and tree pruning. This determination was further validated by the results of the risk assessment tool that categorized residences south of Montauk Highway in the severe, high, and moderate risk ranges.

Several members of the Community also raised the issue of the lack of affordability and diversity in the housing stock. Encouraging the construction of varying housing types and sizes outside of the risk areas would accommodate young people, seniors, and residents who wish to move out of the risk areas while staying in West Islip. In the wake of Superstorm Sandy, there exists an opportunity to update local density, design, and building codes to reflect the need for affordable and diversified housing options, as well as to introduce development incentives for mixed-use development in West Islip's revitalized downtown. Suitable locations would be sites that are outside of risk assessment areas and close to transportation, retail shopping, and office centers. These new housing units should be of a smaller size than the predominant three- and four-bedroom homes, should be designed with few architectural impediments to seniors and disabled persons, and should also be attractive to younger residents and single person households.

Infrastructure

Regarding infrastructure and utilities, issues of flooding and power outages during and after Superstorm Sandy were the strongest themes among Committee and Community members. Particularly south of Montauk Highway, there is a need to address repetitive flooding that comes over bulkheads and backs up through the drainage system,



Residents hope to rectify flooding that occurs from the bay and from an inadequate stormwater management system.



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inundating streets, yards, and homes. Some Community members described losing cars to routine flooding after Superstorm Sandy and parents explain that they have to walk their children up the street away from the bay because school buses won't risk driving on flooded streets.

The Community is realistic about the difficulties of preventing flooding of the magnitude experienced from Superstorm Sandy, but they want to find solutions to the flooding that occurs from a common storm, nor'easter, or a strong high tide. This need was validated by the results of the risk assessment tool showing the residential housing below Montauk Highway in the severe, high, and moderate risk ranges.

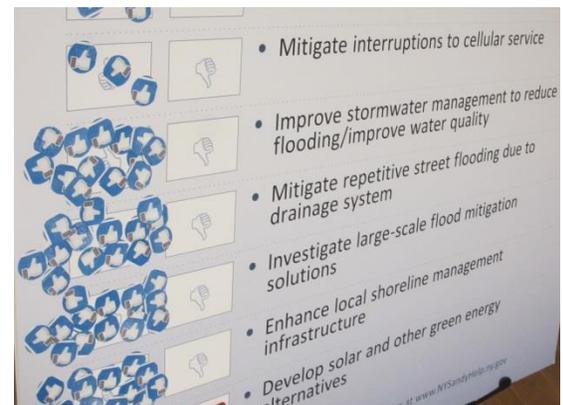
Other critical infrastructure issues that were highlighted by Superstorm Sandy included the need for resiliency in the power system, cellular and Internet services, and the sanitary sewer system.

Natural and Cultural Resources

The NYRCR West Islip Community expressed repeatedly and wholeheartedly that they support all regional efforts to strengthen and rehabilitate the barrier islands' and the Great South Bay's natural protective landscape of dunes, beaches and marshes. West Islip's residents also recognize the need to improve and protect the sustainability of the natural resources within their boundaries, such as improving the movement of water in the creek systems, protecting West Islip Beach, and reducing the pollutants that run off of West Islip's streets and lawns and contaminate the bay's waters.

In terms of cultural resources, West Islip residents love to take advantage of their location on the bay and want to increase access to nature by way of recreational activities for youth, such as fishing and crabbing. There is also strong movement in West Islip to protect remaining historic buildings, such as the La Grange Inn. Each of these Community initiatives to protect and enhance the natural and cultural resources in West Islip were validated by the risk assessment, which found that most recreational and natural resources in the Community are in the severe risk range. The Committee views the enhancement of beaches and creeks as opportunities to bolster the valuable ecological services that they provide of wave attenuation and flood control.

Table 13 summarizes the Needs and Opportunities identified through the planning process.



Needs and opportunities presented for public feedback at a public engagement event.



Table 14: West Islip Needs and Opportunities

Community Planning and Capacity Building
Need: Enhance communication related to emergency management.
Opportunity: Increase public awareness and knowledge of risk management and hazard mitigation.
Need: Increase provision of temporary shelters/distribution centers.
Opportunity: Increase resiliency of public and not-for-profit facilities.
Economic Development
Need: Increase the resiliency of the local economy.
Opportunity: Grow local tax base.
Health and Social Services
Need: Improve access to physical and mental medical care following emergencies.
Opportunity: Increase public awareness of post-event health-related services and programs.
Need: Increase access to public safety services following emergencies.
Opportunity: Use lessons learned from Superstorm Sandy to improve deployment of resources.
Housing
Need: Increased housing options outside of risk areas.
Opportunity: Increase utilization of resilient housing construction practices.
Infrastructure
Need: Mitigate repetitive flooding.
Opportunity: Improve emergency access and evacuation routes.
Need: Protect provision of utility services.
Opportunity: Strengthen communications and drainage systems.
Natural and Cultural Resources
Need: Protect and enhance natural, recreational, cultural and historic assets.
Opportunity: Improve the sustainability of the local and regional environment.



Swans mistake a residential street for a pond in West Islip.



Section III: Reconstruction and Resiliency Strategies

The process of identifying the post-storm needs and opportunities of NYRCR West Islip (Community) informed the NYRCR Committee's (Committee) development of strategies to resolve these needs and realize opportunities. In turn, the strategies assisted in the conceptualization and design of projects to specifically address these needs and opportunities. Strategies are general approaches to types of projects, programs, policies, or other actions that address an identifiable need. Typically, there are several strategies to address a given need. For example, communities are most successful when they blend 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.

The Committee developed reconstruction strategies, which were derived from a review of the inventory of assets that were identified as being at risk relative to the Community's needs (discussed in the previous section of this report). For every reconstruction and resiliency need or opportunity, potential strategies were generated from multiple management angles. 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. Strategies also included conservation of natural protective features, regulatory changes and building code updates, structural defenses, resiliency 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.

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.



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 highest and best use of recovery funds. These considerations included how each strategy relates to Superstorm Sandy's impacts on the West Islip Community, to what extent each strategy would reduce current and projected risk, whether it contributed to protection of vulnerable populations, feasibility of a successful implementation, compliance with existing regulations, upfront and long-term maintenance costs, direct and indirect benefits, and public perception.

The Community's reconstruction strategies are discussed below. Each is followed by a table which list Proposed and Featured Projects that would help to implement the strategy.

Reconstruction Strategies and Implementation Actions Tables

Strategy: Increase awareness of and access to resources for hazard mitigation, preparedness, and emergency response.

Information and communication are key to preparing for and quickly recovering from acute storm events and this strategy was developed directly as a result of information gaps that occurred during and after Superstorm Sandy. Although local, regional, State, and Federal governmental and non-governmental organizations orchestrated an impressive response operation, the Town of Islip's integrated information system was damaged during the storm and this had a detrimental effect on response and recovery operations. At the individual level, residents faced challenges as they sought information and assistance regarding immediate post-storm assistance and more resilient reconstruction for their homes and businesses, among other questions. This strategy seeks to improve knowledge and utilization of information and resources at both the public and individual levels to prepare for, respond to, and recover more resiliently from disasters.

The Proposed Projects developed to address these needs include an Enhanced Electronic Mapping/ Emergency Management System and a Recovery Manager/Grant Specialist. These projects would address resiliency issues related to the Community Planning and Capacity Building Recovery Support Function (RSF). The Enhanced Electronic Mapping/Emergency Management System would address risk locally as well as regionally for the entire Town of Islip by coordinating emergency



management communications and reducing the gaps in information flow and accuracy. The Recovery Manager/Grant Specialist would reduce risk to West Islip residents by aiding with the preparation of funding applications for hazard mitigation, emergency preparedness, and emergency response projects. This specialist also would be available to Community members to provide information and support regarding funding programs for hazard mitigation and resiliency, thereby empowering individuals to reduce risk to their personal property. These projects can be implemented over 12 months or less.

Additional Resiliency Recommendations that also relate to this strategy include a Comprehensive Emergency Management Communications Plan and a Resiliency Plan for Public Facilities. Additional information can be found about these projects in Table 14, Section IV, “Implementation – Project Profiles,” and Section V, “Additional Materials.”

Table 15: Strategy: Increase awareness of and access to resources for hazard mitigation, preparedness, and emergency response to reduce risk.

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
Enhanced Electronic Mapping/ Emergency Management System	The procurement and installation of an enhanced GIS-enabled program for the Town of Islip to improve emergency planning, response and recovery from severe storm events. Program would enable real-time transmission of risk and safety information for rapid deployment of resources.	\$50,000	Proposed	Y
Recovery Manager/Grant Specialist	This project would fund a Recovery Manager/Grant Specialist with experience in funding for public and private mitigation projects, grant writing, and Federal/State grants management.	\$300,000	Proposed	Y

Strategy: Expand local resources and alternatives for residents likely to be impacted by future flooding and other storm-related risks to remove themselves from harm’s way.

This strategy was formulated in direct response to the fact that as a Community, West Islip residents felt underprepared for Superstorm Sandy. For example, residents were not ready for a potential evacuation and were unaware what steps to take to prepare themselves, their families, and their property for several days away from home. Upon



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returning to their houses, they faced an extended power outage, which made it difficult to obtain information (and communications) regarding the full breadth of resources that were being offered at shelters and distribution centers. They were also frustrated that these shelters and centers were far from their devastated neighborhoods.

The Proposed Projects for Designated Parking for Flood Events and a Local Drop-In/Distribution Center were developed to implement this strategy and would address resiliency issues related to the Community Planning and Capacity Building RSF. The designated parking for flood events would address risk for residents who live on streets that frequently flood (primarily those south of Montauk Highway). The drop-in center, which would be located at a nearby facility compliant with the Americans with Disabilities Act (ADA), would supply electricity and heat and provide residents with the opportunity to warm up, charge electronics, share community information, and access disaster assistance resources. This is particularly important for elderly residents who may be reliant on electronic medical devices. These projects can be implemented over 12 months or less. Additional information can be found about these projects in Table 15, Section IV, “Implementation – Project Profiles,” and Section V, “Additional Materials.”

Table 16: Strategy: Expand local resources and alternatives for residents likely to be impacted by future flooding and other storm-related risks to remove themselves from harm’s way.

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
Designated Parking for Flood Events	This project would fund the designation and pre-approval of parking areas out of the extreme and high risk areas (such as at schools, municipal facilities, faith-based facilities, or shopping centers) where residents who live in flood zones can park and be assured their vehicles will not be ticketed or towed.	\$40,000	Proposed	N
Local Drop-In/Distribution Center	This project would fund the outfitting of a local public facility with a permanently installed backup generator to be utilized as a drop-in center and/or distribution center in West Islip. The facility would be out of the risk areas and ADA compliant. The backup power would allow for the provision of heat, electricity for the charging of electronics, and Internet access.	\$385,000	Proposed	N



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Strategy: Improve the Community's natural and engineered stormwater management and flood control systems to mitigate flood risk and improve water quality.

This strategy was developed in response to Superstorm Sandy's devastating flooding, which highlighted the importance of a comprehensive drainage and flood control system to mitigate flood losses as well as to protect emergency access and evacuation routes within the Community. This strategy is also intended to improve the sustainability of the local and regional environment (including surface water quality) by creating a long-term and holistic plan to increase the ability of wetlands and stream corridors to convey, store, and filter stormwater runoff. This strategy is relevant to vulnerable populations of West Islip because current flooding restricts access for evacuation and emergency purposes, thus impairing safety of elderly and disabled populations.

The Proposed Projects for a Community-Wide Drainage Plan and Phase I Improvements, Pump Stations, and Rehabilitation of Willetts Creek, as well as the Featured Project for Flood Reduction Phase II Improvements would implement this strategy and would address resiliency issues related to the Infrastructure and Natural and Cultural Resources RSFs. These projects can be implemented over 12 months or less, but also call for long-term planning and investments.

Additional Resiliency Recommendations that relate to this strategy include the Long-Term Flood Reduction Program - Portable Pump and Strengthening of Shoreline Stabilization Structures. Additional information can be found about these projects in Table 16, Section IV, "Implementation – Project Profiles," and Section V, "Additional Materials."



Bulkheads are one means of shoreline stabilization in West Islip.



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Table 17: Strategy: Improve the Community’s natural and engineered stormwater management and flood control systems to mitigate flood risk and improve water quality.

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
Community-Wide Drainage Plan and Phase I Improvements	This project would fund the study and preparation of a long-term capital improvement program focused on drainage that incorporates the entire natural (creeks and open space) and built drainage infrastructure (storm drains, pipes, pumps, and outfalls) to establish the blueprint for significant long-term investments. The project would also fund a selection of the drainage improvements as recommended in the plan.	\$1,300,000	Proposed	N
Long-Term Flood Reduction Program - Pump Stations	This project would fund the flood-proofing of electrical controls and the installation of backup power for two drainage pump stations in the Sequams neighborhood to ensure the continuity of operations for this critical drainage equipment.	\$235,000	Proposed	N
Long-Term Flood Reduction Program - Rehabilitation of Willetts Creek	This project would fund the rehabilitation of Willett’s Creek to improve the movement of water in this tidal wetland resource, including removal of sedimentation that resulted from Superstorm Sandy, redesign of culverts, and other measures to restore it as a functional and beautiful natural resource.	\$1,760,000	Proposed	N
Long-Term Flood Reduction Program - Phase II Improvements	This project would fund the implementation of measures to reduce on-street flooding via raising of roads, installation of check valves and additional pump stations, and incorporation of green stormwater best management practices, among other measures as recommended in the Community-Wide Drainage Plan.	\$10,600,000	Featured	N



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Strategy: Increase the attractiveness and appeal of downtown West Islip to business owners and consumers alike to strengthen the local economy.

This strategy was developed in response to many members of the Community who view West Islip’s recovery from Superstorm Sandy as an opportunity to build better resiliency into the local economy by strengthening the downtown. West Islip’s downtown at Higbie Lane and Union Boulevard is currently underutilized and undervalued. Through this strategy, the Community seeks to grow the local tax base by recommending actions and improvements that will attract new businesses, create jobs, and expand the consumer groups to pedestrians and cyclists. The strategy would benefit all West Islip residents, including the elderly and disabled, because complete streets principles would be incorporated to increase access to all populations.

The Proposed Project for Downtown Revitalization Plan and Related Activities and the Featured Project for Downtown Revitalization Streetscape Improvements were developed to implement this strategy and would address resiliency issues related to the Economic Development RSF. These projects can be implemented over 12 months or less, though capital improvements would likely extend over a longer timeframe of 36 months or longer. Additional information can be found about these projects in Table 17, Section IV, “Implementation – Project Profiles,” and Section V, “Additional Materials.”

Table 18: Strategy: Increase the attractiveness and appeal of downtown West Islip to business owners and consumers alike to strengthen the local economy.

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
Downtown Revitalization Plan and Related Activities	This project would fund the development of a downtown revitalization plan for West Islip’s main business district on Higbie Lane and Union Boulevard, as well as small capital improvements and programming activities to spur the overall revitalization.	\$300,000	Proposed	N
Downtown Revitalization Streetscape Improvements	This project would fund streetscape improvements such as safer intersections, street furniture, and bicycle-friendly infrastructure for a safe and welcoming downtown. Specific measures would be recommended in the Proposed Project for a downtown revitalization plan.	\$1,000,000	Featured	N



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Strategy: Increase public awareness of post-event healthcare resources and options.

This strategy was formulated in response to the concern that following Superstorm Sandy West Islip residents lacked knowledge of (and communication about) health-related services. In the months that followed, the Community also felt that services to assist residents in managing post-disaster mental health issues could be expanded. This strategy would address risk for residents throughout Good Samaritan Hospital’s service coverage area and is particularly relevant to vulnerable populations of West Islip because it would seek to prioritize elderly and other vulnerable populations in the proposed outreach efforts.

The Proposed Project for Post-Event Health Services for Vulnerable Populations was developed to implement this strategy by increasing the number of health care professionals who are trained to facilitate mental health services following an acute event, as well as growing the public’s awareness of these health care services following disasters. This project would address resiliency issues related to the Health and Social Services RSF and can be implemented over 12 months or less. Additional information can be found about this project in Table 18, Section IV, “Implementation – Project Profiles,” and Section V, “Additional Materials.”

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
Post-Event Health Services for Vulnerable Populations	This project would fund an outreach campaign to increase knowledge of and access to health care related preparedness issues as well as post-event mental and physical health services with a special focus on vulnerable populations. The project would also fund training for local health care professional to facilitate support/grief counseling services following an acute event.	\$275,000	Proposed	Y



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Strategy: Increase access to recreational and natural resource amenities and programs.

This strategy was developed in response to the Community’s desire to improve access to West Islip’s natural resources as a means to expand both healthy recreational opportunities and environmental awareness for future generations. This strategy would address risk for residents of West Islip by protecting and enhancing key recreational and natural resource assets that were damaged by Superstorm Sandy and by increasing awareness of natural resources that require protection for future sustainability.

The Featured Project for West Islip Marina and Beach was developed to implement this strategy and addresses resiliency issues related to the Natural and Cultural Resources RSF. West Islip Marina is open to the public and accessible by everyone and all improvement projects would include ADA compliance measures. This project can be implemented over 12 months or less. Additional information can be found about this project in Table 19, Section IV, “Implementation – Project Profiles,” and Section V, “Additional Materials.”

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
West Islip Marina and Beach	This project would fund improvements to the West Islip Marina bulkheading that was damaged during Superstorm Sandy to allow for safe and resilient public access to the bay. The improvements would be designed to anticipated sea level rise.	\$990,000	Featured	Y



Fireboats moored in West Islip Marina.



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Strategy: Create incentives for homeowners to implement residential resiliency upgrades to reduce future risk to life and property.

This strategy was formulated in response to Superstorm Sandy’s devastation to West Islip’s housing stock, particularly in neighborhoods south of Montauk Highway, and the Community’s desire to increase the resiliency of future housing construction. This strategy would address risk for residents of the Community by providing direct assistance for proper resilient construction techniques to ensure safety for structures and occupants. It would also reduce risk to residents throughout the Town of Islip by creating regulatory and market-based incentives for homeowners to upgrade the resiliency of their home construction gradually over time. The strategy would benefit all West Islip homeowners, including elderly, disabled, and other vulnerable populations.



Incentives and regulations would aim to gradually improve the resiliency of the housing stock in West Islip.

The Featured Projects for Resilient Housing Assistance and Resilient Housing Policy were developed to implement this strategy and address resiliency issues related to the Housing and Community Planning and Capacity Building RSFs. Projects involving policy and regulatory changes can be implemented over 12 months or less, while construction projects would require longer and could be implemented over 12 to 36 months. Additional information can be found about this strategy and these projects in Table 20, Section IV, “Implementation – Project Profiles,” and Section V, “Additional Materials.”

Table 21: Strategy: Create incentives for homeowners to implement residential resiliency upgrades to reduce future risk to life and property.

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project	Regional Project (Y/N)
Resilient Housing Assistance	This project would fund incentive grants or low-interest loans for residents in risk areas to build resiliency into their homes, e.g., home elevations, roof strapping, and/or installation of wind-resistant windows for a more storm-proof home.	\$500,000	Featured	N
Resilient Housing Policy	This project would fund regulatory incentives and code upgrades for residents to build resiliency into their homes, such as a tax relief/deferral program, expedited permitting and waivers, code updates, among others.	\$100,000	Featured	N



Section IV: Implementation – Project Profiles

The NYRCR Program has allocated to the Community up to \$3.1 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, the NYRCR West Islip Committee (Committee) 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. The Committee 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 NYRCR West Islip Community’s (Community) 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 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, “Additional Materials”) are projects and actions that the 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 NYRCR 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 and Featured Project identified by the Committee and the 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

"We worked hard to present projects that protect our neighborhoods by securing our wetlands, cleaning our creeks and waterways to allow the water to flow in and out, assisting our residents with evacuation and shelter, and helping our local businesses thrive. If we accomplish all this, I believe our Hamlet will be able to sustain itself for generations to come."

—Lynn Luttenberger, NYRCR West Islip Committee Member



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) is a tool used to evaluate and compare 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 projects for implementation; and (2) to support grant applications for funds.

Because the NYRCR Program is a community-driven process, the CBA was focused on identifying project costs and benefits that easily relate to the Community. Community and Committee input—informed by a true understanding of local conditions, needs, and Community values—played a crucial role in the selection of projects that are implemented. With this in mind, the CBA incorporated a mix of both quantitative and qualitative factors.

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

Project Costs

Each Project Profile includes total project costs that represent the full implementation of the Proposed or Featured Project, from planning and design through to construction. Overall lifecycle costs are, where relevant, separately described.

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. Inaction has the potential to negatively impact the long-term viability of both the NYRCR West Islip Community and its neighboring communities on the mainland and across the bay. While the costs of inaction are more difficult to quantify, they are no less important to our analysis, and are



therefore addressed qualitatively. These costs include, but are not limited to:

- 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 to a Community asset from a future storm event (discussed further below under “Risk Reduction Analysis”).^{xxiii}
- **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.^{xxiv}
- **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 storm damage (environmental, social, and economic) and flooding risk to specific Community assets when the project is in place. The extent to which a project would reduce such risk



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is also considered as a benefit in the CBA (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 storm and flood risks to Community assets before the project is implemented; risk reduction looks at the reduced risk after the project is in place.

For this risk reduction analysis, projects were evaluated under a three 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 each scenario. (For a more detailed discussion of the methodology and factors used in the risk reduction analysis, see Section V, “Additional Materials”).

Using a combination of quantitative and qualitative analysis, each of the Proposed and Featured Projects for NYRCR West Islip has been shown to increase the resiliency of particular areas of the Community. The implementation of the Proposed Projects, identified below, will improve Community assets and increase the resiliency of the Community as a whole to future storms and emergency events.



PROPOSED PROJECT: *Enhanced Electronic Mapping/ Emergency Management System*

Project Description

This project would help to fund the development of an enhanced Geographic Information System (GIS) for the Town of Islip to improve storm preparedness planning, as well as response during severe storms and recovery efforts thereafter.

The Town of Islip experienced a devastating shock to the Emergency Management Information System during Superstorm Sandy. The call center was inundated with phone calls from residents who were reporting damages to their homes, electrical outages, and medical emergencies. The Town was tasked with recording these reports, assessing the severity of the incident, and then dispatching the appropriate resources to the location. To compound the problem, the electrical power to the Town's Information Technology (IT) Department was lost and the emergency generators could not provide adequate power to the computer system. Flood waters entered the IT Department and prevented the use of the network. Therefore, the existing GIS system could not be used to track the locations of the incidents, nor could the crews be tracked. A make-shift system was cobbled together at the Town Hall West site and the information was collected and mapped. This was a herculean effort that helped with deploying resources to the correct locations. However, this emphasized the need to seek out solutions to provide a more robust GIS system to manage this information, track damages, and document costs associated with storm events. While the Town has had a GIS system for many years, the systems are not adequate to accommodate the needs of the Town to manage severe storm events and other disasters.

The GIS system would enable better communication and record keeping among Town agencies and emergency responders. The system would track incoming reports of flooding, damages, utility outages and blocked roads and enable more rapid and efficient deployment of resources. Real time and accurate record keeping of storm response and damage, should result in better accountability (and improved reimbursement) of eligible costs to the Federal Emergency Management Agency (FEMA), the State, and any other agencies. The project involves the use of demonstrated technology. By way of example, a similar system was implemented for the State of Vermont and many other communities with proven success.



An emergency responder makes rescues by boat on flooded streets.

ENHANCED ELECTRONIC MAPPING/ EMERGENCY MANAGEMENT SYSTEM

RECOVERY SUPPORT FUNCTION

Community Planning and Capacity Building

COST

\$50,000

ASSETS MADE MORE RESILIENT

Public facilities and infrastructure throughout Town of Islip

RISK REDUCTION & BENEFITS

Increased efficiency and accuracy of communication, resource mobilization, and documentation



West Islip NY Rising Community Reconstruction Plan

The system would be based upon a full web GIS infrastructure. Proposed applications would include:

- an E911 Information Application enabling communication between Enhanced 911 operators and responders;
- a Road Obstruction Application tracking fallen trees, power lines and other road obstructions;
- a Damage Assessment Application providing initial damage assessment to FEMA as well as organizing and tracking recovery data essential for FEMA reimbursement; and
- a Public Information Application providing key information to the public in advance, during, and after emergency events.

Estimated Project Costs

The estimated project cost of \$50,000 includes capital and soft costs required for project implementation. The anticipated overall cost of this project, including additional contributions from the Towns of Islip and Brookhaven, as well as other local NYRCR Communities, is estimated at \$300,000 and the project would be implemented as a Town-wide asset. The Committee is proposing an allocation of \$50,000 towards the overall project costs. It is expected that other NYRCR Communities in the Town of Islip and, possibly, the Towns of Brookhaven and Islip, may provide the balance of funds.

The useful life of software is typically three years, and can be extended with software updates.^{xxv} Typical database maintenance and field updating of GIS data is a cost that the Town of Islip already incurs and must be continued to ensure that software capabilities are maximized during an acute event. GIS software licenses are also costs that the Town of Islip already maintains. The software also has the ability to acquire real-time information transmitted by mobile devices (i.e. smart phones or tablets). Additional funding sources would need to be identified for utilization of this capability by field employees.

Project Benefits

Risk Reduction Benefits

The procurement and roll-out of the GIS Emergency Management System has the potential to enhance the efficiency and coordination of response and recovery activities by the Town of Islip and other governmental entities, thereby reducing public health, safety, and financial risks. Risk reduction benefits from this project can be recognized in the short term, such as the reporting of fallen trees in real-time that pose threats to life and property. The system would be able to track incoming reports of flooding, damages, utility outages, and



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medical emergencies and enable rapid and efficient deployment of resources. Risk reduction benefits will also be captured in the long term. The ability of the system to track costs and resources will allow the Town to document and report actual costs to FEMA and the State for quick reimbursement, thereby minimizing a future storm's impact to the local government budget and services.

Economic Benefits

The use of enhanced GIS Emergency Management system during preparation, response, and recovery phases of future disasters will reduce government expenditures by (1) creating complete and comprehensive documentation of disaster-related costs for rapid reimbursement, (2) providing real-time transmission of accurate, time-sensitive emergency information to increase timeliness of response efforts, and (3) creating data for after-action reporting and lessons learned that can be used to improve preparedness and resource allocation for future storm events. Over the long-term recovery period, the expedient reimbursement of disaster response costs to municipalities frees up local funding to both return government operations to business as usual and makes local funds available for upfront costs to recovery projects (e.g. funding requirements for preliminary design work, funding programs by reimbursement only, etc.).

Health and Social Benefits

During disaster situations resources are scarce and timing is crucial. The immediate transmission of information to the appropriate entities about flooded roadways, fallen trees and power lines, drainage pump failures, and other common occurrences can mean the difference between a safe and orderly evacuation and a chaotic one. Furthermore, an enhanced GIS program would allow the system to assign a specific location to each structure in the Community, enabling emergency responders to locate an address more quickly. This is vital for accessing and providing services to vulnerable populations in the Community. The program would also facilitate inter-agency coordination with the Suffolk County Emergency Preparedness Registry, which includes a database of people with special and/or functional medical needs. Additionally, the project is expected to help create better coordination among first responders.



Cost-Benefit Analysis

The enhanced GIS system would serve all of Islip's 332,443 residents^{xxvi}, including NYRCR West Islip. The Town of Islip recognizes inefficiencies in emergency management procedures during the aftermath of Superstorm Sandy due to damage to the existing system during the storm. The Town is seeking the most innovative and cost effective methods for handling future events. The total project cost of \$300,000 is an investment that will yield high returns while reducing government expenditures for future storm events.

Risk Reduction Analysis

A risk reduction analysis was not performed using the risk assessment tool. However, the most significant risk reduction that can be realized through this project is to Islip's 332,443 residents who will have faster and more reliable emergency response services in future emergency situations.

General Timeframe for Implementation

Coordination of additional funding between the Towns of Islip and potentially Brookhaven could be completed within 6-12 months of project approval. Procurement, training, and roll out of the new software could be completed within six months thereafter.

Regulatory Requirements Related to Project

No permits or regulatory approvals are required for the project.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



PROPOSED PROJECT: *Recovery Manager/Grant Specialist*

Project Description

The purpose of this project is to increase access to available recovery and resiliency funding resources for both public projects in NYRCR West Islip and for individuals. Knowing that there are hundreds of opportunities each year, many with short application timeframes, the Committee seeks to set aside a portion of the NYRCR Program funding to hire a Recovery Manager/Grant Specialist with experience in funding for public and private mitigation projects, grant writing, and Federal/State grants management. The Specialist, who would hold a two-year position, would increase access to hazard mitigation and other funding by identifying and applying for additional grants for West Islip facilities/infrastructure, as well as manage the grants to ensure State and Federal compliance. The Specialist would also be available to the public as a resource for individuals and homeowners who wish to apply for individual assistance grants to implement hazard mitigation and resiliency activities.

Estimated Project Costs

The total estimated cost of \$300,000 for this two-year position includes salary and benefits, computer and supplies, and office space. There are no anticipated operations and maintenance costs associated with this project; the lifecycle cost, therefore, is also \$300,000.

Project Benefits

Risk Reduction Benefits

The Recovery Manager/Grant Specialist will help to reduce risk in NYRCR West Islip by increasing access to hazard mitigation and other funding, and managing grants to ensure State and Federal compliance. A key benefit of this project is the anticipated additional funding for the Community, which would enable them to implement longer-term resiliency/risk reduction projects.

Economic Benefits

This project has the potential to increase funding available for resiliency and hazard mitigation projects for public infrastructure and facilities, the purpose of which is to reduce the risk of future damages from natural hazards. If successfully implemented, these projects would reduce the financial burden of future disaster costs on the Town of Islip and the Hamlet of West Islip. In addition, this project would create two full time equivalent (FTE) positions (one full-time position for two years is equivalent to two FTEs).



A goal of the Community is to increase access to funding sources for homeowners to protect their homes from flooding.

RECOVERY MANAGER/GRANT SPECIALIST

RECOVERY SUPPORT FUNCTION

Community Planning and Capacity Building

COST

\$300,000

ASSETS MADE MORE RESILIENT

Potentially all assets in NYRCR West Islip

RISK REDUCTION & BENEFIT

Increased access to Federal and State funding sources, particularly for hazard mitigation and resiliency projects



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Environmental Benefits

The Recovery Manager/Grant Specialist will assist with the procurement and management of funding opportunities, many of which are awarded through the United States Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYS DEC). These agencies actively seek to fund projects, policies, and initiatives that protect and enhance the environment. For NYRCR West Islip, the DEC is particularly instrumental in guidance, permitting, and management of the creeks and tidal wetland areas.

Cost-Benefit Analysis

This is a low cost project that will have substantial benefits to NYRCR West Islip through increased opportunities to access grants and other funding sources for needed projects. The potential amount of funding received because of this Specialist would far outweigh the cost.

Risk Reduction Analysis

A risk reduction analysis using the risk assessment tool was not conducted. While the Recovery Manager/Grant Specialist would not directly decrease the risk of any particular assets in NYRCR West Islip, the Specialist could help to secure additional funding to enhance and restore wetlands and beaches and reduce risk of flooding for public infrastructure and facilities and residential structures throughout NYRCR West Islip. Therefore, the position could play a role in decreasing risk to all assets in NYRCR West Islip.

General Timeframe for Implementation

Following public employee hiring requirements, this full time position could be filled within 3-6 months of project approval.

Regulatory Requirements Related to Project

No permits or regulatory approvals are required for the project.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



PROPOSED PROJECT: Designated Parking for Flood Events

Project Description

The purpose of this project is to provide alternative parking options to residents who live in areas that are prone to flooding during nor'easters, hurricane events, or even very high tides and who, as a result, have incurred repetitive costs from damage to vehicles. This project seeks a low-cost, Community-based alternative to minimize future damages to vehicles from on-street flooding.

This project would fund the designation and pre-approval of parking areas out of the extreme and high risk areas (such as at schools, municipal facilities, faith-based facilities, or shopping centers) where residents who live in flood zones can park and be assured their vehicles will not be ticketed or towed. The funding may go toward a two-year shared-use agreement with the selected facility, as well as signage and outreach to eligible residents. Security and liability may be a concern and issues of responsibility and reasonable safeguards will need to be addressed.

Estimated Project Costs

The total estimated project cost of \$40,000 includes \$35,000 for initial planning to determine the ideal project location and the cost of a pre-approved agreement with the facility owner and \$5,000 for signage at the location and communications with residents who live in flood-risk areas who may want to utilize the parking option. Parking lot security and transportation to and from the parking lot once a vehicle is parked are additional costs that are not included in this project cost, but which the Community may decide are necessary. Due to the ad hoc potential use of the parking (e.g. during major rain events, nor'easters, or unusually strong high tides), pre-arranged security and/or transport would be difficult to administer. Shuttle services to transport residents to/from designated parking lots to retrieve parked vehicles once flooding has subsided is an option, but would have complicated implementation issues to work through. For example, the use of locally available transportation, such as West Islip School District buses, would be complicated by school schedules. There are no additional anticipated operations and maintenance costs associated with this project; therefore, the total lifecycle cost of this project is also \$40,000.



The Community recommends a parking lot out of risk areas for use during flooding.

DESIGNATED PARKING FOR FLOOD EVENTS

RECOVERY SUPPORT FUNCTION
Community Planning and Capacity Building

COST
\$40,000

ASSETS MADE MORE RESILIENT
Public facilities and infrastructure in Islip

RISK REDUCTION & BENEFITS
Increased efficiency and accuracy of communication, resource mobilization, and documentation



Project Benefits

Risk Reduction Benefits

The pre-arrangement of parking areas for use during hurricanes, storms, or unusually high tides would greatly reduce the ancillary damage to vehicles from street flooding. The number of households in NYRCR West Islip who live in the extreme risk area is 489, representing an estimated 1,176 vehicles.^{xxvii} As sea levels continue to rise and residential streets south of Montauk Highway are at increased risk, this program could be expanded to include additional residential areas.

Economic Benefits

Residents would avoid the repeat costs of repairing or replacing vehicles damaged by flooding. Furthermore, access to functioning vehicles after a storm will facilitate a return to normalcy.

Environmental Benefits

The flooding of vehicles results in the contamination of water that then flows into storm drains and the bay, contributing to the degradation of water quality. From a regional perspective, disposal of flood-damaged cars also can be an environmental problem.

Cost-Benefit Analysis

This project reflects the Community's efforts to adapt to a future reality in which flood events are likely to become more frequent and severe. The provision of parking alternatives to minimize damages to vehicles that belong to residents in flood hazard areas at an estimated cost of \$40,000 is a practical and cost-effective solution.

Risk Reduction Analysis

A risk reduction analysis using the risk assessment tool was not conducted. However, if implemented and utilized by residents in the extreme risk area alone, 489 West Islip households would have a reduced risk of damage to an estimated 1,176 vehicles from flooding.

General Timeframe for Implementation

The identification of a parking facility may take 3-6 months from the time of project approval. The shared parking agreement, communications with the public, and signage at the facility could be arranged and installed within another 3-6 months.

Regulatory Requirements Related to Project

No permits or regulatory approvals are required for the project.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



PROPOSED PROJECT: Local Drop-In/Distribution Center

Project Description

The purpose of this project is to provide a local facility with reliable backup power that can be accessed by residents following major future storms. The closest shelter was located in Brentwood, a round-trip distance of nearly 20 miles from the Sequams neighborhood (the most heavily flooded neighborhood in West Islip), and considered too far to reasonably expect impacted residents to travel for drop-in services when gas rationing limited travel.

This project would fund the procurement and installation of a diesel generator, fuel tank, transfer switch, concrete basepad, and other required equipment, for installation at a local, to-be-identified facility. The cost estimate is based on a 750KW generator, though the required specifications will be confirmed once a facility is identified. With the provision of backup power, the facility will be able to provide many necessities and services to residents on a drop-in basis, including heat, charging of electronics (e.g. cell phones and electronic medical devices), wireless Internet, and hot meals. Disaster recovery agencies may also opt to set up stations in the facility to distribute information to residents about recovery resources. The facility, which is yet-to-be-identified, should be outside of the State-identified risk assessment areas and will be Americans with Disabilities Act (ADA) compliant.

Estimated Project Costs

The total estimated project cost of \$385,000 includes \$350,000 for the planning, permitting, procurement, and installation of a diesel powered backup generator at a local public facility and \$35,000 for contingency. The useful life of a permanently installed diesel generator is about 15 years^{xxv} and would require brief monthly maintenance and inspection for an additional anticipated operation and maintenance cost of \$30,000 over the life of the generator. Fuel consumption would also be an expense following each generator’s use that is not included in the total project cost. In addition, the Community may request that the facility be staffed with a police officer to oversee security; this cost is also not included in the project cost.



A permanently installed backup generator would keep a public facility in use during power outages.

LOCAL DROP-IN/DISTRIBUTION CENTER

RECOVERY SUPPORT FUNCTION
Community Planning and Capacity Building

COST
\$385,000

ASSETS MADE MORE RESILIENT
One public facility

RISK REDUCTION & BENEFITS
Access to a local facility with reliable electricity, heat, Internet service, and other services as decided



Project Benefits

Risk Reduction Benefits

The outfitted facility could be used year-round to provide access to basic necessities, including electricity, heat, air-conditioning, and communications capabilities, as well as other response resources. Depending on the season, the facility could be used as a warming or cooling center and has the potential to prevent life-threatening situations, such as hypothermia and heat stroke that can result from multi-day power outages in cold or hot weather. Access to such a facility may also reduce residents' stress and trauma during a major disaster situation. Furthermore, the provision of post-disaster recovery information at the location would provide residents with the knowledge to access funding and in-kind assistance for rebuilding.

Economic Benefits

Residents south of Montauk Highway in particular would benefit from a local facility within West Islip. Efforts would be made for the facility to be centrally located, while staying outside of the flood risk areas. The project would reduce travel time/distance to the local drop-in center compared to the Red Cross shelter facility located in Brentwood approximately nine miles away, reducing the financial burden of fuel costs. Furthermore, the availability of gasoline was a significant hurdle for residents after Superstorm Sandy, making the nearly 20-mile roundtrip drive to the Brentwood facility a major deterrent.

Health and Social Benefits

For 13.8% of West Islip residents who are ages 65 years and greater,^{xxvii} or an estimated 3,910 people, this project would create significant added benefits because senior residents, a vulnerable population, often require electronic medical devices that need charging and are susceptible to heat and cold events.

A local drop-in center would provide additional benefits from Community support, improved mental health, and information dissemination. The sharing of local news and information would increase neighbor-to-neighbor assistance, particularly for elderly and disabled residents. The distribution of information about disaster response resources and the availability of Internet access would improve the Community's awareness of and access to these vital resources.

In looking to the future and the anticipated impacts of climate change, the facility that will be outfitted with the backup generator can be used for other acute situations when access to a facility with power will be



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essential for life and safety. For example, summer heat wave events are expected to increase due to climate change. It is not uncommon for power grids to become overwhelmed and fail during heat waves and the Community can use this facility as a cooling center.

Cost-Benefit Analysis

The provision of backup power for a local facility outside of the flood risk areas has the potential to serve the Community for a variety of future acute events. The facility would be open to any person in need, but would primarily serve West Islip's Community of 28,335 people,^{xxvii} all of whom lost power during Superstorm Sandy. These factors justify the cost of \$385,000.

Risk Reduction Analysis

A facility has not yet been identified for this project; a risk reduction analysis for a specific facility asset, therefore, has not been carried out. The chosen facility will have a reduced vulnerability to future acute events because it will be equipped with backup power. This project would reduce risk for one to-be-determined facility through the provision of backup power, as well as reduce risk for NYRCR West Islip's 28,335 people.^{xxvii}

General Timeframe for Implementation

The identification of a facility and completion of required permits may be implemented in 3-6 months of project approval. The procurement and installation may be completed in another three months thereafter.

Regulatory Requirements Related to Project

The chosen facility will be ADA compliant. The generator installation would comply with Town of Islip building codes.

Jurisdiction

This project would fall jointly under the jurisdiction of the Town of Islip and the facility owner (to be determined).



PROPOSED PROJECT: *Community-Wide Drainage Plan and Phase I Improvements*

Project Description

The purpose of this project is to provide a long-term infrastructure investment plan to relieve current and anticipated future flooding in NYRCR West Islip. Flood issues in the Community range from flooding that occurs below Montauk Highway when bay waters rise over the bulkheads and back up through the drainage outfalls, to stormwater that floods the creek systems and becomes blocked behind culverts, to an undersized and under designed subsurface system.

This project would fund a long-term, Community-wide drainage improvement plan. The planning effort would include a study that would take into account the overall drainage system, including both engineered “gray” infrastructure (pipes, catch basins, pumps, etc.) and natural “green” infrastructure (creek corridors and canals), and develop a comprehensive, long-term, system-wide strategy for repair, improvement, and maintenance. This project would also fund a selection of the plan’s projects to initiate the West Islip’s progress toward a more resilient and flood protected Community. These may include a combination of targeted road raising, drainage improvements, and stormwater best management practices.

Estimated Project Costs

The total estimated cost for this project is \$1,300,000. Of this total cost, \$300,000 is budgeted for the Community-wide drainage plan development, including field work, system-wide assessment and modeling, public involvement, and plan development. Field work will likely include visual inspection of catch basins, outfalls, creeks, and culverts, as well as pipeline video inspection to examine the subsurface drainage system and pinpoint bottlenecks and pipe failures. The remainder of the funding, \$1,000,000 is budgeted to carry out a selection of the drainage improvement projects identified in the plan. Such improvements may include select road raising, an additional drainage pump, improved outfall structures, rehabilitation of one of West Islip’s creek corridors, an array of green stormwater management installations, or a combination of these strategies. The \$1,000,000 includes \$160,000 for soft costs (engineering and design, permitting, construction inspection, etc.), \$640,000 for hard costs (labor, materials, equipment rental, etc., for construction), and \$200,000 for contingency.



The implementation of key drainage improvements, such as stormwater outfalls, is a goal of this project.

COMMUNITY-WIDE DRAINAGE PLAN AND PHASE I IMPROVEMENTS

RECOVERY SUPPORT FUNCTION
Infrastructure

COST
\$1,300,000

ASSETS MADE MORE RESILIENT
Includes recommendation and select implementation of resiliency measures for drainage assets

RISK REDUCTION & BENEFITS
Provides a “roadmap” for drainage infrastructure upgrades as well as “shovels in the ground” projects



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The useful life of the selected improvement projects may range from 15 to 50 years depending on the recommendations of the plan.^{xxv} Although the scope of work has yet to be developed, a reasonable assumption is that annual maintenance costs will be an additional \$5,000 per year. The project's lifecycle cost, therefore, would be \$1,550,000. However, because the Town of Islip has a program of infrastructure asset management and because the scope of the improvements has yet to be developed, the net expense to the Town is considered to be \$0.

Project Benefits

Risk Reduction Benefits

The preparation of a drainage plan that encompasses the entire natural or "green" infrastructure and the built or "gray" infrastructure of West Islip would establish the blueprint for significant long-term investments. Recommendations of the plan would include strategies, policies, and actions to improve the movement and infiltration of stormwater runoff, minimize impacts of flooding from the bay, and reduce localized flooding in streets and on properties. The implementation of a collection of the plan's recommendations will reduce risk to residents and emergency responders by mitigating on-street and on-site flooding in residential areas.

Economic Benefits

The preparation of a plan that will serve as a blueprint for a long-term capital improvement program will help the Town of Islip to prioritize projects that will have the most impact for the least cost and avoid projects that will be less effective. Fewer government resources will be spent on the project development and decision-making processes and more resources can be devoted directly to project construction. Once drainage project recommendations are implemented, economic benefits will be realized in the form of reduced flood damages to personal and public property.

In addition, this project aligns and supports the Long Island Regional Economic Development Council's (REDC) "Key Strategy" regarding infrastructure to "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."^{xviii} Finally, this project would create jobs for the construction activities. An estimated 12.5 FTE employee positions would be created.^{xxvii}



Flooding of properties adjacent to a canal in West Islip.



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Environmental Benefits

As a comprehensive study, the Community-Wide Drainage Plan will take into account the natural drainage infrastructure and how to protect and enhance the ecological services of West Islip's wetlands and creeks. Once drainage project recommendations are implemented, environmental benefits will be captured in the form of reduced stormwater runoff to the bay and improved water quality. The surface and groundwater quality improvements that may result from this project align with recommendations from the Suffolk County Department of Health in their 2014 *Comprehensive Water Resources Management Plan*.^{xvi}

Cost-Benefit Analysis

Flooding in West Islip south of Montauk Highway is common and the local government is at a loss for the most cost-effective means of dealing with this issue. A plan that lays out the best way forward will empower the West Islip Community and the Town to take steps to implement projects with the confidence that the projects will reduce flooding. This project represents a low-cost planning investment that will serve the Community for decades into the future in guiding its capital improvement decisions. The implementation component of the project also represents a catalyst to promote the plan and to reassure West Islip residents of future recovery and resiliency.

Depending on the specific drainage improvements implemented through this project, maintenance costs could rise or fall, but there will be long-term trade-offs to consider. Green infrastructure installations, for example, require a relatively low upfront capital cost and higher operations and maintenance costs (typically for weeding, pruning, and trash removal) to keep the installations healthy and functioning. Over the long term, however, municipalities have found that green infrastructure can reduce the overall drainage system costs because less costly capital improvements to the gray infrastructure are needed in the future. These long-term costs and benefits should be considered as part of the public involvement component of the Community-wide drainage planning process.

The beneficiaries for this project would include the entire NYRCR West Islip population of 28,335 people^{xxvii}, and would particularly benefit residents who live in the extreme and high risk area below Montauk Highway.



Risk Reduction Analysis

The plan will lay out flood reduction projects that, once implemented, will reduce risk to public and private properties and infrastructure. A risk reduction analysis was not completed for this project using the risk assessment tool because the scope of the flood reduction improvements has not been developed and therefore the protected assets are not known.

General Timeframe for Implementation

The planning component of this project can be completed within 9-12 months of project approval. The engineering, permitting, and construction of the recommended drainage improvements can be completed within another 12-36 months thereafter.

Regulatory Requirements Related to Project

As the scope of work has yet to be determined, regulatory requirements are unknown. However, improvements to be completed within the public right of way and must comply with all codes and requirements of the Town of Islip, Suffolk County Public Works, and New York State Department of Transportation (NYS DOT). Projects that impact the shoreline or tidal wetlands will involve the U.S. Army Corps of Engineers (USACE) and Coastal Zone Management (CZM) consistency concurrence with New York State Department of State (NYS DOS). New York State Department of Environmental Conservation (NYS DEC) Tidal and Freshwater Wetlands and other permits will be required for the installation of new, or the modification of existing, shoreline stabilization structures.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



FEATURED PROJECT: Long-Term Flood Reduction Program—Phase II Improvements

Project Description

The purpose of this project is to implement a number of stormwater management/drainage and flood reduction upgrades to reduce the most serious flooding in NYRCR West Islip. This project would complement the Proposed Project for a Community-Wide Drainage Plan by implementing a number of the plan’s capital improvement drainage projects. The scope of this project, therefore, will be determined through that planning process. Design recommendations may include such measures as raising of roads, backflow preventers, check valves, additional pump stations, and stormwater best management practices (rain gardens, permeable pavement, tree plantings, infiltration basins, etc.). The estimated project cost is based on an anticipated implementation of project areas for the flood reduction projects. A combination of technical analysis and public input would determine the most critical locations for targeted road raising, drainage improvements, and stormwater best management practices.

This project would be part of the implementation of a long-range capital improvement program to reduce flooding throughout West Islip as recommended in the Propose Project, “Community Wide Drainage Plan.”

Estimated Project Costs

The total estimated cost for the project of \$10,600,000 includes \$1,700,000 for soft costs (engineering and design, permitting, environmental compliance, construction inspection, etc.), \$6,800,000 for hard costs (materials, labor, equipment rental, etc.), and \$2,100,000 for contingency to construct a series of drainage improvements as recommended in the Proposed Project, “Community-Wide Drainage Plan.” The scope of the project has not yet been developed; the hard cost estimate of \$6,800,000, however, is based on a preliminary scope of raising 15,000 linear feet of road by six inches, installation of 100 gate valves and catch basins in key locations, and construction of green infrastructure installations at 100 key locations.

The useful life of improvements to hard infrastructure, such as road raising or larger pipes and culverts, is 50 years;^{xxv} the net change in operations and maintenance is considered to be \$0 because the Town of Islip has a program of infrastructure asset management. The useful



A storm drain in an area of low elevation shows the water level in the drainage system to be near that of the street.

LONG-TERM FLOOD REDUCTION PROGRAM - PHASE II IMPROVEMENTS

RECOVERY SUPPORT FUNCTION
Infrastructure

COST
\$10,600,000

ASSETS MADE MORE RESILIENT
Public and private property and infrastructure in the highest flood risk areas of West Islip

RISK REDUCTION & BENEFITS
Reduced flood risk and increased sustainability of the local environment



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life of check valves is expected to be 15 years and these would present new infrastructure components and thus additional operations and maintenance costs. Additionally, stormwater best management practices, depending on the type of intervention chosen, can require a moderate level of maintenance, such as weeding, pruning of native plants, and clearing rain gardens of invasive species and debris. Though the project scope is yet to be defined an anticipated lifecycle cost is \$11,100,000.

Project Benefits

Risk Reduction Benefits

Recommendations of the Proposed Project Community-Wide Drainage Plan would include projects to upgrade the streets, storm sewers, and public rights-of-way to better manage and reduce on-street flooding, which currently causes access and egress issues for residents south of Montauk Highway, and which is projected to worsen with climate change. The raising of roads, upgrading of the subsurface drainage infrastructure, installation of check valves at outlets, and installation of stormwater best management practices would reduce risk to residents by minimizing repetitive flooding issues.

Economic Benefits

The Town of Islip currently manages flood issues south of Montauk Highway. One expensive and unsustainable method is to deploy pump trucks to collect floodwaters that pool in streets and transport it away for proper disposal. The investment in smart long-term upgrades to NYRCR West Islip's "green" and "gray" drainage infrastructure would reduce the use of uneconomical practices such as pump trucks and instead finance a functional system that is built for anticipated future flood conditions.

This project would create jobs for the design and construction activities. An estimated 132.5 full time equivalent (FTE) jobs would be created.^{xxvii} This project aligns with and supports the Long Island Regional Economic Development Council's (REDC) "Key Strategy" regarding the creation of jobs in infrastructure: "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."^{xxviii}

Environmental Benefits

As a comprehensive flood reduction program based on recommendations from the Proposed Project Community-Wide Drainage Plan, all of the drainage improvements carried out would take



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into account West Islip's natural drainage infrastructure, particularly wetlands and creeks, and endeavor to protect and enhance their ecological services.

In addition, this project includes a component for the construction of stormwater best management practices. This component would use green infrastructure interventions to mimic nature by capturing stormwater runoff before it enters and overwhelms the subsurface drainage system, and instead allowing it to soak into the ground. Types of interventions that may be appropriate for West Islip include rain gardens, infiltration basins, downspout disconnections, and rain barrels. Green infrastructure designs have the added benefit of filtering water as it soaks into the ground, which over time will improve the quality of the water that makes its way to the bay. The surface and groundwater quality improvements that may result from this project align with recommendations from the Suffolk County Department of Health in their 2014 *Comprehensive Water Resources Management Plan*.^{xvi}

Health and Social Benefits

Each of the flood reduction strategies recommended in this project will have the benefit of reducing on-street flooding that can be a hazard for all residents, but particularly for elderly and disabled. An estimated 3,910 elderly West Islip residents would benefit from the flood reduction measures carried out under this project.

Cost-Benefit Analysis

This project is conceptual and the exact scope would be developed and refined in the Community-Wide Drainage Plan. In addition, the project represents a long-term capital improvement program that would be implemented for 20 or 30 years on an incremental and gradual basis in an attempt to keep up with increasing flood risks and sea level rise. On the timescale of two or three decades, the cost benefit of flood reduction investments will be realized. The beneficiaries for this project would include the entire West Islip population of 28,335 people.^{xxvii}

Risk Reduction Analysis

A risk reduction analysis using the risk assessment tool was not conducted because the scope of work for this project has not been determined. The assets that would be protected, therefore, cannot be determined. The goal of the designed improvements, however, will be to undertake projects that result in the greatest risk reduction for the most residents, which will likely occur with projects that target the extreme and high risk areas of West Islip.



General Timeframe for Implementation

Engineering and design and permitting can be completed within 12 months of project approval. Construction can be completed within another 12-24 months thereafter.

Regulatory Requirements Related to Project

As the scope of work has yet to be determined, regulatory requirements are unknown. However, improvements to be completed within the public right of way and must comply with all codes and requirements of the Town of Islip, Suffolk County Public Works, and New York State Department of Transportation (NYS DOT). Projects that impact the shoreline or tidal wetlands will involve the U.S. Army Corps of Engineers (USACE) and Coastal Zone Management (CZM) consistency concurrence with New York State Department of State (NYS DOS). New York State Department of Environmental Conservation (NYS DEC) Tidal and Freshwater Wetlands and other permits will be required for the installation of new, or the modification of existing, shoreline stabilization structures.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



PROPOSED PROJECT: Long-Term Flood Reduction Program—Pump Stations

Project Description

The purpose of this project is to ensure continuity of operations for a Federal Emergency Management Agency (FEMA)-critical drainage pump station. NYRCR West Islip’s two stormwater pump stations at the southern end of Eaton Lane and Sequams Lane Center failed during Superstorm Sandy because their electrical controls were flooded. The Town of Islip provided backup power generators and elevated electrical controls as an emergency stop-gap measure, though the work was not completed in a manner intended for long-term operation.

The Sequams neighborhood is a particularly exposed residential area of NYRCR West Islip due to its very low land elevations (much of it is five feet above sea level or less) and adjacency to the bay and finger canals. Much of the neighborhood is located in the extreme and high risk areas and residents reported storm surge levels of up to five feet in the streets and on residential properties during Superstorm Sandy. Residents are realistic about the ability to prevent flooding during future storm events of Superstorm Sandy’s magnitude, but they also want to reduce the frequent flooding that occurs from nor’easters and particularly strong high tide events. The reliable operation of the drainage pump stations is a step toward a more resilient drainage system.

This project would fund the elevation of electrical controls and the installation of a three-phase, 12KW natural gas generator at each of the two drainage pump stations in the Sequams neighborhood to ensure the continuity of operations for this critical drainage equipment. The project would raise the electrical controls and generator at each station to an elevation above the 500-year flood level. This project would be part of the implementation of a long-range capital improvement program to reduce flooding throughout West Islip as recommended in the Proposed Project, “Community Wide Drainage Plan.”

Estimated Project Costs

The total estimated cost for this project of \$235,000 includes \$145,000 for the procurement, installation, and testing of two natural gas backup generators at two drainage pump stations, as well as the elevation of electrical controls and connections, \$40,000 for soft costs (engineering, permitting, etc.), and \$50,000 for contingency. The useful life of the



A site location map shows West Islip’s two drainage pump station in the Sequams neighborhood.

LONG-TERM FLOOD REDUCTION PROGRAM - PUMP STATIONS

RECOVERY SUPPORT FUNCTION
Infrastructure

COST
\$235,000

ASSETS MADE MORE RESILIENT
Two pump stations, 93 residential structures, and Babylon Yacht Club

RISK REDUCTION & BENEFITS
Continuity of drainage pumping capability throughout future storm events



newly installed backup generators is 15 years.^{xxv} This project includes the upgrade of two existing pump stations and the only additional maintenance component will be brief monthly maintenance and inspection, at an additional expense of approximately \$2,000 per year. The lifecycle cost of this project is approximately \$265,000. Fuel is an added cost that would be required only after the pumps have required backup power during a power outage and is not included in the additional expense of maintenance and inspection or in the total project cost.

Project Benefits

Risk Reduction Benefits

The implementation this project involves the flood-proofing of electrical controls and the installation of backup power for two drainage pump stations in the Sequams neighborhood of NYRCR West Islip. This project will achieve a direct risk reduction for the two pump stations being addressed. For the pump station facilities, which Islip Public Works addressed after Superstorm Sandy with only temporary stopgap measures, the implementation of this project will mitigate the facilities against both future flooding and power outages and ensure the continuity of their operations in future storms.

The mitigation of the pump stations would also reduce flood risk to nearby assets including the residential housing that is located in the service areas of the pump stations and a recreational facility, which is adjacent to one of the pump stations. The pump stations directly benefit 93 residential structures located on Eaton Lane, Sequams Lane East, and Sequams Lane Center, as well as indirectly benefiting hundreds more by reducing the load on the overall drainage system.

Economic Benefits

The continued operation of the pump stations reduces flooding of residential properties, which translates into avoided future costs of damages to residential structures and vehicles. The pump stations also help to keep streets clear of floodwaters that would otherwise block access and egress. Economic productivity is decreased for employees who cannot get to work due to flooded streets, causing economic burdens to the residents.

Health and Social Benefits

Reliable access is a critical matter for residents and particularly so for those who may be elderly or have reduced mobility. Maintaining free and clear access on residential streets is a public safety issue that this project would help to address.



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Cost-Benefit Analysis

This project would potentially benefit 93 households representing an estimated 287 people whose risk to flooding, and the damage costs and access barriers that flooding entails, would be directly reduced. The Committee considers the project cost of \$235,000 a reasonable expense to mitigate a critical flood reduction facility that serves 93 households and a recreational facility directly, plus several hundred more households indirectly by reducing the load on the overall drainage system.

Risk Reduction Analysis

This project would reduce risk of flooding for two drainage pump stations, 93 residential structures, and one recreational facility. The risk score for the drainage pump stations would decrease from severe risk to moderate risk. The risk scores for the 93 residential structures and the recreational facility, all of which are located in the extreme risk area, would be lowered from severe risk to high risk. These residences and recreational facility remain at risk to flooding that overtops the bulkheading as well as being vulnerable to power outages. These assets would benefit from additional resiliency measures to elevate the structures.

General Timeframe for Implementation

The procurement and installation of the backup generators as well as elevation of electrical controls can be completed within 3-6 months of project approval.

Regulatory Requirements Related to Project

The infrastructure retrofit and backup generator installation will comply with local building codes for backup generators and FEMA 500-year floodplain elevations. Compliance may also involve the New York State Department of Environmental Conservation (NYS DEC), the U.S. Army Corps of Engineers (USACE), and Coastal Zone Management (CZM) consistency concurrence with New York State Department of State (NYS DOS).

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



Strategic reductions of flooding on streets and residences in West Islip is a primary goal of this project.



PROPOSED PROJECT: Long-Term Flood Reduction Program— Rehabilitation of Willetts Creek

Project Description

The purpose of this project is to restore the movement of water in Willetts Creek and reduce flooding of the adjacent areas. Willetts Creek is a major creek corridor in West Islip, extending from Montauk Highway north to Union Boulevard. Under natural conditions, Willetts Creek would serve as a tidal wetland, allowing water from the bay to move in and out of the landscape unimpeded. However, suburban development has narrowed the creek’s natural floodplain and also channeled the water under roads and through culverts. Exacerbating the flood issues that result from the narrowness of the creek, the adjacent neighborhood was designed (prior to modern drainage and stormwater management practices) on a slant to channel water over the streets directly into the creek. Thus the constricted creek corridor is being made to handle far more stormwater runoff than would naturally occur. The culverts have become congested with silt and debris and currently inhibit the upstream landscape’s natural drainage and sediment transport processes.

Although the Town of Islip maintains the creeks and culverts, the litter, vegetative debris and silt that resulted from Superstorm Sandy’s destruction were unprecedented and highlighted the poor design of the surrounding neighborhood. Due to the deluge of silt and debris from Superstorm Sandy, the Creek corridor has been silted up with organic material, litter, and overgrowth of the surrounding vegetation that congest the creek bed and further obstruct the sub-street culverts. Due to these obstructions, during high tide events, nor’easters, or major storm surge occurrences, water from the bay cannot flow into the creek’s natural floodplain, resulting in the bay’s excess waters building up in the canal system and increasing the amount that overtops bulkheads and floods residential properties. Likewise, during high rain events, stormwater runoff cannot easily drain downstream to the bay, resulting in flooding of upstream areas.

This project would fund the rehabilitation of one of NYRCR West Islip’s major creek systems, Willetts Creek, to mitigate flooding that occurs due to excess stormwater runoff, stream flow blockages, and underdesigned culverts. Activities may include planning and design to most effectively handle stormwater runoff, clearing of overgrowth, debris, siltation, and culvert blockages that have built up because of Superstorm Sandy, and upgrading subsurface culverts. The proper



A site location map showing Willetts Creek as a central feature in the area.

LONG-TERM FLOOD REDUCTION PROGRAM - REHABILITATION OF WILLETTS CREEK

RECOVERY SUPPORT FUNCTION Natural and Cultural Resources

COST
\$1,760,000

ASSETS MADE MORE RESILIENT
Willetts Creek and public and private properties and roads adjacent to the creek

RISK REDUCTION & BENEFITS
Reduced flood risk, improved movement of water, improved water quality, and restored natural resource



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functioning of the creek will reduce flooding to adjacent roads and public and private properties, as well as improve water quality by allowing the creek's ecology to naturally filter stormwater runoff. Willetts Creek's revitalization may serve as a pilot project to be repeated in West Islip's other major creek systems such as Sampawams, Skookwams, and Trues.

An additional component of the project would also fund a community walking and bicycle path that would border the west bank of Willetts Creek and connect the West Islip Public Library, the Paul J. Bellew Elementary School, West Islip High School, Beach Street Middle School and the Union Boulevard shopping areas. In addition to providing connectedness and recreational opportunities, the path would elevate the visibility and importance of the creek to the Community and enable improved access to the creek by the Town for ongoing maintenance efforts. The project could be carried out in coordination with and connect to the Village of Babylon's planned walking/bicycle path for improved regional integration of recreational and economic development opportunities.

This project would be part of the implementation of a long-range capital improvement program to reduce flooding throughout West Islip adjacent as recommended in the Propose Project, "Community Wide Drainage Plan."

Estimated Project Costs

The total estimated cost for this project of \$1,760,000 includes \$280,000 for soft costs (engineering and design, permitting, and environmental compliance), \$1,130,000 for hard costs (materials, labor, etc. for construction). Preliminarily, it is estimated that the project scope would include approximately 8,000 cubic yards of sediment and debris from Superstorm Sandy would be removed from 4,000 linear feet of the creek corridor and replaced with native trees and shrubs, three undersized culverts would be retrofitted or rightsized, and an Americans with Disabilities Act (ADA) compliant walking path of about one mile.

The useful life of retrofitted culverts is 30 years, while the useful life of planted vegetation can be up to 20 years.^{xxv} Stormwater management measures that seek to enhance the natural environment's drainage capabilities, such as by rehabilitating and enhancing a creek corridor, can require a moderate level of maintenance, such as pruning of vegetation and clearing debris. Estimating maintenance costs at \$5,000 per year for 30 years, the lifecycle cost of this project is estimated at \$1,910,000.



Project Benefits

Risk Reduction Benefits

The implementation of this project to rehabilitate Willetts Creek would substantially improve the movement of water in and out of the Community to the bay from both high rain and storm surge events and reduce flood risk. The creek would function more naturally with the ability to channel stormwater runoff from upstream areas during rain events and accept the bay's waters during tidal surge events. Reduced flooding adjacent to the creek and downstream would benefit residential housing, important Community assets such as the public library and high school, and Montauk Highway. Additionally, the walking/biking path would improve access by the Town to the creek bed for the purpose of ongoing maintenance to keep the creek's natural drainage functioning at maximum capacity. The path would also increase educational opportunities for residents to observe and understand the creek's ecological services to the Community, including as a natural drainage and flood reduction mechanism.

Economic Benefits

This project will create benefits through avoided costs associated with on-street and on-site flooding of properties. In addition, the proposed path would link several Community assets, including Montauk Highway, Higbie Lane, the public library, and three schools to the shopping areas on Union Boulevard, which may lead to an increase in spending at food and restaurant establishments.

This project will also create jobs for the construction activities over the full implementation period. An estimated 22 full time equivalent (FTE) jobs would be created.^{xxvii} Finally, this project aligns with and supports the REDC's "Key Strategy" regarding jobs in the sector of recreation to "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."^{xxviii}

Environmental Benefits

The project would remediate, enhance and protect Willetts Creek and approximately 9.2 acres of tidal wetlands adjacent to it. Approximately 8,000 cubic yards of silt would be removed in addition to organic and nonorganic debris that washed into the creek during Superstorm Sandy, helping to restore the flow of stormwater and tides in and out of the creek. By reestablishing this connection between the creek and the bay and removing impediments to the flow of water, water quality and wildlife habitat in the creek and downstream would improve. The



Children enjoying a community walking and biking path like the one proposed for Willetts Creek.



surface and groundwater quality improvements that may result from this project align with recommendations from the Suffolk County Department of Health in their 2014 *Comprehensive Water Resources Management Plan*.^{xvi} The path would also provide an opportunity for residents to enjoy and learn about one of NYRCR West Islip's primary natural resources and increase the likelihood of those residents becoming advocates for its continued protection.

Health and Social Benefits

A walking and biking path would encourage all of NYRCR West Islip's 28,335 residents^{xxvii} to engage in outdoor activity that is part of a healthy lifestyle and may help to improve public health indicators such as reduced adult and childhood obesity. The benefits of this lifestyle change would improve both mental and physical health for all residents. The pathway would also be Americans with Disabilities Act compliant to include accessibility measures.

Cost-Benefit Analysis

Willetts Creek, which runs nearly a mile through West Islip and drains many of West Islip's residential neighborhoods, should be seen as a critical element in the Hamlet's drainage infrastructure. The rehabilitation of the creek has numerous direct benefits (reduced flooding of adjacent neighborhood and Community assets) and co-benefits (improved water quality, enhanced wildlife habitat, beautification, and an outdoor recreation amenity for the Community) that support the conclusion that this project is a good investment.

Risk Reduction Analysis

This project would reduce risk for Willetts Creek as a natural resource asset by helping to restore its natural movement of water. It would also reduce flood risk to residences and public properties adjacent to the creek, including West Islip Public Library and West Islip High School, and Montauk Highway that can flood when the creek overflows.

General Timeframe for Implementation

Engineering and design, permitting, and environmental compliance can be completed within 12 months of project approval. The construction can be completed within another 12 months thereafter.

Regulatory Requirements Related to Project

New York State Department of Environmental Conservation (NYS DEC) Tidal and Freshwater Wetlands and other permits will be required for for the modification of the creek corridor. Projects that impact the tidal wetlands may also involve the U.S. Army Corps of Engineers (USACE)



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and Coastal Zone Management (CZM) consistency concurrence with New York State Department of State (NYS DOS). Plans should also be reviewed by Suffolk County and the Town of Islip.

Jurisdiction

This project would fall under multiple jurisdictions including the Town of Islip, Suffolk County, and the State of New York.



PROPOSED PROJECT: *Downtown Revitalization Plan and Related Activities*

Project Description

The purpose of this project is to increase the economic resiliency of NYRCR West Islip’s local economy. West Islip’s central business district (CBD) along Higbie Lane and Union Boulevard is located immediately outside of the moderate risk area and fortunately did not flood during Superstorm Sandy, unlike business districts in the neighboring communities where the CBDs are located along Montauk Highway. West Islip’s CBD presents an excellent economic development opportunity to increase the economic resiliency of the local economy in an area that will be safe and dry for the foreseeable future.

This project would fund the development of a downtown revitalization plan for West Islip’s CBD, as well as small capital improvements and programming activities to spur the overall revitalization. Activities and programs might include the establishment of a Business Improvement District, disbursement of small grants for façade enhancements, development of promotional materials, and holding a series of markets/festivals. The Community also recommends a Featured Project, “Downtown Revitalization Streetscape Improvements,” that would complement this Proposed Project.

Estimated Project Costs

The total estimated cost for this project of \$300,000 includes approximately \$200,000 for the public engagement, planning study, and development of the revitalization plan; \$20,000 for programming activities; and \$80,000 for a façade improvement program for local businesses in the Higbie Lane/Union Boulevard commercial area. Programming activities will include events organized to draw people to West Islip’s downtown area, such as a local artist market, food festival, children’s art walk, or other afternoon or evening activities. Estimated costs for façade improvements would likely require a match or in-kind assistance from each business owner to spruce up storefronts. No additional operations and maintenance costs are anticipated for this project; therefore, the total lifecycle cost of this project is \$300,000.

Project Benefits

Risk Reduction Benefits

The preparation of a downtown revitalization plan, including a public engagement process and promotional activities, will bolster West Islip’s



The corner of Higbie Lane and Union Boulevard at the heart of downtown West Islip.

DOWNTOWN REVITALIZATION PLAN AND RELATED ACTIVITIES

RECOVERY SUPPORT FUNCTION
Economic Development

COST
\$300,000

ASSETS MADE MORE RESILIENT
West Islip’s local economy

RISK REDUCTION & BENEFITS
Lower chance of economic disruptions or lost tax revenue following a future event



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local business community and strengthen the economic resilience of the area. This would reduce the risk of post-disaster disruptions to business operations, loss of tax revenue, and economic downturns. Furthermore, West Islip's downtown located just outside of the flood risk area should be a focus of investment as it has a lower risk profile than other nearby downtown districts.

Economic Benefits

Tactical programming efforts, such as festivals and pop-up markets, as well as façade improvements for the small businesses along Higbie Lane, will serve as a catalyst to increase interest and spending in West Islip's downtown shops, which in turn will increase business profits and tax revenue. This project also aligns and supports the Long Island Regional Economic Development Council's (REDC) Key Strategies to invest in downtowns for vibrant community life: "Develop innovation and industry clusters in transformative locations across the region, including downtowns, brownfields and university, research and medical centers, by integrating the smart-growth principles of transit oriented development and vibrant community life" and "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."^{xviii}

Environmental Benefits

West Islip residents have expressed that they would like their downtown to be pedestrian and bicycle friendly and these proposed downtown revitalization efforts could result in more environmentally friendly transportation habits.

Health and Social Benefits

A vibrant and safe downtown area that is walkable and bikeable would encourage more community engagement, and increase outdoor activities for the 28,335 residents of NYRCR West Islip.^{xxvii} If the recommendations in the revitalization plan are implemented at a future time, the benefits of this lifestyle change would improve both mental and physical health for all residents. Improvements to intersections, such as Union Boulevard and Higbie Lane, would dramatically improve the safety of street crossings for pedestrians and cyclists by highlighting crosswalks, improving visibility, and calming traffic. Improvements would also be Americans with Disabilities Act compliant to include accessibility measures, such as curb ramps at intersections.



Cost-Benefit Analysis

West Islip residents expressed a desire to have their downtown area reinvigorated, particularly after the effects of Superstorm Sandy on neighboring downtown areas. West Islip's core commercial district along Higbie Lane and Union Boulevard is located just outside of the moderate risk assessment area, and therefore presents an excellent opportunity to invest in an existing downtown area with a similar history to the neighboring main street areas, but without concern for future flood hazards. The Community, however, needs a plan for effective targeted investments. A \$300,000 investment in a downtown revitalization plan will accomplish this and provide the foundation for future downtown improvements.

Risk Reduction Analysis

A risk reduction analysis using the risk assessment tool was not completed for this project.

General Timeframe for Implementation

The public involvement and revitalization plan may be completed within 9-12 months of project approval. The programming activities and façade improvement program may follow with completion within another 12-24 months.

Regulatory Requirements Related to Project

No regulatory requirements have been identified. Recommendations of the plan that will likely include streetscape improvements must comply with New York State Department of Transportation (NYS DOT), Suffolk County Public Works, and Town of Islip Department of Public Works codes and standards. The County maintains Higbie Lane and Union Boulevard. Planning recommendations relating to streetscape improvements, therefore, should be developed in coordination with these agencies.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



FEATURED PROJECT: Downtown Revitalization Streetscape Improvements

Project Description

The purpose of this project is to increase the economic resiliency of NYRCR West Islip’s local economy by carrying out capital improvements as recommended in the Proposed Project, “Downtown Revitalization Plan and Related Activities.” West Islip’s central business district (CBD) along Higbie Lane and Union Boulevard is located immediately outside of the moderate risk area and fortunately did not flood during Superstorm Sandy, unlike business districts in the neighboring communities where the CBDs are located along Montauk Highway. West Islip’s CBD presents an excellent economic development opportunity to increase the economic resiliency of the local economy in an area that will be safe and dry for the foreseeable future.

Activities under this project as recommended in the revitalization plan may include streetscape and intersection improvements, traffic calming, lot and curb cut consolidation, and pedestrian and bicycle improvements for a safe and welcoming "complete streets" downtown. The project will require an extensive design phase with traffic studies and public engagement to ensure that streetscape designs align with the Community’s vision.

Estimated Project Costs

The total estimated project cost of \$1,000,000 includes \$160,000 for soft costs (engineering and design, permitting, etc.); \$640,000 for hard costs (labor, materials, equipment rental, etc. for construction), and \$200,000 for contingency to implement streetscape improvements in West Islip’s CBD. The scope of the improvements will be developed in the Proposed Project for a Downtown Revitalization Plan; however, improvements are likely to include improved drainage, traffic calming, and enhanced pedestrian and bicycle safety at six intersections; curb cut consolidation and parking improvements; and beautification and amenities such as street trees, planters, benches, bicycle racks, and signage.

The useful life of investments in West Islip’s downtown area is 50 years.^{xxv} Although the streetscape needs to be maintained (a typical cost of approximately \$3,000 per year), the project is an upgrade to an existing streetscape and the net impact to the Town of Islip’s



Residents hope that a more walkable downtown will increase foot traffic and strengthen the local economy.

DOWNTOWN REVITALIZATION STREETScape IMPROVEMENTS

RECOVERY SUPPORT FUNCTION
Economic Development

COST
\$1,000,000

ASSETS MADE MORE RESILIENT
West Islip’s local businesses on Higbie Lane and Union Boulevard within a designated downtown commercial district

RISK REDUCTION & BENEFITS
Lower chance of economic disruptions or lost tax revenue following a future event



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maintenance budget is essentially zero. The total lifecycle cost of this project is \$1,150,000.

Project Benefits

Risk Reduction Benefits

The implementation of recommendations from the Proposed Project Downtown Revitalization Plan will help to bolster West Islip's local business community and strengthen the economic resilience of the area. Strong local businesses would have the capital to rebound quickly and resume business operations. This in turn would reduce the risk of post-disaster loss of tax revenue and economic downturns. Furthermore, West Islip's downtown, located just outside of the flood risk area, should be a focus of investment as it has a lower risk profile than other nearby downtown districts.

Economic Benefits

The *Shopping Center and Downtowns*^{xii} report from 2006 indicates that West Islip's CBD at Higbie Lane and the Long Island Rail Road tracks is comprised of 20 stores in four acres of approximately 28,000 square feet of commercial space. Although there is no anchor store, in 2005 there was a 0% vacancy rate, indicative of a profitable and promising business district. Despite this fact, residents expressed that the downtown lacks the strong identity and character defining features of its neighboring downtown areas, and as a result is not thought of as an inviting "Main Street" destination.

The investment in improved intersections in the Higbie Lane/Union Boulevard commercial area, plus additional investments in sidewalk and pedestrian/bicycle amenities would significantly increase the attractiveness of the area and draw in consumers from West Islip and surrounding villages. Traffic calming and increased foot traffic would increase visibility of small businesses as well as the number of direct and ancillary shopping trips to these local businesses. Increased spending would directly raise revenue for the businesses and increase sale tax revenue for the Town of Islip.

This project will also create temporary jobs for the reconstruction of the streetscape, resulting in the creation of an estimated 12.5 full time equivalent (FTE) employee positions.^{xxvii} Finally, this project aligns and supports the Long Island Regional Economic Development Council's (REDC) Key Strategies to revitalize downtowns: "Develop innovation and industry clusters in transformative locations across the region, including downtowns, brownfields and university, research and medical centers, by integrating the smart-growth principles of transit oriented



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development and vibrant community life” and “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.”^{xviii}

Environmental Benefits

West Islip residents have expressed that they would like their downtown to be pedestrian and bicycle friendly and these proposed downtown revitalization efforts could result in more environmentally friendly transportation habits.

Health and Social Benefits

A vibrant and safe downtown area that is walkable and bikeable would encourage more community engagement, and increase outdoor activities for the 28,335 residents of NYRCR West Islip.^{xvii} If the recommendations in the revitalization plan are implemented at a future time, the benefits of this lifestyle change would improve both mental and physical health for all residents. Improvements to intersections, such as Union Boulevard and Higbie Lane, would dramatically improve the safety of street crossings for pedestrians and cyclists by highlighting crosswalks, improving visibility, and calming traffic. Improvements would also be Americans with Disabilities (ADA) compliant to include accessibility measures, such as curb ramps at intersections.

Cost-Benefit Analysis

The \$1,000,000 cost to revitalize West Islip’s downtown area is an excellent investment because it will return economic, environmental, and health/social benefits to the Community and neighboring villages. In terms of future resiliency during storms, this area of NYRCR West Islip is a reliable investment due to its geographic location just outside of risk areas. In the event of a future storm with flooding that exceeds that of Superstorm Sandy, downtown West Islip will be the closest dry commercial area to residents of West Islip, Babylon, and Bay Shore.

Risk Reduction Analysis

The areas of Union Boulevard and Higbie Lane that would benefit from streetscape improvements are located outside of the risk areas and therefore a risk reduction analysis was not completed for this project. The implementation of this project would reduce risk to the local West Islip economy in the event of a future disaster event.



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General Timeframe for Implementation

Engineering, design, procurement, and permitting can be completed within 12 months of project approval. Construction can be completed within another 12-24 months thereafter.

Regulatory Requirements Related to Project

The County maintains Higbie Lane and Union Boulevard roadways, while intersecting streets, sidewalks, and driveways are maintained by a combination of the Town of Islip and the local property owner. Streetscape improvements will be completed within the public right of way and must comply with New York State Department of Transportation (NYS DOT), Suffolk County Public Works, and Town of Islip Department of Public Works codes and standards. Permitting and approval by these entities will be necessary prior to construction.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip and Suffolk County.



PROPOSED PROJECT: *Post-Event Health Services for Vulnerable Populations*

Project Description

The purpose of this project is to increase awareness of and access to mental and physical health care services related to disaster events. In the aftermath of Superstorm Sandy, Committee members describe a situation where health needs were not met for several reasons, including inadequate preparation of families and elderly citizens who did not anticipate the magnitude or duration of the storm's impacts; unawareness of health care facilities and services that were operational (or never ceased operations) after the storm; and preoccupation with the urgent needs of cleanup and rebuilding. Committee members indicate that the last factor in particular, preoccupation with the most immediate recovery needs, led to a multitude of mental health issues such as severe chronic stress and depression. The Committee, in coordination with local health care providers, identified three overarching areas for improvement in future storm events:

- Communication—in the immediate aftermath of the storm
- Outreach into the community—in the days and weeks following
- Emotional support/counseling—in the weeks to months after the disaster

The Committee proposes to use funding to enhance the local health care providers' capacity to serve the local community in the areas of communication, outreach, and emotional support/counseling through the following activities:

- Communication to the community regarding storm/disaster preparedness, either in the form of a community education event, a series of community based meetings, a resource booklet, or some combination thereof;
- Training of staff to facilitate support groups/grief counseling services following a large-scale disaster.

The intended outcomes of this project would be to increase residents' knowledge and awareness of health-related preparedness measures for themselves and their families; to build capacity of local health care providers to provide counseling services following acute events; and to increase awareness of and uptake of health-related resources following an acute event. The Committee has expressed that there should be a particular focus on outreach to vulnerable populations. This project dovetails with the Proposed Project for a Local Drop-In Center, where



Adequate physical and mental health resources following emergencies is a need expressed by the Community.

POST-EVENT HEALTH SERVICES FOR VULNERABLE POPULATIONS

RECOVERY SUPPORT FUNCTION
Health and Social Services

COST
\$275,000

ASSETS MADE MORE RESILIENT
Mental and physical health of all West Islip residents

RISK REDUCTION & BENEFITS
Lowered risk of long-term mental and physical ailments as a result of acute storm events



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local health care professionals can establish support groups for West Islip residents in the days and weeks following the event.

Estimated Project Costs

The total estimated cost for this project of \$275,000 includes training of health care professionals to facilitate support groups/grief counseling following an acute event as well as labor and materials for an outreach and public awareness campaign. No additional operations and maintenance costs have been identified; therefore the lifecycle cost is \$275,000.

Project Benefits

Risk Reduction Benefits

The implementation of outreach and communications activities would reduce risk of unmet health care needs for all residents in the Community. Outreach information may include a range of disaster-related health topics from preparedness to recovery. For instance, prior to an event the topics may be refilling prescription medications and charging batteries in medical devices. In the immediate aftermath of a severe storm event, health care needs may relate to acute trauma or hypothermia. In the weeks and months following an event, stress management, depression, and other mental health issues may be of concern. This project would help to ensure that residents are prepared for and equipped to respond more effectively to disaster-related health issues.

Economic Benefits

Unmet mental and physical health care needs can result in work absenteeism and lower economic productivity. The implementation of this project would seek to improve residents' uptake of available health care resources and thereby support continuity of current levels of productivity.

Health and Social Benefits

The implementation of this project would increase the Community's awareness of health-related emergency preparedness issues as well as access to mental and physical health care related resources and services available to them after an acute event. It is the intention that increased knowledge will lead to increased uptake of these services and thereby reduce residents' risk of suffering from mental and physical ailments following an event.

The public outreach activities in this project would likely extend to residents throughout the Community. West Islip's population of 28,335 residents^{xxvi} would benefit from increased knowledge of and access to



mental and physical health care resources. Of this population, an estimated 3,910 are aged 65 years and older and considered a vulnerable population. The population within NYRCR West Islip that was likely most impacted by Superstorm Sandy are those who live in the extreme, high, and moderate risk assessment areas and it can be surmised that these household would have benefited most from knowledge of available health care services. These areas are comprised of an estimated 4,677 households, about 14,452 persons. Of those beneficiaries, an estimated 199 are ages 65 years and older, who as a vulnerable population would benefit greatly from information on post-event health and social service resources.

Cost-Benefit Analysis

The strategic dissemination of health care related information prior to and following an event might save lives in the aftermath of a disaster. The more knowledge and preparation residents have before an acute event, the more likely they will avoid health-related emergencies and/or to access the appropriate resources should a health-related emergency arise. This project has the potential to reach 28,335 residents in West Islip, 14,452 of whom live in the extreme, high, or moderate risk areas and would therefore be at higher risk of physical and mental health issues following a disaster event. The Committee feels that the risk reduction and health benefits for residents who face mental and physical health issues following an acute event are worth the estimated cost of approximately \$275,000.

Risk Reduction Analysis

A risk reduction analysis using the risk assessment tool was not completed for this project. However, this project has the potential to reduce health-related risk to 28,335 beneficiaries in West Islip.

General Timeframe for Implementation

The training component of this project could be completed within 0-3 months of project approval. The outreach campaign may extend up to 24 months to maximize awareness raising benefits throughout the community by sustained messaging.

Regulatory Requirements Related to Project

No regulatory requirements have been identified.

Jurisdiction

This project would likely fall under the jurisdiction of Suffolk County Office of Emergency Management or a local/regional healthcare administrator.



FEATURED PROJECT: *West Islip Marina and Beach*

Project Description

The purpose of this project is to restore safe access to a critical natural and cultural asset in NYRCR West Islip through the repair of damages incurred by Superstorm Sandy. The marina is a public facility accessible to all residents of the Town of Islip and serves as a beloved and active recreational asset in the summer months. The marina area has slips for about 120 private watercraft, as well as slips reserved for the West Islip Fire Department’s fireboats. The overall Marina and Beach facility has a beach area, pavilion with bathrooms, showers, and concessions, playground structures, and a large parking field with grassy areas adjacent for picnicking and play. Just north of the Marina and Beach are Beach Drive ball fields with four baseball diamonds and fields for soccer, lacrosse, and football. The Marina, Beach, and ball fields become the epicenter of recreational activities in the warmer months for families and youth.

The Town of Islip Department of Parks and Recreation have stated that damage to the bulkheading at the Marina as a result of Superstorm Sandy’s storm surge, wave action, and debris included damage to the wood pilings and sheeting, particularly at the entrance to the marina adjacent to West Islip Beach; erosion of the ground behind the walls; exposure and potential undermining of tie-rods; damage to the boardwalk adjacent to the fireboats; and concerns of general weakening of the structure. Damage to the beach and park included extreme erosion of the beach and flooding and minor resulting damages to the pavilion and walkways.

This project would fund repairs to approximately 600 feet of bulkheading at West Islip Marina. The bulkheading would be rebuilt to anticipated future sea level rise thereby increasing the facility’s future resiliency. The full repair of this asset will help to signify recovery from Superstorm Sandy to the West Islip Community.

Estimated Project Costs

The total estimated cost of \$990,000 includes \$160,000 for soft costs (engineering and design, permitting, construction inspection, etc.), \$630,000 for hard costs (labor, materials, equipment rental, etc.), and \$200,000 for contingency for construction of 600 linear feet of bulkheading around the perimeter of West Islip Marina. The useful life of this project is estimated at 15 years.^{xxv} The project is for an existing facility and the Town of Islip maintains the marina; therefore, the net



West Islip Marina’s facilities, which serve as a major cultural and recreational asset, were damaged in Superstorm Sandy.

WEST ISLIP MARINA AND BEACH

RECOVERY SUPPORT FUNCTION

Natural and Cultural Resources

COST

\$990,000

ASSETS MADE MORE RESILIENT

West Islip Marina

RISK REDUCTION & BENEFITS

Rebuilt shoreline stabilization structures around the marina to anticipated sea level rise elevations



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impact of this project on the operations and maintenance budget for the Town of Islip is essentially \$0. With an estimated \$2,000 for maintenance costs per year, the lifecycle cost of this project is estimated at \$1,020,000.

Project Benefits

Risk Reduction Benefits

The implementation of this project would rebuild the West Islip Marina's damaged bulkheading to anticipated sea level rise, thereby reducing risk to the marina and the West Islip Beach and Marina parking lot and site. Beyond the marina parking lot on Beach Drive are Our Lady of Consolation Nursing and Rehabilitative Care Center and Good Samaritan Hospital. This project may therefore slightly reduce flood risk to these two FEMA-critical facilities.

Economic Benefits

This project will create jobs for the construction activities over the full implementation period. An estimated 12.4 full time equivalent (FTE) jobs would be created.^{xvii} Finally, this project aligns with and supports the Long Island Regional Economic Development Council's (REDC) "Key Strategy" regarding jobs in the sectors of tourism and recreation to "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."^{xviii}

Environmental Benefits

This project will secure a vital access point to the Great South Bay for many families in West Islip, which becomes a valuable opportunity for learning about and developing a sense of stewardship over the bay's ecosystem.

Cost-Benefit Analysis

This project would restore an important cultural and recreational asset to the Community. The project would also rebuild that asset to be more resilient and sustainable and would signal to the Community that the Hamlet is recovering in a stronger and smarter manner. The Committee feels that the estimated cost of about \$990,000 is a worthwhile investment in a vital cultural asset that will be able to withstand future storm events and sea level rise in the future.

Risk Reduction Analysis

This project would reduce risk to the West Islip Marina by altering its landscape attributes. The newly constructed bulkheading would be



The entrance to West Islip Marina from the Great South Bay adjacent to West Islip Beach.



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designed to anticipated sea level rise conditions, reducing the facility's risk score from the severe to high risk range.

General Timeframe for Implementation

Engineering and permitting could be completed within 3-6 months of project approval with construction completed within 6-12 months thereafter.

Regulatory Requirements Related to Project

Projects that impact the shoreline or tidal wetlands will involve the U.S. Army Corps of Engineers (USACE) and Coastal Zone Management (CZM) consistency concurrence with New York State Department of State (NYS DOS). New York State Department of Environmental Conservation (NYS DEC) Tidal and Freshwater Wetlands and other permits will be required for the installation of new, or the modification of existing, shoreline stabilization structures.

Jurisdiction

This project would fall under the jurisdictions of the Town of Islip.



FEATURED PROJECT: *Resilient Housing Assistance*

Project Description

The purpose of this project is to encourage more property owners in NYRCR West Islip to increase the resiliency of their residential construction. Many households in the Hamlet that were heavily damaged by Superstorm Sandy have chosen to rebuild with elevated homes and stronger construction methods. However, Committee members point out that the flooding from Superstorm Sandy could have been worse if there had been heavy rains in addition to the extreme storm surge. Committee members recognize that projected sea level rise may continue to increase the extent and magnitude of residential flood damages in the future. Furthermore, the Committee wants to view resiliency more broadly to include green initiatives such as green infrastructure and solar and wind power installations. There is an opportunity to open up access to financial assistance for residential housing retrofits for more residents who want to make their homes safer and more resilient in the face of future storm events.

This project would fund incentives for residents to build resiliency into their homes (e.g., small grants or low interest loans), including homes elevations, roof strapping, solar panel installations, and green roofs, among other hazard mitigation and sustainability measures. The project could be structured as a partnership with a local lending institution for a revolving fund of low-interest loans, which would expand the number of potential beneficiaries of the program. Grant or loan amounts would be approximately \$5,000 per household, with an estimated 80 to 100 households initially benefitting from this project.

Estimated Project Costs

The total estimated cost for this project of \$500,000 includes 80 to 100 grants or low-interest loans in the amount of \$5,000 each. The range of 80-100 homes is provided because there will be some amount of project management required for the implementation of the project, the amount of which will depend on the existing capacity of the sub-recipient. The useful life of the residential retrofits is 30 years.^{xv} Operations and maintenance costs would be the responsibility of the homeowner recipient of the assistance. However, these costs to homeowners are anticipated to decrease due to lowered flood insurance premiums; avoided future damages from flooding, wind, or wind driven rain; and/or lower home energy costs. The lifecycle cost of this project is therefore \$500,000.



A house elevation project underway in West Islip aims to reduce future flood damages.

RESILIENT HOUSING ASSISTANCE

RECOVERY SUPPORT FUNCTION

Housing

COST

\$500,000

ASSETS MADE MORE RESILIENT

80-100 residential structures

RISK REDUCTION & BENEFITS

A greener and more sustainable Community; decreased flood and wind damages from future storms; and increased awareness throughout the Community of sustainability and hazard mitigation options



Project Benefits

Risk Reduction Benefits

The provision of assistance to homeowners in the extreme, high, and moderate risk areas (who have not previously been eligible for similar resiliency assistance) to carry out structural retrofits to their housing structures, including elevation, roof strapping, and strengthening of windows and doors, would achieve significant risk reduction to the structures themselves and their inhabitants. The risk reduction must be assumed to be effective only for those homeowners who implement the mitigation measures; this risk reduction analysis does not suggest that the implementation of this project would reduce risk across the board for all housing in NYRCR West Islip.

Economic Benefits

Residents who utilize this project will benefit economically from decreased flood insurance premiums; avoided future damage costs from flooding, wind, or wind driven rain; and/or lower home energy costs. This project will also create temporary jobs for the construction work, resulting in the creation of an estimated 6.25 full time equivalent (FTE) jobs.^{xxviii}

Health and Social Benefits

The average household size in West Islip is 3.08 persons per household.^{xxvii} Assuming 80 households are benefited by this project, an estimated 246 residents will benefit from more resilient housing construction. Of the 246 persons, 13.8%, or an estimated 34 residents, are aged 65 years or older, and as a vulnerable population, would be better protected in their more resilient homes.

Cost-Benefit Analysis

This project is evidence that the Community of West Islip is interested in increasing the resiliency and sustainability of their housing stock in preparation for anticipated future risk, including more frequent and more intense storm events, sea level rise, and increasing interest in green energy. The project is a cost-effective incentive program that will have the dual benefits of assisting homeowners in affording resiliency upgrades and of increasing awareness throughout the Community of risk and resiliency options.

Risk Reduction Analysis

This project would result in increased resiliency and sustainability of at least 80 residential structures in the Community from future hurricane events. For the residences that take advantage of this project and implement more resilient housing construction methods, the residential



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structure's risk score would decrease from severe to high in the extreme risk area and from high to moderate in the high risk area. The anticipated 80 households who would benefit from this project translate to an estimated 246 West Islip residents who will face reduced risk in the face of future storms from more resilient housing.

General Timeframe for Implementation

This project would likely require about 6-12 months from project approval to establish the program and another 24-36 months to distribute the grants/loans and complete the construction. This timeframe may be reduced if a subrecipient can be identified with existing experience and organizational structure to deliver small individual assistance grants/loans.

Regulatory Requirements Related to Project

Resilient housing construction measures would comply with local building codes and permits must be acquired from the Town of Islip Building Division. House elevations would comply with the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) requirements.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



FEATURED PROJECT: *Resilient Housing Policy*

Project Description

The purpose of this project is to encourage more property owners in NYRCR West Islip specifically and the Town of Islip overall to increase the resiliency of their residential construction. Many households in the Hamlet that were heavily damaged by Superstorm Sandy have chosen to rebuild with elevated homes and stronger construction methods. However, Committee members point out that the flooding from Superstorm Sandy could have been worse if there had been heavy rains in addition to the extreme storm surge. Furthermore, Committee members recognize that projected sea level rise may continue to increase the extent and magnitude of residential flood damages in the future. There is a need to encourage, regulate, and enforce more resilient housing construction for the safety of residents in anticipation of future storm events.

This project would fund regulatory incentives and code upgrades for residents to build resiliency into their homes, such as a tax relief/deferral program, expedited permitting and waivers, strengthened floodplain, land use and zoning policies, and building code updates, among others.

Estimated Project Costs

The total estimated project cost of \$100,000 includes labor to carry out the described policy changes. The success of updates to codes and policies related to resilient housing construction requires enforcement. The Town of Islip already employs inspectors and enforcement officers in its Buildings Division; therefore there should be no additional operations, maintenance, or other costs associated with the compliance component of this project. The lifecycle cost of this project is therefore \$100,000.

Project Benefits

Risk Reduction Benefits

Resilient housing incentives and stronger regulations would reduce risk for residential structures to flood, high wind, and wind-driven rain.

Economic Benefits

Residents who comply with new codes and standards will benefit from decreased flood insurance premiums and by avoiding future costs of repairing damage from flooding, wind, or wind driven rain.



The Community wishes to see more resilient housing construction techniques used in the future for the protection of lives and property.

RESILIENT HOUSING POLICY

RECOVERY SUPPORT FUNCTION

Housing; Community Planning and Capacity Building.

COST

\$100,000

ASSETS MADE MORE RESILIENT

Residential structures throughout the Town of Islip

RISK REDUCTION & BENEFITS

Decreased flood and wind damages from future storms and increased awareness throughout the Community of residential mitigation options



Health and Social Benefits

Were policy changes to be applied to every household in NYRCR West Islip's extreme, high, and moderate risk areas over time, an estimated 4,677 households or 14,452 persons would benefit (average 3.08 persons per household). Of those beneficiaries, 13.8%, or an estimated 199 residents 65 years and older,^{xxvi} would benefit greatly from more resilient housing construction.

Cost-Benefit Analysis

Code and policy updates for increased resiliency of housing construction comprise a low-cost means of incrementally incentivizing the mitigation of homes by homeowners. As previously mentioned, were policy changes to be applied to every household in NYRCR West Islip's extreme, high, and moderate risk assessment areas, an estimated 4,677 households or 14,452 persons would benefit. The benefits are expected to outweigh the cost of approximately \$100,000.

Risk Reduction Analysis

This project would gradually result in reduced vulnerability of residential structures throughout the Town of Islip from future hurricane events because over time policy updates would require homes to be raised or otherwise incorporate more storm-resilient housing construction practices. According to the risk assessment tool, this project would result in reduced risk for residential structures in the Community for those households that choose to undertake resiliency retrofits. In West Islip, the risk score of residences would decrease from severe to high in the extreme risk area and from high to moderate in the high risk area.

General Timeframe for Implementation

This project may be implemented within 12 months of project approval.

Regulatory Requirements Related to Project

Code updates, floodplain updates, and tax programs would not conflict with or contradict any State and Federal building codes or tax and floodplain requirements.

Jurisdiction

This project would fall under the jurisdiction of the Town of Islip.



Section V: Additional Materials

A. Additional Resiliency Recommendations

Presented in Table 21 are Additional Resiliency Recommendations identified during the planning process. The NY Rising Community Reconstruction (NYRCR) Program West Islip Community (Community) will pursue these initiatives independently or through other funding sources.

Strategy	Project Name	Short Description	Estimated Cost	Regional (Y/N)
Increase awareness of and access to resources for hazard mitigation, preparedness and response to reduce risk.	Comprehensive Emergency Management Communications Plan and Related Activities	This project would fund updates to the Town of Islip's Emergency Management Plan with a focus on communication for preparedness, early warnings, evacuation notifications, and response/recovery that incorporate low-tech and high-tech strategies and multiple media outlets for information dissemination and outreach. Techniques would be layered and diverse to create redundancy and reliability in the communication of risk: traditional means such as robo-calling, reverse 911, eAlert and local radio and television broadcasting; simple methods such as door-to-door notification and speaker-equipped vans; and technology-based methods like telephone and social media campaigns, videos, and applications. The project will also include awareness-raising activities in support of plan updates.	\$100,000	Y



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Table 21: Additional Resiliency Recommendations (cont'd)

Strategy	Project Name	Short Description	Estimated Cost	Regional (Y/N)
Increase awareness of and access to resources for hazard mitigation, preparedness and response to reduce risk.	Resiliency Plan for Public Facilities	This project would fund a long-term facility use planning study for NYRCR West Islip's public facilities to maximize their resiliency. While most public facilities in West Islip are out of the risk areas, several schools are located in the Moderate Risk Area and therefore are at risk over the long term to increased flooding events from sea level rise. The planning study would inventory all of the Hamlet's facilities, including schools, libraries, community centers, and municipal facilities, categorize them by risk and mitigation options (retrofit or relocate), and develop an implementation plan for the long-term capital improvements and relocations that will be necessary to safeguard each facility.	\$200,000	N
Improve the Community's natural and engineered stormwater management and flood control systems to mitigate flood risk and improve water quality.	Long-Term Flood Reduction Program - Portable Pump	This project would fund the procurement of a portable pumping unit with filtration capabilities to reduce on-street flooding in neighborhoods adjacent to the bay. The unit would be transported to flooded locations adjacent to canals and pump the filtered floodwaters back into the bay. In combination with check valves on outfalls, a portable system would be an economical means of dealing with on-street flooding.	\$300,000	Y
	Strengthening of Shoreline Stabilization Structures	This project would fund the strengthening of shoreline stabilization structures (bulkheads, natural shorelines, revetments, etc.) at key locations to reduce erosion and to meet future risk projections such as sea level rise. Priority would be given to locations where an entire block or canal of homes chooses to work together for improvements.	\$8,500,000	N



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Strategy	Project Name	Short Description	Estimated Cost	Regional (Y/N)
Increase access to recreational and natural resource amenities and programs.	Improvement of Wetlands Health through Runoff Control (Public Awareness Campaign)	This project would fund a campaign to increase public awareness of the link between harmful runoff from everyday activities (fertilizer, pet waste, vehicle residue, etc.) and the health and flood protection capacity of the bay and its marshes. The campaign would promote design and techniques that reduce runoff from flowing directly into the bay, including stormwater best management practices that are designed to slow down, infiltrate, and filter stormwater before it enters the bay.	\$200,000	Y
	Casamento Park Recreational Facility	This project would fund the enhancement of sports fields at Casamento Park to increase positive activities for youth and teens and increase property values. The park is located outside of the risk areas and therefore would be a good long-term investment for the hamlet.	\$100,000	N
Improve access to public safety services following acute events.	Expansion of Post-Event Security	This project would fund expanded police patrols of evacuated and flooded areas following a disaster event, on land and water, to prevent looting and increase safety/security.	\$100,000	Y
Expand housing options outside of flood risk areas.	Affordable Housing Development Initiatives	This project would fund a grant toward a larger project to expand options for multi-generational affordable housing with a particular focus on mixed-use, mixed income housing. In the vicinity of the downtown revitalization district, a development could take advantage of currently vacant properties, such as the Dzus Fasteners property and incorporate first-floor retail and age-restricted housing. Additional incentives may include residential density bonuses, fee reductions or waivers, and zoning changes or waivers.	\$1,000,000	N



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Table 21: Additional Resiliency Recommendations (cont'd)

Strategy	Project Name	Short Description	Estimated Cost	Regional (Y/N)
Address deficiencies in public and private utility networks.	Upgrades to Sanitary Sewer System	This project would fund activities to upgrade the sanitary sewer system to prevent leakages into homes and contamination of waterways and drinking water sources. The project would reach out to impacted homeowners who experience sanitary sewer backups into their homes for the installation of backflow preventers, which will prevent the system from backing up into homes during future flood events.	\$300,000	N
	Mitigation of Failures to Power System	This project would fund activities to mitigate interruptions to the power system in the most cost-effective manner by exploring and implementing options such as residential block generators, solar and wind energy generation, compartmentalized electrical switchgear, prevention of saltwater intrusion into lines and conduits, among other measures.	\$400,000	Y
	Town-Wide Wireless Network	This project would fund the installation of a hamlet-wide municipal wireless network, with all components elevated and hardened against hurricane winds for the dissemination of critical information during disaster events and for economic development during non-disaster times.	\$600,000	N
	Mitigation of Failures to Cellular Service	This project would fund code updates to require the elevation of electrical controls on all microwave towers and installation of backup power sources, which will help to ensure continuity of cellular service during acute events when communication is critical to reach family and friends, request emergency services, and receive and pass along updates on evacuation, weather, road blocks, power outages, fuel supplies, and myriad other emergency management issues.	\$100,000	Y



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B. Master Table of Projects

Presented in Table 22 are all projects identified by the NYRCR West Islip Committee (Committee). This table includes Proposed Projects, Featured Projects, and Additional Resiliency Recommendations.

Table 23: Master Project Table

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
Increase awareness of and access to resources for hazard mitigation, preparedness and response to reduce risk.	Enhanced Electronic Mapping/ Emergency Management System	The procurement and installation of an enhanced Geographic Information System (GIS)-enabled program for the Town of Islip to improve emergency planning, response and recovery from severe storm events. Program would enable real-time transmission of risk and safety information for rapid deployment of resources.	Proposed	\$50,000	Y
	Recovery Manager/Grant Specialist	This project would fund a Recovery Manager/Grant Specialists with experience in funding for public and private mitigation projects, grant writing, and Federal/State grants management.	Proposed	\$300,000	Y



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Comprehensive Emergency Management Communications Plan and Related Activities	This project would fund updates to the Town of Islip's Emergency Management Plan with a focus on communication for preparedness, early warnings, evacuation notifications, and response/recovery that incorporate low-tech and high-tech strategies and multiple media outlets for information dissemination and outreach. Techniques would be layered and diverse to create redundancy and reliability in the communication of risk: traditional means such as robo-calling, reverse 911, eAlert and local radio and television broadcasting; simple methods such as door-to-door notification and speaker-equipped vans; and technology-based methods like telephone and social media campaigns, videos, and applications. The project will also include awareness-raising activities in support of plan updates.	Additional Resiliency Recommendation	\$100,000	Y



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Resiliency Plan for Public Facilities	This project would fund a long-term facility use planning study for West Islip's public facilities to maximize their resiliency. While most public facilities in West Islip are out of the risk areas, several schools are located in the Moderate Risk Area and therefore are at risk over the long term to increased flooding events from sea level rise. The planning study would inventory all of the Hamlet's facilities, including schools, libraries, community centers, and municipal facilities, categorize them by risk and mitigation options (retrofit or relocate), and develop an implementation plan for the long-term capital improvements and relocations that will be necessary to safeguard each facility.	Additional Resiliency Recommendation	\$200,000	N



West Islip NY Rising Community Reconstruction Plan

Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
Expand local resources and alternatives for residents likely to be impacted by future flooding and other storm-related risks to remove themselves from harm's way.	Designated Parking for Flood Events	This project would fund the designation and pre-approval of parking areas out of the extreme and high risk areas (such as at schools, municipal facilities, faith-based facilities, or shopping centers) where residents who live in flood zones can park and be assured their vehicles will not be ticketed or towed.	Proposed	\$40,000	N
	Local Drop-In/Distribution Center	This project would fund the outfitting of a local public facility with a permanently installed backup generator to be utilized as a drop-in center and/or distribution center in West Islip. The facility would be out of the risk areas and Americans with Disabilities Act compliant. The backup power would allow for the provision of heat, electricity for the charging of electronics, and internet access.	Proposed	\$385,000	N



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
Improve the Community's natural and engineered stormwater management and flood control systems to mitigate flood risk and improve water quality.	Community-Wide Drainage Plan and Phase I Improvements	This project would fund the study and preparation of a long-term capital improvement program focused on drainage that incorporates the entire natural (creeks and open space) and built drainage infrastructure (storm drains, pipes, pumps, and outfalls) to establish the blueprint for significant long-term investments. The project would also fund a selection of the drainage improvements as recommended in the plan.	Proposed	\$1,300,000	N
	Long-Term Flood Reduction Program - Phase II Improvements	This project would fund the implementation of measures to reduce on-street flooding via raising of roads, installation of check valves and additional pump stations, and incorporation of green stormwater best management practices, among other measures as recommended in the Community-Wide Drainage Plan.	Featured	\$10,600,000	N



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Long-Term Flood Reduction Program - Pump Stations	This project would fund the flood-proofing of electrical controls and the installation of backup power for two drainage pump stations in the Sequams neighborhood to ensure the continuity of operations for this critical drainage equipment.	Proposed	\$235,000	N
	Long-Term Flood Reduction Program - Rehabilitation of Willetts Creek	This project would fund the rehabilitation of Willett's Creek to improve the movement of water in this tidal wetland resource, including removal of sedimentation that resulted from Superstorm Sandy, redesign of culverts, and other measures to restore it as a functional and beautiful natural resource.	Proposed	\$1,760,000	N
	Long-Term Flood Reduction Program - Portable Pump	This project would fund the procurement of a portable pumping unit with filtration capabilities to reduce on-street flooding in neighborhoods adjacent to the bay. The unit would be transported to flooded locations adjacent to canals and pump the filtered floodwaters back into the bay. In combination with check valves on outfalls, a portable system would be an economical means of dealing with on-street flooding.	Additional Resiliency Recommendation	\$300,000	Y



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Strengthening of Shoreline Stabilization Structures	This project would fund the strengthening of shoreline stabilization structures (bulkheads, natural shorelines, revetments, etc.) at key locations to reduce erosion and to meet future risk projections such as sea level rise. Priority would be given to locations where an entire block or canal of homes chooses to work together for improvements.	Additional Resiliency Recommendation	\$8,500,000	N
Increase the attractiveness and appeal of downtown West Islip to business owners and consumers alike to strengthen the local economy.	Downtown Revitalization Plan and Related Activities	This project would fund the development of a downtown revitalization plan for West Islip's main business district on Higbie Lane and Union Boulevard, as well as small capital improvements and programming activities to spur the overall revitalization.	Proposed	\$300,000	N



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Downtown Revitalization Streetscape Improvements	This project would fund streetscape improvements such as safer intersections, street furniture, and bicycle-friendly infrastructure for a safe and welcoming downtown. Specific measures would be recommended in the Proposed Project for a downtown revitalization plan.	Featured	\$1,000,000	N
Increase public awareness of post-event healthcare resources and options.	Post-Event Health Services for Vulnerable Populations	This project would fund an awareness-raising and outreach campaign to increase knowledge of and access to health care related preparedness issues as well as post-event mental and physical health services with a special focus on vulnerable populations. The project would also fund training for local health care professional to facilitate support/grief counseling services following an acute event.	Proposed	\$275,000	Y



West Islip NY Rising Community Reconstruction Plan

Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
Increase access to recreational and natural resource amenities and programs.	West Islip Marina and Beach	This project would fund improvements to the West Islip Marina bulkheading that was damaged during Superstorm Sandy to allow for safe and resilient public access to the bay. The improvements would be designed to anticipated sea level rise.	Featured	\$990,000	Y
	Improvement of Wetlands Health through Runoff Control (Public Awareness Campaign)	This project would fund a campaign to increase public awareness of the link between harmful runoff from everyday activities (fertilizer, pet waste, vehicle residue, etc.) and the health and flood protection capacity of the bay and its marshes. The campaign would promote design and techniques that reduce runoff from flowing directly into the bay, including stormwater best management practices that are designed to slow down, infiltrate, and filter stormwater before it enters the bay.	Additional Resiliency Recommendation	\$200,000	Y



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Casamento Park Recreational Facility	This project would fund the enhancement of sports fields at Casamento Park to increase positive activities for youth and teens and increase property values. The park is located outside of the risk areas and therefore would be a good long-term investment for the hamlet.	Additional Resiliency Recommendation	\$100,000	N
Create incentives for homeowners to implement residential resiliency upgrades to reduce future risk to life and property.	Resilient Housing Assistance	This project would fund incentive grants or low-interest loans for residents in risk areas to build resiliency into their homes, e.g., home elevations, roof strapping, and/or installation of wind-resistant windows for a more storm-proof home.	Featured	\$500,000	N
	Resilient Housing Policy	This project would fund regulatory incentives and code upgrades for residents to build resiliency into their homes, such as a tax relief/deferral program, expedited permitting and waivers, code updates, among others.	Featured	\$100,000	Y
Improve access to public safety services following acute events.	Expansion of Post-Event Security	This project would fund expanded police patrols of evacuated and flooded areas following a disaster event, on land and water, to prevent looting and increase safety/security.	Additional Resiliency Recommendation	\$100,000	Y



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
Expand housing options outside of flood risk areas.	Affordable Housing Development Initiatives	This project would fund a grant toward a larger project to expand options for multi-generational affordable housing with a particular focus on mixed-use, mixed income housing. In the vicinity of the downtown revitalization district, a development could take advantage of currently vacant properties, such as the Dzus Fasteners property and incorporate first-floor retail and age-restricted housing. Additional incentives may include residential density bonuses, fee reductions or waivers, and zoning changes or waivers.	Additional Resiliency Recommendation	\$1,000,000	N
Address deficiencies in public and private utility networks.	Upgrades to Sanitary Sewer System	This project would fund activities to upgrade the sanitary sewer system to prevent leakages into homes and contamination of waterways and drinking water sources. The project would reach out to impacted homeowners who experience sanitary sewer backups into their homes for the installation of backflow preventers, which will prevent the system from backing up into homes during future flood events.	Additional Resiliency Recommendation	\$300,000	N



West Islip NY Rising Community Reconstruction Plan

Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Mitigation of Failures to Power System	This project would fund activities to mitigate interruptions to the power system in the most cost-effective manner by exploring and implementing options such as residential block generators, solar and wind energy generation, compartmentalized electrical switchgear, prevention of saltwater intrusion into lines and conduits, among other measures.	Additional Resiliency Recommendation	\$400,000	Y
	Town-Wide Wireless Network	This project would fund the installation of a hamlet-wide municipal wireless network, with all components elevated and hardened against hurricane winds for the dissemination of critical information during disaster events and for economic development during non-disaster times.	Additional Resiliency Recommendation	\$600,000	N



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Table 22: Master Project Table (cont'd)

Strategy	Project Name	Short Description	Project Category	Estimated Cost	Regional (Y/N)
	Mitigation of Failures to Cellular Service	This project would fund code updates to require the elevation of electrical controls on all microwave towers and installation of backup power sources, which will help to ensure continuity of cellular service during acute events when communication is critical to reach family and friends, request emergency services, and receive and pass along updates on evacuation, weather, road blocks, power outages, fuel supplies, and myriad other emergency management issues.	Additional Resiliency Recommendation	\$100,000	Y



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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 West Islip Program was the exchange of information between the NYRCR Consultant Team, the State, the NYRCR Committee (Committee), and the public to identify appropriate projects, strategies, and solutions that were likely to obtain NYRCR West Islip Community (Community) support. The public included area residents, employees, civic groups, neighborhood and homeowner associations, chamber of commerce and other interest groups, governmental agencies, educational, medical, religious, and other institutions, the media, and elected/ appointed officials, as well as other stakeholders who express interest in the process.



Committee members work to identify Community assets that need to be protected.

Public Engagement Strategy

The Public Engagement Strategy:

- Established the means to engage and facilitate information-sharing with the public throughout the development of the final NYRCR Plan.
- Educated the public and received public comments and suggestions regarding all aspects of the Plan within the NYRCR Community.
- Employed outreach techniques that allowed for collection and coordination of public communication and comments.
- Reached out to groups that might normally be underrepresented in a planning study, such as minorities, Spanish-speaking residents, low-income residents, seniors, youth, and the disabled.

The NYRCR Consultant Team utilized a number of dissemination techniques to achieve a thorough, responsive, open, and transparent communication process. 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 Committee used these comments to enhance and improve the NYRCR Plan.



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NYRCR Planning Committee Members/Meetings

NYRCR Committee meetings were held on a regular basis at which time Committee members discussed agenda items and reached consensus on topics such as the Community vision statement, critical assets and risks, Community needs and opportunities, Public Engagement Event planning and feedback, NYRCR West Islip Conceptual Plan development, strategies, projects, and costs.

Eleven Committee meetings have been held as of March 31, 2014. All Committee meetings were open to the public, with meeting dates and times posted on the NYRCR website (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.

Public Engagement Events

While the Committee represented the interests of many, it was important to provide opportunities for the public to participate in the development of the NYRCR Plan. While the primary vehicle for this effort was Public Engagement Events, additional outreach opportunities for comment were provided at different venues in the Community and through the NYRCR website.

Each Public Engagement Event included the presentation of work completed to date, as well as opportunities for attendees to provide feedback. The NYRCR Consultant Team provided the following materials for each meeting: 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 engagement event was available both in hard copy and electronically.

Public Engagement Events were scheduled to coincide with major project milestones. A targeted and well-executed public involvement process is intended to educate and raise awareness during the development of the plan, which ensures that when the plan is put into implementation, the public, elected officials, and key stakeholders have had ample opportunity to actively participate in the decision-making



A digital sign outside the West Islip Fire Department announces a public engagement event.



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process. Members of the public who are informed and engaged in the process are more likely to support the overall plan or become interested in a targeted component within the plan.

Outreach for Public Engagement Events included: submission to Newsday and the local West Islip Patch online publication; press releases from local legislators to constituents; posting on the State's NYRCR webpage and other electronic media; flyers and posters at strategic locations throughout the Community including libraries, community centers, recreational facilities, Good Samaritan Hospital and other centers of activity; e-mails and/or texts to lists available from West Islip Chamber of Commerce, civics, school district, Parent Teacher Associations, neighborhood organizations, recreational leagues, churches, women's organizations such as Women of West Islip, historical societies, synagogues, American Legion, Veterans of Foreign Wars, American Association of Retired Persons, Boy Scout troops, and other Community leaders. Prior to each event, flyers were also distributed to each student in the elementary and middle schools to reach as many families as possible.

The desired outcome of each public engagement event was to obtain the public's reactions and feedback to the Committee's work to incorporate their input. These comments were compiled by the NYRCR Consultant Team and provided to the Committee in a clear and comprehensive manner. The Committee reviewed the public's feedback and incorporated it into the NYRCR Plan.

Although the meetings were advertised as events for the NYRCR Planning Program, Community members attended who were often 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, the Federal Emergency Management Agency (FEMA), and non-governmental organizations (NGO) staff from the various intake centers to provide individual assistance. These Community members were subsequently encouraged to participate in the NYRCR Planning process.



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The following public engagement events were held:

- Public Engagement Event 1, Tuesday, September 17, 2013, West Islip Fire Department, 309 Union Boulevard, West Islip, NY, 6:00 PM to 9:00 PM. At this open house-style event the program background, planning process, Community vision, needs and opportunities, and Community assets were presented.
- Public Engagement Event 2, Thursday, November 18, 2013, West Islip Fire Department, 309 Union Boulevard, West Islip, NY, 5:00 PM to 8:00 PM. This event included both an open house for viewing materials and a formal presentation by the Committee Co-Chairs. Information discussed at this meeting included the strategies and potential projects.
- Public Engagement Event 3, Thursday, February 20, 2014, West Islip Fire Department, 309 Union Boulevard, West Islip, NY, 5:00 PM to 7:00 PM. At this open house event the risk assessment, Proposed Projects, Featured Projects, and Additional Resiliency Recommendations were presented. This event also included an online survey component that was open from February 20 to March 9, 2014, that included all materials presented at the February 20 event and an opportunity for participants to rate Proposed Projects.
- Public Engagement Event 4, A fourth Public Engagement Event will be held in spring 2014 to present this NYRCR Plan to the public.

Expert Sessions

A **Power (Electric/Gas) Resiliency Education Session** which 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 Committees were in attendance. The education session focused on National Grid/LIPA (now known as 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.

A **Flooding & Erosion Protection Education Session** was held on January 21, 2014, at the West Islip Fire Department, 309 Union Boulevard in West Islip. Representatives from New York Sea Grant and the New York State Department of Environmental Conservation of the natural shoreline, coastal resiliency options for flood mitigation and erosion control, and best practices for the Long Island coastal context.



Community members gather at a public engagement event to view and provide feedback on proposed resiliency measures.



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Outreach Activities

In addition to the public engagement events, other outreach activities were conducted. The Suffolk Regional Lead regularly met with elected and public officials—local, County and Federal (FEMA)—to report on the progress of the Committee and to generate input. This outreach involved:

Online Outreach: A web-based survey was used to gauge public opinion on the Proposed Projects in conjunction with Public Engagement Event #3. An advantage of an online survey is its potential to reach individuals who cannot or choose not to attend public engagement events. Surveys were restricted to one survey completion per computer.

Schools/Youth: A web-based survey targeting school-age persons 10 to 23-years old was conducted to receive input on the Proposed Projects from the “Next Generation” in the Community. This online survey was also held in conjunction with Public Event #3.

Website: The NYRCR West Islip website (<http://stormrecovery.ny.gov/nyrcr/community/west-islip>) served as a repository for downloadable versions of all public information and event notifications. Posted materials included an overview of the planning process, maps, the NYRCR West Islip Conceptual Plan, summaries, notices, and materials from public engagement events, and contact information. The website includes an area to accept public comment.

Print and Broadcast Media: Planning information was disseminated through local print media to keep the Community informed and to respond to media inquiries.

NYRCR Staff Communication: The NYRCR staff was available to directly answer specific questions and receive comments. The primary contact for the Community was the NYRCR Suffolk County Regional Lead.

E-Mail: E-mail comments and requests for information could be sent to the State’s e-mail address at: info@stormrecovery.ny.gov. This email address was prominently displayed on all materials and the website so that it was widely disseminated and available for public use.

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 feedback, which were then passed along to the Committee.



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D. Community Asset Inventory

As discussed in Section II, “Assessment of Risk and Needs,” a standardized risk assessment tool was used to assist the NYRCR West Islip Committee to assess and quantify the risk to their assets and to test whether various projects and management measures will reduce the risk to those assets. The risk assessment tool is available at <http://stormrecovery.ny.gov/nyrcr>.

Using the Risk Assessment Tool

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

Most of the risk assessment tool fields that required basic data such as asset name and type, asset category, risk area, and asset class, were populated using appropriate data from the consolidated database or were automatically filled in. This included the Hazard Score.

Hazard Score

This risk assessment assigned a hazard score of 3 for each asset based on a 100-year event occurring within a 100-year planning timeframe. Hazard scores may range from 1 to 5 depending on whether a higher (e.g., 500-year event) or lower (e.g., 10-year event) magnitude event are used for the analysis.

Two additional important factors in the tool, exposure and vulnerability scores, were populated using a combination of technical and local knowledge.

Exposure Score

Exposure scores range from 0.5 to 5. The exposure score takes into consideration the risk area in which the asset is located and local landscape attributes that influence the potential for storm impacts, including the local erosion rate, beach width, presence and condition of natural protective features, presence and condition of engineered shore defenses, and soils. Assets located in the extreme, high, and moderate risk area began with an exposure score of 2, 1, or 0.5, respectively. Each landscape attribute that increases an asset’s exposure to storm effects increases the exposure score by 0.5.



Community members provide feedback on Community assets at a public engagement event.



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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 NYRCR Consulting Team, Committee, and Community residents.

Vulnerability Score

Vulnerability generally pertains to the length of time that an asset is out of service from a storm event. The vulnerability score of each asset was determined from local knowledge, of how assets were affected during past storm events. The vulnerability scores range from 1 to 5 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

Risk Score Range

After populating the risk assessment tool with hazard area, exposure, and vulnerability data, a risk score is automatically generated. The risk score relies on past experience as a predictor of future risk and includes 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 to 75) and serves as a valuable means of comparing the relative risk of assets to each other to better inform the Committee's development and identification of projects.

Presented on the following pages is a baseline inventory of assets in the Community, followed by the risk assessment tool results. Included in the risk assessment spreadsheet for each asset is the asset name, risk area, asset class, critical facility designation, Community value, landscape attributes, and risk assessment scores.



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Asset Inventory Worksheet												
Asset Information		Landscape Attributes										
Asset Name	Risk Area	Asset Class	Asset Subcategory	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion Rate: Long-term average erosion rate 1 foot or more/year, or unknown	Beach Width: Waterline frequently at shore defense or upland vegetation	Shore Defenses: Shore defenses absent, not constructed to anticipated storm or sea level rise conditions, or deteriorating	Vegetation: Protective vegetation, wetlands, or intervening structures between asset and flood source absent	Dunes or Bluffs: Dunes absent, below BFE, or eroding (scarped), discontinuous, or have little vegetation. Bluff slope is unstable, partially unconsolidated	Soils: Asset located on a coastal barrier island or filled wetland
Babylon Yacht Club	Extreme	Economic	Marina/Water Based Business	Yes	No	Low	No	Yes	Yes	Yes	Yes	Yes
Our Lady of Consolation	Extreme	Health and Social Services	Healthcare Facilities	Yes	Yes, FEMA	High	No	No	Yes	Yes	Yes	Yes
Medical and Commercial District	Extreme	Health and Social Services	Healthcare Facilities	Yes	Yes, FEMA	High	No	Yes	Yes	No	Yes	Yes
Good Samaritan Hospital Medical Center	Moderate	Health and Social Services	Primary/Regional Hospitals	Yes	Yes, FEMA	High	No	No	Yes	Yes	Yes	Yes
Good Samaritan Hospital Medical Center - Radiological Storage	Moderate	Health and Social Services	Hazardous Materials, Solid Waste, and Recycling	Yes	Yes, FEMA	High	No	No	Yes	Yes	Yes	Yes
Saint Francis Hospital (Medical - Nuclear Cardiology)	Moderate	Health and Social Services	Healthcare Facilities	Yes	Yes, FEMA	High	No	No	Yes	No	Yes	No
Bayview School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes
Beach St Middle School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No
Paul E. Kirdahy Elementary School at Captree (The Bridges Academy)	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes
Paul J. Bellow Elementary School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No
Saint John the Baptist High School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes
West Islip High School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No
NYS OPWDD Intermediate Care Facility	Moderate	Health and Social Services	Healthcare Facilities	Yes	No	High	No	No	Yes	No	Yes	Yes
Residential Housing - Extreme Risk Area	Extreme	Housing	Single-Family Residence	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes
Residential Housing - High Risk Area	High	Housing	Single-Family Residence	Yes	No	High	No	No	Yes	No	Yes	Yes
Residential Housing - Moderate Risk Area	Moderate	Housing	Single-Family Residence	Yes	No	High	No	No	Yes	No	Yes	Yes



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Asset Information				Landscape Attributes								
Asset Name	Risk Area	Asset Class	Asset Subcategory	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion Rate: Long-term average erosion rate 1 foot or more/year, or unknown	Beach Width: Waterline frequently at shore defense or upland vegetation	Shore Defenses: Shore defenses absent, not constructed to anticipated storm or sea level rise conditions, or deteriorating	Vegetation: Protective vegetation, wetlands, or intervening structures between asset and flood source absent	Dunes or Bluffs: Dunes absent, below BFE, or eroding (scarped), discontinuous, or have little or no vegetation. Bluff slope is unstable, partially unconsolidated	Soils: Asset located on a coastal barrier island or filled wetland
Pump-Out Station - Eaton Lane	Extreme	Infrastructure Systems	Stormwater	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes
Pump-Out Station - Sequams Lane Center	Extreme	Infrastructure Systems	Stormwater	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes
Robert Moses Cswy	Extreme	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	Yes	No	Yes	Yes
Wagstaff Heliport	Extreme	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes
Sanitary Sewer Lift Station	Extreme	Infrastructure Systems	Wastewater	Yes	Yes, FEMA	High	No	Yes	Yes	No	Yes	Yes
Babylon Yard (LIRR)	Moderate	Infrastructure Systems	Hazardous Materials, Solid Waste, and Recycling	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No
Department of Transportation	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	Yes
LIRR Microwave Tower	Moderate	Infrastructure Systems	Telecommunications	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No
Suffolk County Water Authority - Treatment Plant and Well	Moderate	Infrastructure Systems	Water Supply	Yes	Yes, FEMA	High	No	No	Yes	No	Yes	No
Lico - Babylon NRT/HR	Moderate	Infrastructure Systems	Power Supply	Yes	Yes, FEMA	Low	No	No	Yes	No	Yes	No
Marketspan Gas Corp - Babylon NRT/HR	Moderate	Infrastructure Systems	Power Supply	Yes	Yes, FEMA	Low	No	No	Yes	No	Yes	No
Higbie Ln	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	No
State Hwy 231	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	No
State Hwy 27 Sunrise Hwy	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	No
Union Blvd	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	No
Montauk Hwy	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	No
West Islip Town Beach and Marina Park	Extreme	Natural and Cultural Resources	Parks and Recreation	Yes	No	Low	No	Yes	Yes	Yes	Yes	Yes



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Asset Information							Landscape Attributes					
Asset Name	Risk Area	Asset Class	Asset Subcategory	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion Rate: Long-term average erosion rate 1 foot or more/year, or unknown	Beach Width: Waterline frequently at shore defense or upland vegetation	Shore Defenses: Shore defenses absent, not constructed to anticipated storm or sea level rise conditions, or deteriorating	Vegetation: Protective vegetation, wetlands, or intervening structures between asset and flood source absent	Dunes or Bluffs: Dunes absent, below BFE, or eroding (scarped), discontinuous, or have little vegetation. Bluff slope is unstable, partially vegetated.	Soils: Asset located on a coastal barrier island or filled wetland
Beach	Extreme	Natural and Cultural Resources	Natural Protective Features	Yes	No	Medium	No	Yes	Yes	Yes	Yes	Yes
Freshwater Wetland	Extreme	Natural and Cultural Resources	Wetlands and marshes	Yes	No	Medium	No	Yes	Yes	No	Yes	Yes
Beach Dr. Fields	Extreme	Natural and Cultural Resources	Parks and Recreation	Yes	No	Low	No	Yes	Yes	Yes	Yes	Yes
Sampwams Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	Yes	No	Yes	Yes
Skookwams Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	Yes	No	Yes	Yes
Trues Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	Yes	No	Yes	Yes
Willetts Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	Yes	No	Yes	Yes



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Risk Assessment Tool																	
Asset Information					Landscape Attributes					Risk Assessment							
Asset	Risk Area	Asset Class	Asset Sub-category	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion Rate ≥ 1 foot per year or unknown	Waterline frequently at shore defense or upland vegetation	Shore defenses absent, not constructed to anticipated conditions, or deteriorating	Protective vegetation between asset and flood source absent	Dunes absent below BFE, eroding, little vegetation; Bluff slope unstable, little	Asset on coastal barrier island or filled wetland	Landscape Attribute Score ("Yes" = +0.5)	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
Babylon Yacht Club	Extreme	Economic	Marina/Water Based Business	Yes	No	Low	No	Yes	Yes	Yes	Yes	Yes	2.5	3	4.50	4	54
Our Lady of Consolation	Extreme	Health and Social Services	Healthcare Facilities	Yes	Yes, FEMA	High	No	No	Yes	Yes	Yes	Yes	2	3	4.00	3	36
Medical and Commercial District	Extreme	Health and Social Services	Healthcare Facilities	Yes	Yes, FEMA	High	No	Yes	Yes	No	Yes	Yes	2	3	4.00	4	48
Good Samaritan Hospital Medical Center	Moderate	Health and Social Services	Primary/Regional Hospitals	Yes	Yes, FEMA	High	No	No	Yes	Yes	Yes	Yes	2	3	2.50	3	23
Good Samaritan Hospital Medical Center - Radiological Storage	Moderate	Health and Social Services	Hazardous Materials, Solid Waste, and Recycling	Yes	Yes, FEMA	High	No	No	Yes	Yes	Yes	Yes	2	3	2.50	3	23
Saint Francis Hospital (Medical - Nuclear Cardiology)	Moderate	Health and Social Services	Healthcare Facilities	Yes	Yes, FEMA	High	No	No	Yes	No	Yes	No	1	3	1.50	2	9
Bayview School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes	1.5	3	2.00	2	12
Beach St Middle School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No	1	3	1.50	2	9
Paul E. Kirdahy Elementary School at Captree (The Bridges Academy)	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes	1.5	3	2.00	2	12
Paul J. Bellaw Elementary School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes	1.5	3	2.00	2	12
Saint John the Baptist High School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	Yes	1.5	3	1.50	2	9
West Islip High School	Moderate	Health and Social Services	Schools	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No	1	3	1.50	2	9
MYS OPWDD Intermediate Care Facility	Moderate	Health and Social Services	Healthcare Facilities	Yes	No	High	No	No	Yes	No	Yes	Yes	1.5	3	2.00	2	12
Residential Housing - Extreme Risk Area	Extreme	Housing	Single-Family Residence	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	4.50	5	68
Residential Housing - High Risk Area	High	Housing	Single-Family Residence	Yes	No	High	No	No	Yes	No	Yes	Yes	1.5	3	2.50	5	38
Residential Housing - Moderate Risk Area	Moderate	Housing	Single-Family Residence	Yes	No	High	No	No	Yes	No	Yes	Yes	1.5	3	2.00	3	18
Pump-Out Station - Eaton Lane	Extreme	Infrastructure Systems	Stormwater	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	4.50	4	54
Pump-Out Station - Sequoias Lane Center	Extreme	Infrastructure Systems	Stormwater	Yes	Yes, FEMA	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	4.50	4	54
Robert Moses Cswy	Extreme	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	Yes	No	Yes	Yes	2	3	4.00	1	12
Wagstaff Heliport	Extreme	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	Yes	Yes	Yes	Yes	2.5	3	4.50	2	27
Sanitary Sewer Lift Station	Extreme	Infrastructure Systems	Wastewater	Yes	Yes, FEMA	High	No	Yes	Yes	No	Yes	Yes	2	3	4.00	1	12
Babylon Yard (LIRR)	Moderate	Infrastructure Systems	Hazardous Materials, Solid Waste, and Recycling	Yes	Yes, FEMA	Medium	No	No	Yes	No	Yes	No	1	3	1.50	1	5



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Asset	Asset Information										Landscape Attributes				Risk Assessment			
	Risk Area	Asset Class	Asset Sub-category	Socially Vulnerable Populations	Critical Facility	Community Value	Erosion Rate ≥1 foot per year or unknown	Waterline frequently at shore defense or upland vegetation	Shore defenses absent, not constructed to anticipated conditions, or deteriorating	Protective vegetation between asset and flood source or absent	Dunes absent, below BFE, eroding, little vegetation; Bluff slope unstable, little	Asset on coastal barrier island or filled wetland	Landscape Attribute Score ("Yes" = +0.5)	Hazard Exposure Score	Vulnerability Score	Risk Score		
Department of Transportation	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	No	Yes	No	Yes	1.5	3	2.00	1	6		
LIRR Microwave Tower	Moderate	Infrastructure Systems	Telecommunications	Yes	Yes, FEMA	Medium	No	Yes	No	No	No	1	3	1.50	2	9		
Suffolk County Water Authority - Treatment Plant and Well	Moderate	Infrastructure Systems	Water Supply	Yes	Yes, FEMA	High	No	Yes	No	Yes	No	1	3	1.50	1	5		
Lilco - Babylon WRTTHP	Moderate	Infrastructure Systems	Power Supply	Yes	Yes, FEMA	Low	No	Yes	No	Yes	No	1	3	1.50	1	5		
Marketspan Gas Corp - Babylon WRTTHP	Moderate	Infrastructure Systems	Power Supply	Yes	Yes, FEMA	Low	No	Yes	No	Yes	No	1	3	1.50	1	5		
Higbie Ln	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	No	Yes	No	1	3	1.50	2	9		
State Hwy 231	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	No	Yes	No	1	3	1.50	1	5		
State Hwy 27 Sunrise Hwy	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	No	Yes	No	1	3	1.50	1	5		
Union Blvd	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	No	Yes	No	1	3	1.50	2	9		
Montauk Hwy	Moderate	Infrastructure Systems	Transportation	Yes	No	High	No	Yes	No	Yes	No	1	3	1.50	2	9		
West Islip Town Beach and Marina Park	Extreme	Natural and Cultural Resources	Parks and Recreation	Yes	No	Low	No	Yes	Yes	Yes	Yes	2.5	3	4.50	4	54		
Beach	Extreme	Natural and Cultural Resources	Natural Protective Features	Yes	No	Medium	No	Yes	Yes	Yes	Yes	2.5	3	4.50	3	41		
Freshwater Wetland	Extreme	Natural and Cultural Resources	Wetlands and marshes	Yes	No	Medium	No	Yes	No	Yes	Yes	2	3	4.00	2	24		
Beach Dr. Fields	Extreme	Natural and Cultural Resources	Parks and Recreation	Yes	No	Low	No	Yes	Yes	Yes	Yes	2.5	3	4.50	3	41		
Sampansans Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	No	Yes	Yes	2	3	4.00	3	36		
Skookwans Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	No	Yes	Yes	2	3	4.00	3	36		
Trues Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	No	Yes	Yes	2	3	4.00	3	36		
Willetts Creek	Extreme	Natural and Cultural Resources	Natural Habitats	Yes	No	Medium	No	Yes	No	Yes	Yes	2	3	4.00	3	36		



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E. Glossary

Acronyms

ACS - American Community Survey

ADA - Americans with Disabilities Act

CBA - Cost-benefit analysis

CBD - Central Business District

CDBG-DR - Community Development Block Grant – Disaster Recovery

CDP - Census Designated Place

CEHA - Coastal Erosion Hazard Area

FEMA - Federal Emergency Management Agency

FTE - Full-time equivalent

GIS - Geographic Information Systems

HUD - U.S. Department of Housing and Urban Development

LIRR - Long Island Rail Road

NOAA - National Oceanic and Atmospheric Administration

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

OPWDD - Office for People with Developmental Disabilities

RSF - Recovery Support Function

USACE - U.S. Army Corps of Engineers



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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 discouraged; 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.

Lidar - A remote sensing technology that measures distance by illuminating a target with a laser and analyzing the reflected light.

Need - Infrastructure and 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.



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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.



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F. End Notes

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ⁱ 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.

ⁱⁱ First History of West Islip, Gerald and Judith Wilcox, 1976. [http://www.wipublib.org/pdfdocs/West Islip History-Wilcox.pdf](http://www.wipublib.org/pdfdocs/West%20Islip%20History-Wilcox.pdf).

ⁱⁱⁱ United States. Census Bureau. "State-Based Places Gazetteer Files for New York." *2013 U.S. Gazetteer*. Web. 5 March 2014. <http://www2.census.gov/geo/gazetteer/2013_Gazetteer/2013_gaz_place_36.txt>.

^{iv} United States. Census Bureau. "Profile of General Population and Housing Characteristics: 2010." *2010 Demographic Profile Data*. Web. 5 March 2014. <<http://factfinder2.census.gov>>.

^v United States. Census Bureau. "2008-2012 American Community Survey 5-Year Estimates." U.S. Census Bureau's American Community Survey Office, 2013. Web. 5 March 2014. <<http://factfinder2.census.gov>>.

^{vi} US Department of Commerce, NOAA, National Weather Service. *Hurricane/Post-Tropical Cyclone Superstorm Sandy, October 22–29, 2012 May 2013*. p. 1.

^{vii} Monitoring storm tide and flooding from Hurricane Sandy along the Atlantic coast of the United States, U.S. Geological Survey, October 2012.

^{viii} The Town of Islip conducted a rapid damage analysis via a "windshield assessment" of West Islip residences in November 2012. The data was intended to be used as an estimate of damages in the Town.

^{ix} Town of Islip Department of Planning and Development. *1979 Comprehensive Plan Update*. 2011.

^x Suffolk County. *Suffolk County Comprehensive Plan 2035*. August 2011.

^{xi} Town of Islip Department of Planning and Development, *Town of Islip Comprehensive Plan—Community Identity West Islip*, April 1979.

^{xii} Suffolk County Department of Planning. *Shopping Center and Downtowns*. May 2006.

^{xiii} Long Island Index. *Long Island Index 2012 Profile Report*. 2012.

^{xiv} Suffolk County Department of Planning. *Land Available for Development and Population Analysis Western Suffolk County*. October 2009.

^{xv} South Shore Estuary Reserve Council. *Long Island South Shore Estuary Reserve Comprehensive Management Plan*. New York: Albany, 2001.

^{xvi} Suffolk County Department of Health, *Comprehensive Water Resources Management Plan*, January 2014.

^{xvii} Long Island Regional Planning Council. *Long Island 2035 Visioning Initiative Final Report*. December 2009.

^{xviii} Long Island Regional Economic Development Council, *The Strategic Economic Development Plan for Nassau and Suffolk Counties 2013 Update*, September 2013.

^{xix} New York State Energy Research and Development Authority (NYSERDA) ClimAID Team. (2011). Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation Final Report. C. Rosenzweig, W. Solecki, A. DeGaetano, M. O'Grady, S. Hassol, P. Grabhorn, Eds. New York State Energy Research and Development Authority, 17 Columbia Circle, Albany, NY 12203. Retrieved from <http://www.nyserda.ny.gov/climaid>.

^{xx} The risk assessment tool is available online at NY Rising Community Reconstruction Program: <http://stormrecovery.ny.gov/nyrcr>.

^{xxi} New York State Department of State, *Guidance for Community Reconstruction Zone Plans - Appendix 3*. "Extracted from *Local Multi-Hazard Mitigation Guidance*, FEMA, July 1, 2008, pp. 42-43. Based on authority in FEMA Mitigation Planning Regulations, 44 CFR, Part 201. Critical Facilities are essential to the health and welfare of the whole population and are especially important following hazard events. For purposes of this mitigation planning guidance, critical facilities may include emergency service facilities such as hospitals and other medical facilities, jails and juvenile detention centers, police and fire stations, emergency operations centers, public works facilities, evacuation shelters, schools, and other uses that house special needs populations.

^{xxii} United States. Census Bureau. "Profile of General Population and Housing Characteristics: 2010." *2010 Demographic Profile Data*. Web. 5 March 2014. <<http://factfinder2.census.gov>>.

^{xxiii} New York Rising Community Reconstruction Program. *NYRCR Program Guidance to Firms, Project Evaluation, December 30, 2013*. p.3.

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



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^{xxv} FEMA Hazard Mitigation Grant Program. *How do I determine Project Useful Life?*. FEMA HMGP BCA Module 4.8.

^{xxvi} United States. Census Bureau. "2008-2012 American Community Survey 5-Year Estimates." U.S. Census Bureau's American Community Survey Office, 2013. Web. 5 March 2014. <<http://factfinder2.census.gov>>.

^{xxvii} The full time equivalent position is calculated by assuming half the project 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).



NY Rising Community Reconstruction Program
www.stormrecovery.ny.gov/nyrcr