



NYRCR Massapequas

October 2013



Massapequa I (Massapequa)
Massapequa II (East Massapequa)
Village of Massapequa Park



This document was developed by the Massapequas Planning Committee as part of the NY Rising Community Reconstruction (NYRCR) Program within the Governor's Office of Storm Recovery. The NYRCR Program is supported by NYS Homes and Community Renewal, NYS Department of State, and NYS Department of Transportation.

Acknowledgements

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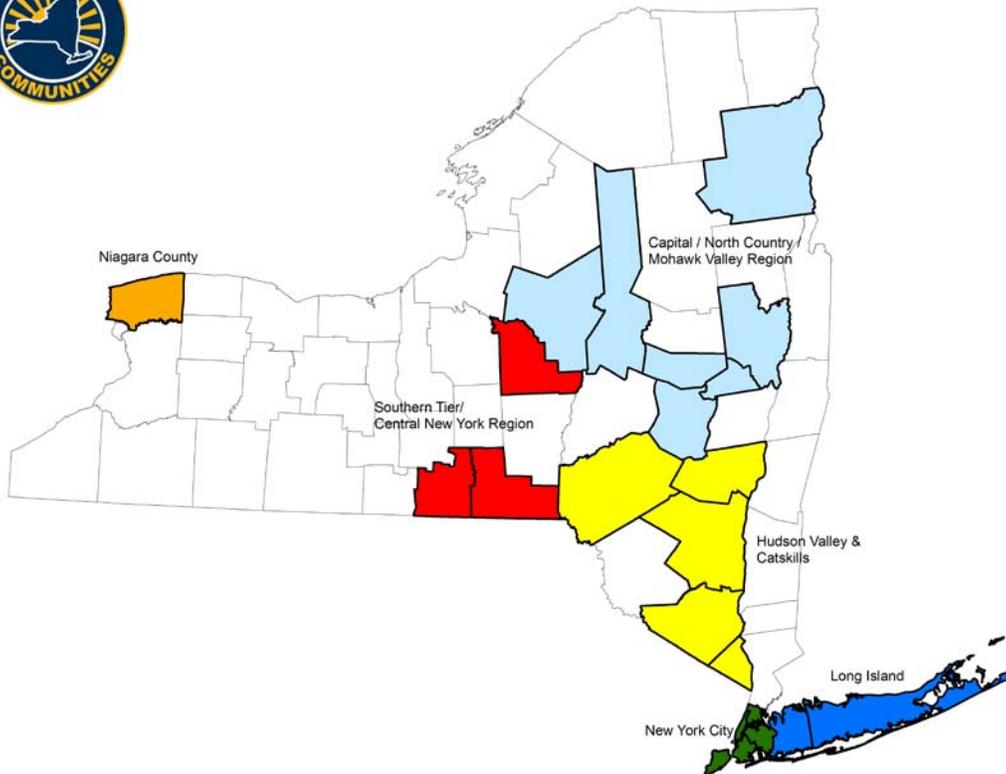
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New York Rising Communities



Find out more at:

StormRecovery.ny.gov/Community-Reconstruction-Program

Foreword

The New York Rising Community Reconstruction (NYRCR) program was established by Governor Andrew M. Cuomo to provide additional rebuilding and revitalization assistance to communities damaged by Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. This program empowers communities to prepare locally-driven recovery plans to identify innovative reconstruction projects and other needed actions to allow each community not only to survive, but also to thrive in an era when natural risks will become increasingly common.

The NYRCR program is managed by the Governor's Office of Storm Recovery in conjunction with New York State Homes and Community Renewal and the Department of State. The NYRCR program consists of both planning and implementation phases, to assist communities in making informed recovery decisions.

The development of this conceptual plan is the result of innumerable hours of effort from volunteer planning committee members, members of the public, municipal employees, elected officials, state employees, and planning consultants. Across the state, over 102 communities are working together to build back better and stronger.

This conceptual plan is 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. As projects are more fully defined, the potential impact on neighboring municipalities or the region as a whole may lead to further modifications.

In the months ahead, communities will develop ways to implement additional strategies for economic revitalization, human services, housing, infrastructure, natural and cultural resources, and the community's capacity to implement changes.

Implementation of the proposed projects and actions found in this conceptual plan is subject to applicable federal, state, and local laws and regulations. Inclusion of a project or action in this conceptual plan does not guarantee that a particular project or action will be eligible for Community Development Block Grant – Disaster Recovery (CDBG-DR) funding. Proposed projects or actions may be eligible for other state or federal funding, or could be accomplished with municipal, nonprofit or private investment.

Each NYRCR Community will continue to engage the public as they develop a final plan for community reconstruction. Events will be held to receive feedback on the conceptual plan, to provide an understanding of risk to assets, and to gather additional ideas for strategies, projects and actions.

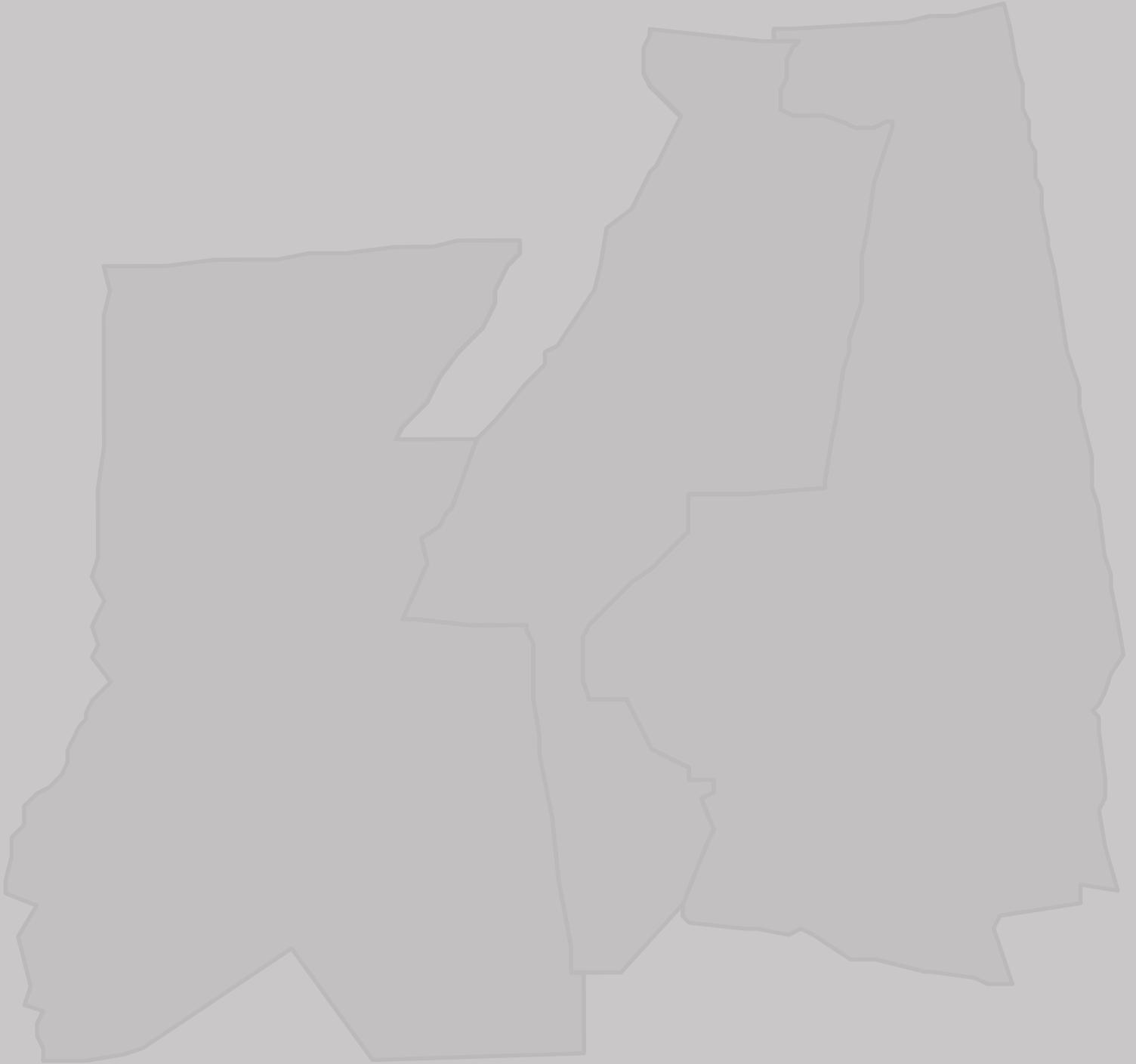
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Introduction



Introduction

On October 29, the New York Tri-State region was devastated by Hurricane Sandy, the most destructive storm of the 2012 Atlantic hurricane season. The South Shore of Long Island suffered massive storm surge damage, power outages, sewer line overflows, and utility and transportation disruption. Flooding from Hurricane Sandy exceeded many of the Federal Emergency Management Agency's (FEMA) 100-year flood zones. Though the initial public response was well-informed and recovery efforts were well-managed, no one was prepared for the extent of the storm's impact. Directly or indirectly, the lives and well-being of virtually everyone in the region was, and still is affected by the events of that fateful night.

However, as we mark the one-year anniversary of this devastating storm, we turn our attention to the future and what must be done to transform this disaster into an opportunity to not only restore what was lost, but to help achieve our collective vision for the future of the Massapequas. In the light of our changing climate, and with the understanding that extreme storms and unpredictable weather are becoming the new normal, returning to the status quo is no longer a sufficient response. We must consider long-term recovery at the neighborhood, hamlet, and regional levels. We must rebuild to be resilient. Our goal in creating this Conceptual Plan is to position the Massapequas to rebuild a safer, more resilient, sustainable community that has reduced its vulnerability and exposure to risks in order to achieve a better future for its residents and future residents.

Governor Andrew M. Cuomo instructed the State to partner with local communities to capture this unique window of opportunity by creating the New York Rising Community Reconstruction (NYRCR) Program. A NYRCR Planning Committee comprised of community residents and stakeholders have been working closely with a Consultant Team and the State agencies to develop the material included in this NYRCR Conceptual Plan. In addition, a series of public information meetings are being held to gather public feedback. This NYRCR Conceptual Plan identifies needs and opportunities as well as the community's goals for recovery and resiliency, and connects those to an initial set of strategies and projects.

NYRCR Planning Committee

As a part of this process, a NYRCR Massapequas Planning Committee composed of local residents was established to work with appropriate municipal, non-profit and consultant supporters to identify a vision, goals, objectives and a plan for the hamlet of Massapequa, East Massapequa, and the Village of Massapequa Park. This committee actively advises on all aspects of the project and will help shape the overall direction of the NYRCR Final Plan and the actions that flow from it.

NYRCR Public Process

The public will be engaged at regular intervals throughout the planning process to provide further guidance and insight into making the Massapequas more resilient communities. The NYRCR Massapequas Community Committee will continue to help guide the public workshops and meetings.



NYRCR Conceptual Plan

The NYRCR Conceptual Plan is a preliminary step in the entire NYRCR planning process. It outlines a vision for the recovery of the Massapequas, and a preliminary set of ideas about how to establish a legacy of positive change in both communities. It is the start of a conversation of how to make the Massapequas a better place to live, work and play, now and in the decades to come. With the release of this conceptual plan, it is expected that further input will be garnered throughout the remainder of the planning and public engagement process. This content will be contained in the final NYRCR Plan, which is expected to be completed in March 2014. From that point forward, the NYRCR Conceptual Plan for the Massapequas should serve as a practical tool for government agencies, private sector partners, not for profits, and the community as a whole to maximize implementation of the proposed recovery and resiliency initiatives.

The NYRCR Massapequas Conceptual Plan is divided into four sections:

1. **Community Background:** This section includes information on the NYRCR Massapequas community, the geographic scope of the NYRCR Massapequas Plan, and the impacts of Hurricanes Sandy and Irene. In addition, existing plans and studies are reviewed as potential sources for local and regional strategies that would support NYRCR Massapequas' reconstruction efforts.
2. **Looking to the Future:** Here we move from examining the past to considering the future. It includes NYRCR Massapequas' vision and goals for recovery and resiliency as developed by the residents and stakeholders of this community; asset inventory and flood risk maps; and needs and opportunities that have been identified.
3. **Public Engagement:** This section of the report describes the ways in which the public has and can continue to participate in the planning process.
4. **Next Steps:** Finally, the next steps section describes how we will work together to review and refine this NYRCR Massapequas Conceptual Plan.



About the Program

About the NY Rising Community Reconstruction (NYRCR) Program

The New York Rising Community Reconstruction (NYRCR) Program was established to provide rebuilding and revitalization assistance to communities severely damaged by Hurricanes Sandy and Irene and Tropical Storm Lee. The NYRCR Program enables communities to identify resilient and innovative reconstruction projects and other needed actions based on community driven plans that consider current damage, future threats and the communities' economic opportunities. Communities successfully completing a final recovery plan will be eligible to receive funds to support the implementation of projects and activities identified in the plans.

Each NYRCR Community has a NYRCR Planning Committee that includes, among others, local residents, community leaders, and municipal officials. The Planning Committee will take the lead in developing the content of the Conceptual and Final plan.

The State has provided each NYRCR Community with a planning team to help prepare a plan. Consultants have been hired through a State process administered by New York State Homes and Community Renewal (NYS HCR) through its Office of Community Renewal (OCR) and the Housing Trust Fund Corporation (HTFC).

Planning experts from the Department of State and Department of Transportation have been assigned to each community to provide assistance to the community and help oversee the planning consultants.



Setting the Scene

South Shore residents value their proximity to water and the natural beauty of the region. The close relationship between human settlements and the natural environment on Long Island offers many quality-of-life benefits to residents and visitors but it also poses risks. The beautiful tree canopies which cool and clean the air pose risks to elevated power lines during wind events. Canals, rivers and waterfronts offer access to beautiful natural landscapes but leave many properties exposed to tidal and storm surges. Low density, sprawling developments and extensive paved surfaces push more water into already overloaded drainage systems, rivers and bays. Striking a better balance between proximity to nature and protection and safety is necessary to ensure that Long Island communities build back better and stronger.

Long Islanders understand that natural disasters and unpredictable weather events are not going away. As Governor Cuomo said days after Hurricane Sandy struck, “extreme weather is the new normal.” Thus, we need to change how things are planned, designed, built and implemented to respect this reality.

The Intergovernmental Panel on Climate Change’s Fifth Assessment Report, 2013, states “warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.” These changes affect the types of weather systems, the seasonal distribution of precipitation, and the overall energy balance in the atmosphere differently at a regional level. This means that an area which has been designed around certain patterns of weather must now adapt to different events that come at greater frequency and with stronger intensity than before.²

Building on this, NYRCR Massapequas must turn its mind to the tremendous opportunity presented by the Governor, through the NYRCR program, to set a legacy of resilience.

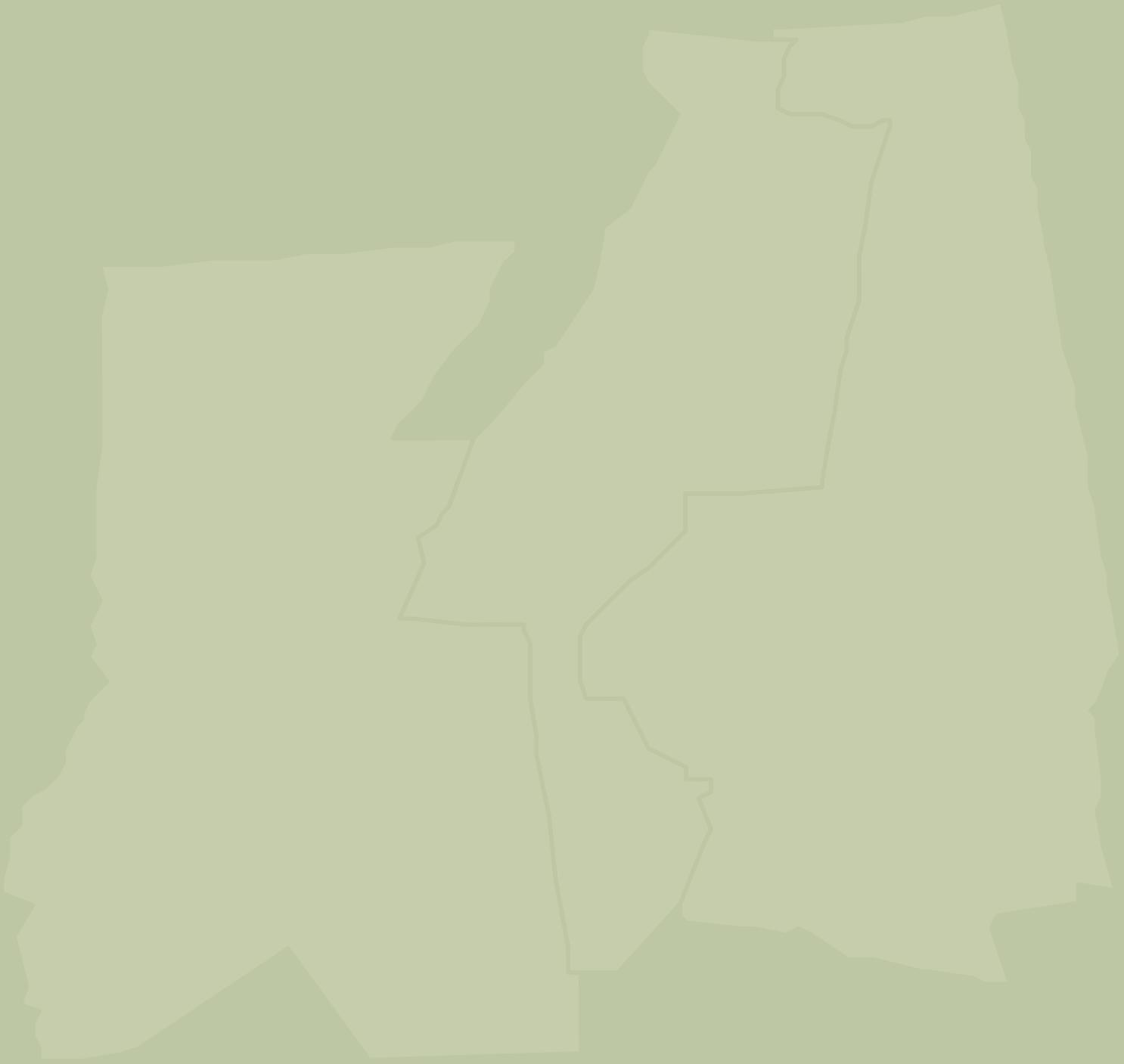
Resiliency for Long Island

For Long Island to continue to be a place for people to call home, and for it to restore its economic and social strength, resiliency must be adopted as an underpinning goal. Resilient planning, design and building on Long Island should create a higher degree of protection for existing communities while allowing for growth that is in a better balance with the natural features that make Long Island so attractive. It also sends a message across the Island – and the region – that Long Island can continue to be an attractive place to live, work and play. Resilient design entails a set of strategies in designs, buildings, and institutional structures that lessen the impact of severe events and speed the recovery when those events happen. Importantly, we should not lose sight of the potential impacts of designing for resilience; oftentimes the approaches that we will discuss yield opportunities for co-benefits, which can enhance the viability of Long Island’s environment, economy and society.

2 <http://www.climatechange2013.org/>

Community Background

1



Overview

The NYRCR Massapequas is composed of three communities located in the southern portion of the Town of Oyster Bay, in Nassau County on Long Island - Massapequa I (Massapequa), Massapequa II (East Massapequa), and the Village of Massapequa Park. As a part of the greater New York City metropolitan area, they are approximately 27 miles east of Manhattan, and 10 miles east of the Nassau-Queens border. According to the 2010 Census, the combined population of these three communities was 57,762. The combined population density was 6,278 people per square mile over a total area of 9.2 square miles.

Predominant industries within the Massapequas are retail trade, finance and insurance, public administration, construction, transportation and warehousing, and professional, scientific, and technical services. Educational services and information are also common. The population-weighted average of median household incomes in the three communities is \$93,308 – slightly higher than Nassau County average.

As communities within the Town of Oyster Bay, the Massapequas are governed by a town supervisor and a six-member town council. Residents also elect a town clerk and a receiver of taxes. The incorporated Village of Massapequa Park is also governed by a Village Board consisting of a mayor, deputy mayor, trustees, treasurer, administrator, and attorney. Most of the area is served by the Massapequas Public School district, which includes six K-6 elementary schools, one 7-8 middle school, a 9th grade high school annex and one 10-12 high school. Additionally St. Rose of Lima and Massapequa Grace Episcopal Day Schools serve as private school alternatives. Some high school students in the Massapequas attend schools outside this district.

The Massapequas are served by a combination of road and rail infrastructure. The major highway is Sunrise Highway, which runs east to west. Other major routes include Merrick Road, Hicksville Road, Broadway, and Park Boulevard. The Long Island Rail Road's (LIRR) Babylon line, which runs from Pennsylvania Station in Manhattan to the Village of Babylon in Suffolk County, stops in Massapequa and Massapequa Park. Massapequa Station averages 5,919 passenger trips daily and Massapequa Park Station averages 3,345. The communities are also served by five bus routes in the Nassau Inter-County Express (NICE) system.

A majority of businesses within the Massapequas are located along Sunrise Highway between Hicksville Road and Broadway, and along Park Boulevard. There is a high density of commercial activity in Westfield Sunrise Shopping Center and at the strip mall to its south. Many businesses are also along Merrick Road. Outside of downtown areas, land uses are mainly residential. Marine uses are common along the water; however, the canals that extend into residential communities typically are lined with homes and only privately accessed.





Figure 1 Park Boulevard in Massapequa Park

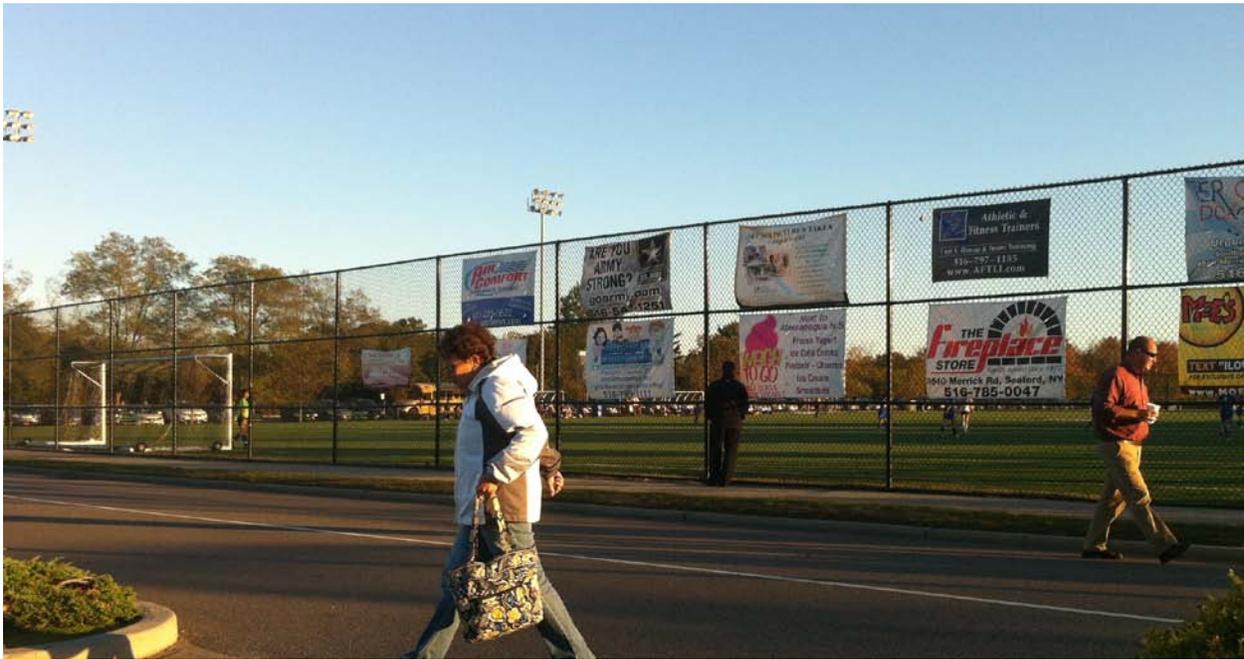


Figure 2 John J. Burns Park ballfields and community walking paths

Geographic Scope

The geographic scope of the New York Rising Community Reconstruction (NYRCR) Plan includes Massapequa I (Masspaequa) and Massapequa II (East Massapequa) in the Town of Oyster Bay and the Village of Massapequa Park as defined by the federal census designations. These three communities will be referred to in this planning effort as the NYRCR Massapequas.

As shown in Figure 3, the geographic scope of NYRCR Massapequas extends north from the South Oyster Bay to Jerusalem Avenue east of the Massapequa Preserve, and up until the Southern State Parkway to the west. The Preserve is omitted from the scope except for the area surrounding the Massapequa Reservoir below Clark Street. The area is bounded to the east by Carman Mill Road, and the west by Seaford Creek in the Tackapausha Nature Preserve.

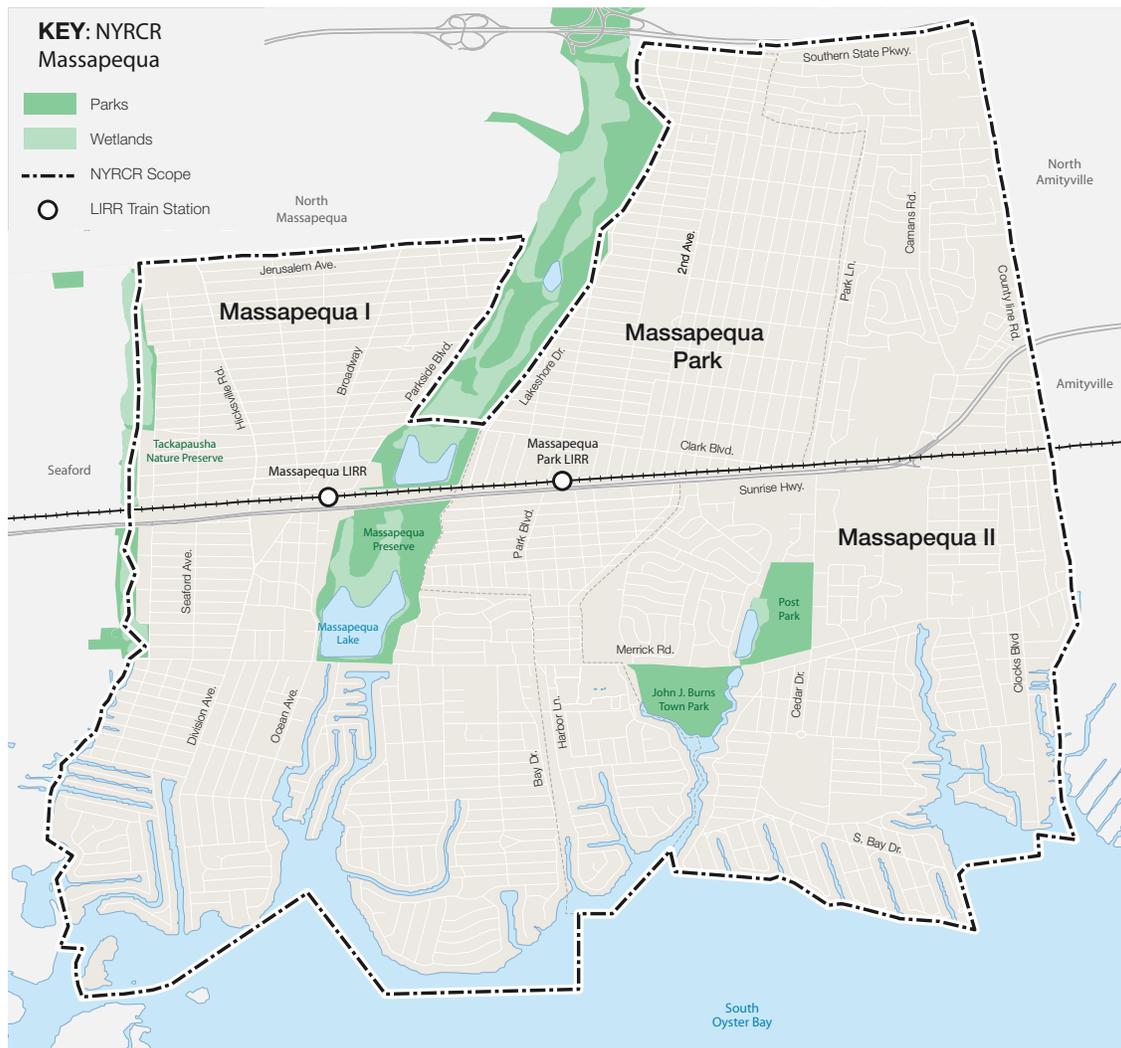


Figure 3 Geographic scope of NYRCR Massapequas

County Impacts

Like many other areas in the greater New York City metropolitan area, Nassau County's residents and businesses were severely damaged by Hurricane Sandy. Nassau County suffered unprecedented damage to homes and businesses, public facilities, infrastructure, and environmental assets. The storm flooded, damaged or destroyed 74,736 structures, with 30,036 suffering damages over 50% of their value and 117 damaged beyond repair. This included 44 power substations and facilities, 26 schools, 31 sanitary sewage pump stations, 100 traffic signals, over 1,000 County drainage outfalls, 28 fire stations, three police stations and one medical facility.

Many community members throughout Nassau County lost homes and property, and a large number of these residents are still displaced. The County's small businesses suffered major losses, which were often exacerbated as damaged roads and buildings prolonged reopening after the initial impacts of the storm as well as rebuilding materials and contractors being in short supply. Although some employees were able to receive unemployment insurance, many of the owners did not qualify for the benefit. Without sufficient capital to finance repairs, and unable to afford additional loans, some of these businesses were left with no option but closure.

The County's wastewater infrastructure systems failed. The Bay Park Waste Water Treatment Plant, which services 40% of Nassau County, including the Massapequas, was inundated with 12 feet of water during the Hurricane Sandy's storm surge. Despite days of emergency preparation, water from the storm surge quickly filled the engines of the plant's main pumping station, forcing Bay Park off-line. Sewage began to back up and overflow into low-lying streets and homes throughout Hempstead's Western Bay, flooding communities with untreated wastewater. The facility remained offline for over 50 hours before service was restored, ultimately flooding channels and waterways with approximately 200 million gallons of raw sewage.²

Electrical shortages caused by saltwater flooding set fire to 32 homes within Nassau County, and resulted in fatalities from carbon monoxide poisoning and electrocution. Flooding and wind damage created a significant amount of debris, including damaged bulkheads, pilings and other marine structures, unmoored boats, and building fragments carried by the storm surge. Over 90% of the approximately 3.3 million cubic yards of debris was structural detritus, with downed trees accounting for 172,980 cubic yards of the total amount.

The Federal Emergency Management Agency (FEMA) received approximately 1,175 requests for public assistance for public projects in Nassau County, with 258 small (less than \$67,500) and 434 large (more than \$67,500) deemed eligible for assistance. FEMA reported that 113,901 residents in both Nassau and Suffolk counties have applied for disaster relief assistance following Hurricane Sandy. Of the 95,534 homes that experienced flooding in these counties, only 43,106 had federal flood insurance policies.

² <http://www.nytimes.com/2012/11/30/nyregion/sewage-flows-after-hurricane-sandy-exposing-flaws-in-system.html?smid=pl-share>



Figure 4 Houses reconstructed after Superstorm Sandy



Figure 5 Neighborhoods built along canals

Existing Plans and Studies

The NYRCR Massapequas Conceptual Plan is informed by numerous existing planning documents and efforts, several of which offer strategies, projects and actions that are relevant to this NYRCR Massapequas Conceptual Plan. Although the geographic scope covered by some of these documents is beyond the boundaries of NYRCR Massapequas, many of the strategies identified are pertinent to the entire South Shore and can be applied at a local level. Moreover, some of the challenges faced by NYRCR Massapequas extend across multiple political jurisdictions and should be considered on a Nassau County or Tri-State region basis. A list of the documents consulted can be found in Appendix A1: Existing Plans and Studies.



Figure 6 Plans for Nassau County



Figure 7 Plans for Long Island

Regional Plans and Studies

The changing social, environmental and economic landscape of Long Island has created a need for short-, mid- and long-term planning goals to address the region's future. Several groups have independently undertaken research and analysis of existing problems and concerns, and have developed recommendations based on their findings. The NYRCR Consultant Team has reviewed this work and identified a set of key themes that outline common issues and opportunities within the region.

Infrastructure Investment

Long Island's aging infrastructure is struggling to accommodate previous population growth while adapting to the increasing threat of storm events and sea level rise. Roads, bulkheads, and power and gas lines have been particularly affected by flooding and storm damage. Additionally, the transportation network no longer best serves Long Island's present-day commuting patterns and should be re-evaluated to better accommodate both regional and local mobility. Infrastructure investment has consistently been identified as critical to the region's growth and economic viability.

Water Resources

Groundwater contamination from pollution and saltwater intrusion is an issue in Nassau County, where potable water is supplied solely by aquifers. Real estate development and population growth, combined with sea level rise, threatens the future water resources of the region. Flood management, water conservation, and environmental protection have been recurring themes in many of the documents studied.

Energy

Electricity rates for Long Island residents are among the highest in the nation, and much of its energy supply depends on off-island resources. Many of the documents reviewed favored investment in energy efficiency and conservation, renewable energy sources, and distributed energy generation strategies to increase energy independence and reduce ratepayer costs.

Housing

Nassau County is dominated by single family housing, with a majority of units over 50 years old. Escalating home prices and property tax levels limit the stock of housing available for the County's young and aging population, low-income residents, and those displaced by previous storms. Many plans have recommended an increase in smaller, affordable housing and rental developments. However, following the impacts of Hurricane Sandy it is uncertain if home prices will remain at their current level.

Governance

Long Island's mesh of administrative divisions can reduce public sector efficiency and limit coordination, while creating an inconsistent regulatory landscape for its residents and businesses. Many plans incorporate recommendations for consolidating overlapping or duplicated services, streamlining permitting processes, and establishing more comprehensive land use regulations.

Transit-Oriented Development

Recent development in Nassau County has not been planned or coordinated in a manner that supports economic and environmental sustainability. Transit-oriented development (TOD) has been suggested as an opportunity to preserve the quality of life of Nassau County's communities while planning for future growth.

Local Plans and Studies

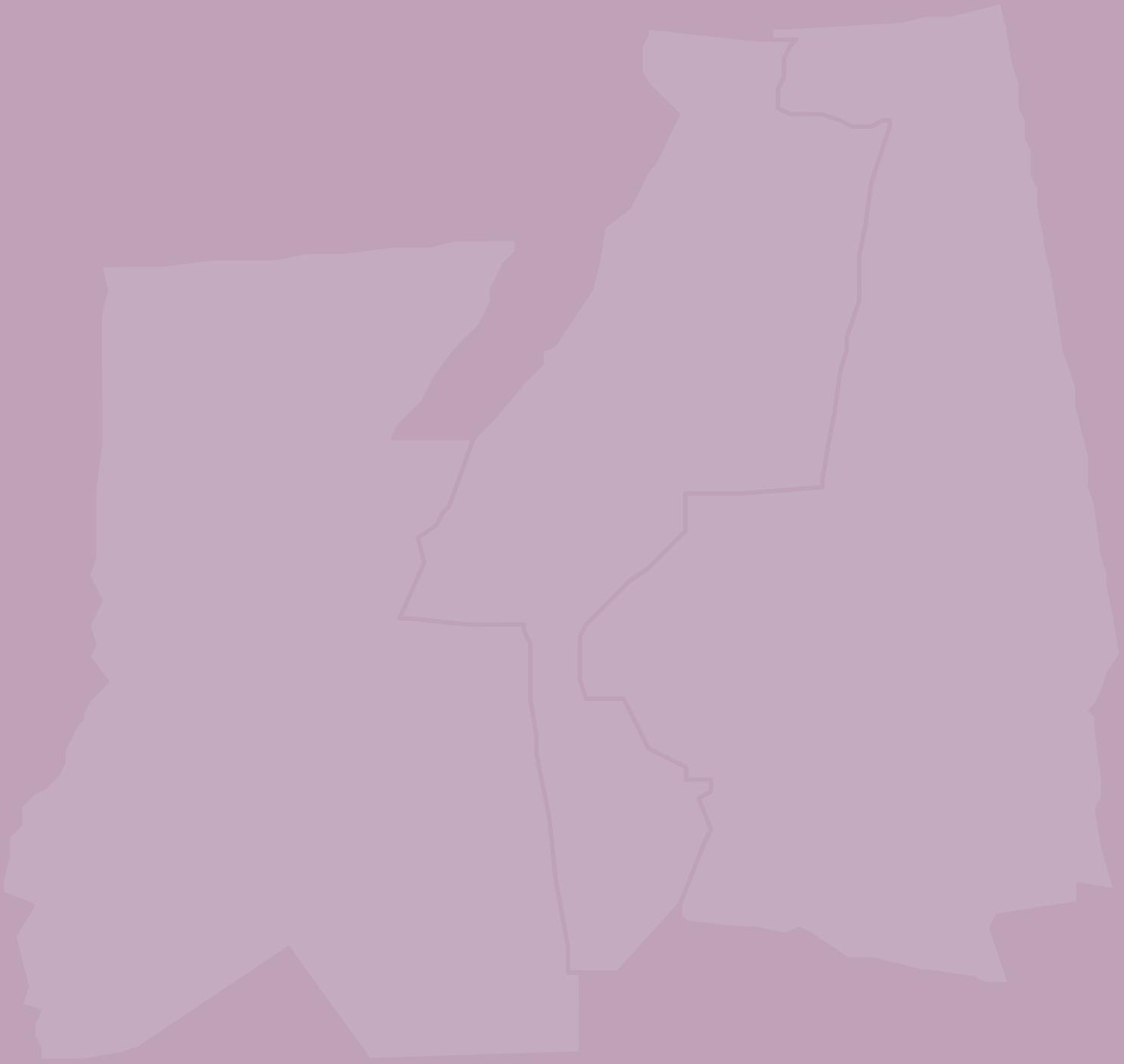
There are currently a limited number of plans and studies that directly address issues specific to the NYRCR Massapequas area. They are mostly focused on the south shore line and the harbor of Oyster Bay and not to the community itself. The Feasibility Report for Erosion Stabilization along the Park Shore (May 2013, Massapequa Park) looks at ways to secure the beach through a variety of technical engineering strategies. The South Oyster Bay Harbor Management Plan (August 2006, Town of Oyster Bay) focuses on the water quality and dredging of areas adjacent to NYRCR Massapequas.



Figure 8 Natural wetlands in the Massapequa Preserve

Looking to the Future

2



Community Vision

During initial Committee and Public Meetings, a Vision Statement was developed to reflect NYRCR Massapequas' desires for a resilient future. This statement describes what the community seeks to become. Although it may evolve as the process continues, it gives the NYRCR Plan a purpose and provides a foundation for response.

The current draft of the Community Vision Statement for the NYRCR Massapequas community is as follows:

The vision for NYRCR Massapequas area is to rebuild an attractive, sustainable, and resilient waterfront community for generations of residents to enjoy with robust residential neighborhoods, vibrant business districts, exemplary leadership, a well-managed coastal zone, and the capacity to effectively manage adverse storm and environmental conditions.

Our Goals:

- 1. Community Planning & Capacity Building**
 - a. Emergency preparedness plans in place to safeguard people and property**
 - i. Fully equipped local emergency shelters**
 - ii. Designated shelters for pet owners**
 - iii. Evacuation during power outages**
 - iv. Traffic light plan for mobility during extended power outages**
 - v. Distribution of filtered water and food during extended power outages**
 - vi. Plan to prevent flood damage to vehicles**
 - b. Clear and effective lines of communication and coordination between agencies and with public before, during, and after emergencies**
 - c. Revitalize neighborhoods**
 - d. Improve parks, community centers, recreation and open space opportunities**
 - e. Improve mobility (transit, auto, pedestrians, bicycles, and boaters)**
- 2. Economic**
 - a. Beautify commercial areas**
 - b. Enhance and revitalize local businesses**
 - c. Private facilities that provide critical goods or services have back up power generation**
- 3. Health & Social Services**
 - a. Proximity to medical facility**
 - b. Community centers that serve the needs of residents young and old generally and during emergency situations**

4. *Housing*
 - a. *Effectively protect homes from future storm impacts*
 - b. *Post storm security for neighborhoods after evacuation*
 - c. *Maintain property values*
 - d. *Affordable flood insurance*
 - e. *Provide a range of housing options*
5. *Infrastructure*
 - a. *Storm resistant power distribution*
 - b. *Effective back up power systems*
 - c. *Improve stormwater management*
 - d. *Enhance shoreline and flood protection*
 - e. *Uninterrupted mobile phone service*
 - f. *Provide emergency infrastructure*
6. *Natural and Cultural Resources*
 - a. *Prevent erosion of parks*
 - b. *Examine and improve canal hydraulics*
 - c. *Protect the community from future storm threats, sea level rise, while strengthening and protecting our natural resources*
 - d. *Protect water resources*



Figure 9 Local businesses in the Massapequas

Community Assessment

The NYRCR Massapequas Final Plan will reflect an assessment of risks facing regional and community assets, and the needs and opportunities presented by community members. The NYRCR Program has developed a standardized methodology consisting of seven main steps for the asset inventory and risk assessment process. This allows for teams supporting each community to share a common understanding of how to categorize assets and evaluate risk, and to ensure that the results of each participating community are comparable.

The six steps developed by NYRCR Program are:

- Collect Preliminary Data Collection
- Conduct supplemental data collection
- Identify and Address data gaps
- Conduct Asset Inventory, Classification and Attributes
- Utilize the Initial Risk Assessment Tool Implementation for Coastal Areas, which includes review by the community planning committee
- Identify Management Options Review and Other Community Scenarios

The needs and opportunities presented in the NYRCR Massapequas Conceptual Plan incorporate existing studies relating to previous storm impacts with public feedback and an analysis of key economic drivers within the community. A majority of needs relate to the repair or replacement of assets damaged by previous storms, and the economic losses attributed to damage and recovery. Other considerations such as existing projects occurring prior to storm damage and opportunities for increasing the resilience of existing assets were addressed.

Community Assets

NYRCR Massapequas has a variety of community assets including residential and commercial districts, schools, infrastructure, parks and ecological areas that were greatly impacted by Hurricane Sandy and which face future exposure. Many of these assets are highly valued and treasured by community members, and stakeholders have expressed particular interest in protecting them.

The NYRCR Consultant Team is cataloguing NYRCR Massapequas' assets by collecting data from State, County and local sources across six asset classes, described below. Throughout the public engagement process, the NYRCR Committee and Consultant Team will continue to add to this initial list, as well as identify the assets that are most critical to protect.

Economic

Economic assets include commercial and industrial buildings, downtown centers and commercial areas along Sunrise Highway at Massapequa and Massapequa Park LIRR stations, Westfield Sunrise Shopping Center, Merrick Road, and Broadway, and seasonal or tourist destinations such as Peninsula Golf Club.

Health and Social Services

Health and social service assets include schools and day cares, health and elder care facilities, government and administrative services, media and communications, and critical services such as police, fire and public works.

Housing

Housing assets include single-family and multi-family dwellings, group or senior housing, such as Bristol Assisted Living, Parkview Nursing Home, and Massapequa Senior Citizens Housing, as well as public housing. Similar building types in close proximity may be identified as a single asset.

Infrastructure Systems

Infrastructure systems include public transit and transit ways, transportation hubs, energy sources and fuel stations, water, stormwater, wastewater, and solid waste and recycling networks.

Natural and Cultural Resources

Natural assets include habitats, wetlands and marshes, as well as parks and open spaces. Cultural assets include religious establishments, libraries and museums, historic landmarks and arts venues.

Socially Vulnerable Populations

Socially vulnerable populations include assets which predominately provide services to people with disabilities, low-income populations, the elderly and young children, and people at risk of becoming or are currently homeless.

The asset map in Figure 10 provides a geographic overview of various asset classes located throughout the community of NYRCR Massapequas.

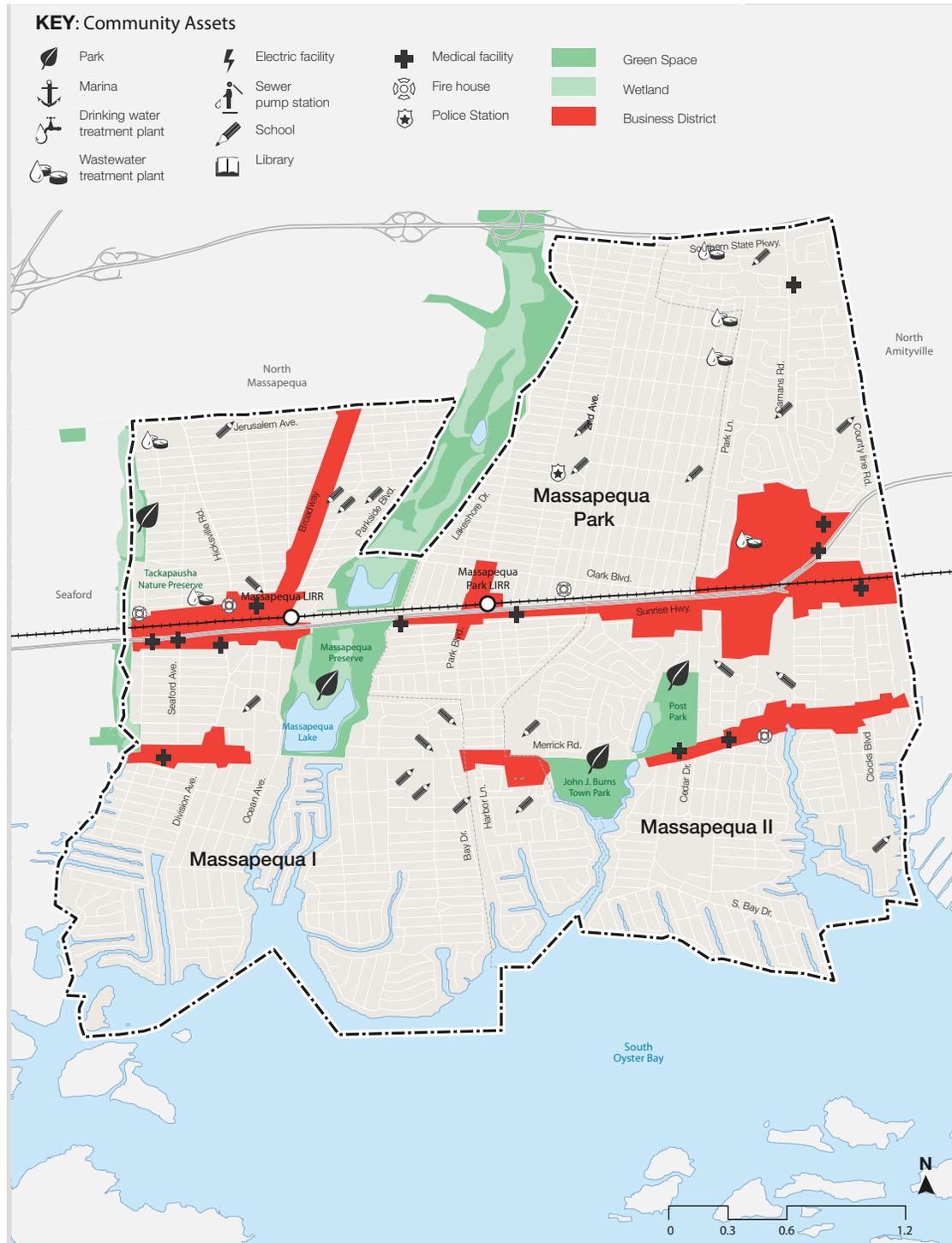


Figure 10 Map of community assets in NYRCR Massapequas

Evaluation of Risks

Risk is the potential for an asset or system to be damaged or destroyed in some future event. The NYRCR Committee and Consultant Team will engage in a comprehensive risk assessment to understand and prioritize projects and strategies for community reconstruction and development. This analysis is based on the impacts of previous storm events, and considers three factors contributing to future risk. These factors are defined as hazards, exposure and vulnerability.

Hazards

Hazard is a measure of the likelihood and magnitude of future storm events. Hazards will be based on the aggregated risk maps used for the asset inventory and prioritization, which identify and rate geographic areas susceptible to future inundation or erosion. Risk areas are categorized as Extreme, High or Medium based on the frequency and magnitude of coastal threats.

Exposure

Local topographic and shoreline conditions can increase or decrease the effect of hazards on assets. Exposure is the measure of this influence on potential storm impacts. Landscape attributes such as erosion rate, beach width, and the presence and condition of natural or engineered protective features will be considered when determining asset exposure.

Vulnerability

Vulnerability reflects the level of impairment or consequences that assets may experience during and after a storm event. It is the measure of an asset's ability to resist damage. In context of vulnerable populations, it reflects the difficulty of evacuation or relocation relative to population size. Vulnerability will be determined by studying previous storm impacts and using local knowledge to develop an estimate of future effects.



Figure 11 Ongoing beach erosion



Figure 12 Efforts to elevate homes above the floodline

Risk Areas

The risk assessment process will be informed by the creation of hazard maps, which incorporate a full range of coastal risks, and consider both the frequency and impact of flooding. The maps, prepared by the New York Department of State for the NYRCR Program, identify three levels of risk based on aggregated information for multiple hazards. These risk areas are qualified as subject to extreme, high, and moderate risk from inundation and erosion from future storm events and sea level rise. ²

Extreme Risk Areas

Areas 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 Areas

Areas outside the Extreme Risk Area that are currently at infrequent risk of inundation or at future risk from sea level rise.

Moderate Risk Areas

Areas outside the Extreme and High Risk Areas but currently at moderate risk of inundation from infrequent events or at risk in the future from sea level rise.

Figure 14 shows the extreme, high and moderate risk areas within NYRCR Massapequas.

² Guidance for New York Rising Community Reconstruction Plans: A Planning Toolkit for CR Planning Committees



Figure 13 Housing at the water's edge

New York Department of State Risk Assessment Area Mapping Methodology³

To help understand the geographic distribution of coastal risk, the NYS Department of State prepared coastal risk assessment areas with assistance from the National Oceanic and Atmospheric Administration Coastal Services Center (NOAA-CSC) and the Federal Emergency Management Agency (FEMA). The following process was used to develop a geographic assessment of extreme, high, and moderate risk areas for Nassau County.

Map risk assessment areas: data was collected from sources accurate enough to differentiate geographic areas according to likelihood of flooding, erosion, waves and storm surge. To the extent allowed by source data, places where flood water can extend upstream are reflected in the mapping. Data sources include, but are not limited to:

- **High Resolution Topography:** The best available topography data for all areas was used. This allowed for topographic mapping of elevation differences that could affect flooding potential. Topographic data for inundation analysis had an average vertical error of 9 centimeters.
- **2009 FEMA Flood Insurance Rate Maps:** Commonly referred to as 100-year flood zones, A and V zones on floodplain maps are areas with a 1% annual risk of flooding based on the most recent FEMA analysis. The boundaries of these zones are identified on Flood Insurance Rate Maps (FIRMs). The FIRMs also identify zones X and B, which are subject to a “500-year flood,” or 100-year flood with a depth less than 1 foot, or with a contributing drainage area less than 1 square mile, and areas protected by levees from the base flood. For this Risk Assessment, zones X and B are relatively low-risk areas subject to future storm surge inundation with sea level rise, in which case a higher standard for flood protection may be appropriate.
- **SLOSH Storm Inundation Zones (NY3 Basin):** The Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model from the National Hurricane Center estimates hurricane storm surge. Because category 3 hurricanes (Saffir-Simpson scale) have occurred numerous times in New York, the SLOSH category 3 inundation zone was used to identify the geographic extent of coastal inundation risk.
- **Sea Level Rise:** To account for future sea level rise, a 0-3 feet above Mean Higher High Water (MHHW) shoreline (using the NOAA VDatum for MHHW surface) that shows both possible and more likely areas impacted by sea level rise based on mapping confidence. Future sea level rise was also accounted for by adding 3 feet of elevation to the NOAA Weather Service coastal flood advisory and adding 3 feet of elevation to the inland extent of the 100-year flood zone.

³NYS Department of State, Risk Assessment Area Mapping – Datasets and Methodology
http://stormrecovery.ny.gov/sites/default/files/documents/Risk_Assessment_Area_Mapping.pdf

-
- Shallow coastal flooding: NOAA National Weather Service (NWS) shallow coastal flood advisory thresholds were used. An analysis of the number of events and duration of coastal flooding over the past 3 years, and the consequence of 0.5 and 1 meter of sea level rise was carried out.
 - Susceptible Natural Shoreline Features: Areas subject to shoreline erosion are at risk of chronic impacts as well as increased storm impacts.

Compile mapping and classify geographic areas: Compile mapping into a summary, and classify geographic areas according to differences in vulnerability. Mapped areas were overlaid, and combined vulnerabilities were used to separate geographic areas into three classes:

- Extreme Risk Areas: Areas 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. This includes FEMA V flood zones, areas subject to Shallow Coastal Flooding per NOAA NWS's advisory threshold, areas prone to erosion or natural features susceptible to erosion, and areas subject to future sea level rise.
- High Risk Areas: Areas outside the Extreme Risk Area that are currently at infrequent risk of inundation or at future risk from sea level rise. These include areas bounded by the 1% annual flood risk zone (FEMA V and A zones), and areas subject to future sea level rise.
- Moderate Risk Areas: Areas outside the Extreme and High Risk Areas but currently at moderate risk of inundation from infrequent events or at risk in the future from sea level rise are Moderate Risk Areas. These include bounded by the 0.2% annual risk (500 year) flood zone, where available, and areas bounded by the SLOSH category 3 hurricane inundation zone.

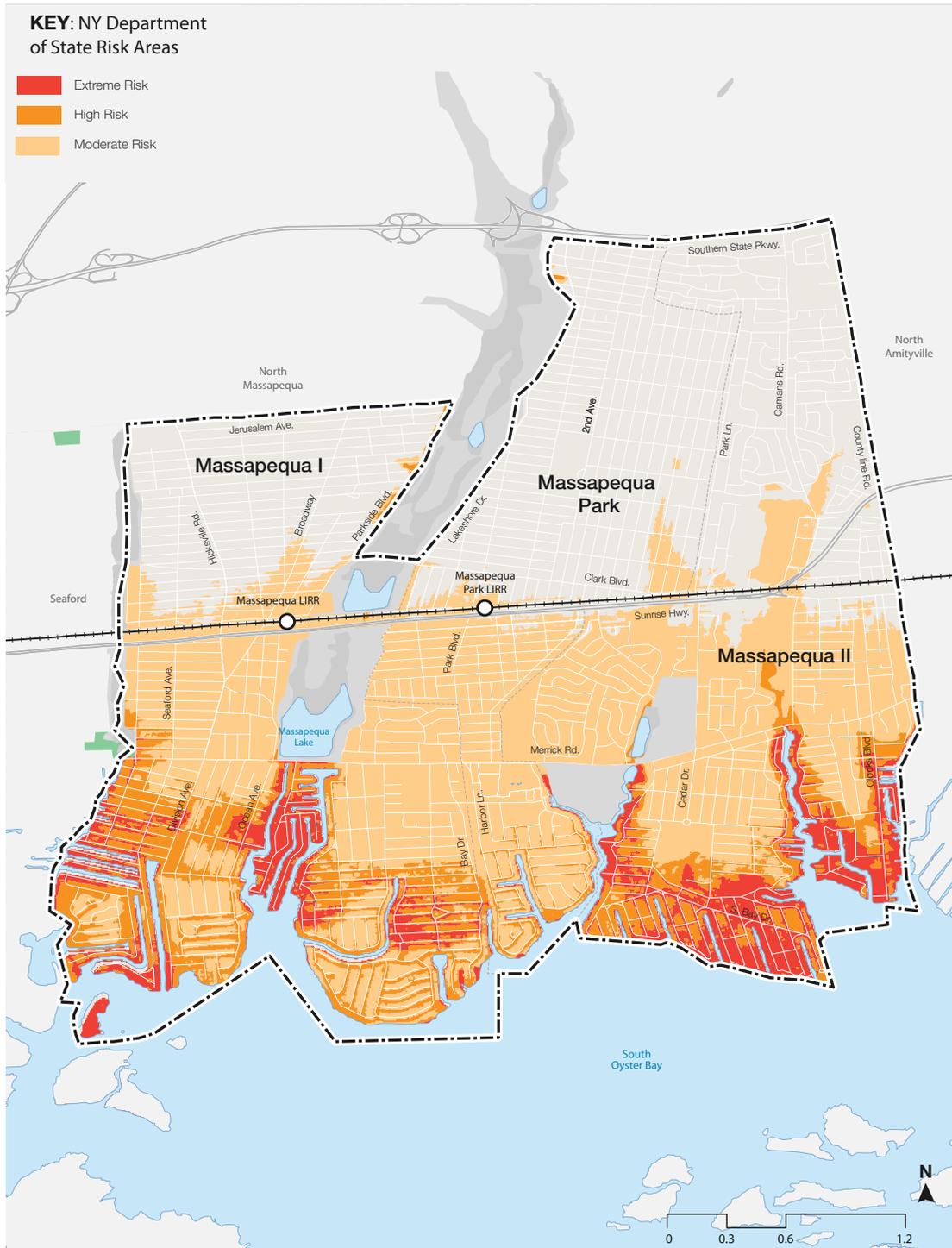


Figure 14 Map of risks in NYRCR Massapequas

The NYRCR Consultant Team has begun to review community assets within NYRCR Massapequas based on their location relative to the risk areas outlined above. Table 1 and Table 2 identify the number of assets in each asset class and sub-class that are located within moderate, high, and extreme risk areas. The asset tables developed for the NYRCR Conceptual Plan consist of data collected from New York State and Nassau County Geographic Information System (GIS) databases. Using GIS software, County and State data was trimmed to include only assets within the NYRCR Massapequas geographic scope. Attribute information contained within different datasets was used to parse individual assets into class and sub-class categories.

Table 1: NYRCR Massapequas assets located in risk areas

ASSET CLASS	ASSET SUB-CLASS	MODERATE	HIGH	EXTREME
Health and Social	Assisted Living	3	1	0
	Community Center	8	0	0
	Day Care Facility	10	1	0
	Emergency Services	5	0	0
	Government	5	2	0
	Hospital	0	0	0
	Library	3	0	0
	Other Medical	6	0	0
	Pharmacy	8	1	0
	School	9	3	0
	Veterinary	2	0	0
Natural and Cultural	Beach	0	5	0
	Cultural	3	0	0
	House of Worship	9	1	0
	Parks	3	1	7
	Recreation	9	0	0
	Wetlands (acres)	17	59	34

ASSET CLASS	ASSET SUB-CLASS	MODERATE	HIGH	EXTREME
Infrastructure	Power Facility	0	0	0
	Rail Bridges	14	0	0
	Rail Stations	2	0	0
	Roads (miles)	82	29	24
	Road Bridges	0	2	1
	Sewer Pump/Treatment	1	2	2
	Water Treatment Plants	2	0	0
	Water Wells	1	0	0
Housing	Low Density Residential	5,660	1,915	2,740
	Medium Density Residential	265	60	110
	High Density Residential	7	0	2
	Assisted Living	3	1	0
Economic	Commercial Parcels	130	6	27
	Industrial Parcels	21	1	0
	Mixed Use Parcels	70	4	2
	Retail Parcels	109	2	4
	Bank/ATM	17	1	0
	Industrial Facility	1	0	0
	Lodging	1	0	0
	Marina/Boat/Pier	0	0	3
	Office	8	0	0

ASSET CLASS	ASSET SUB-CLASS	MODERATE	HIGH	EXTREME
Economic (cont.)	Post Office	2	0	0
	Restaurant/Food/Caterer	54	5	2
	Retail	70	1	0

Table 2: Total number of assets located in risk areas

ASSET CLASS	ASSET SUB-CLASS	MODERATE	HIGH	EXTREME
Health and Social	67	59	8	0
Natural and Cultural *	38 (110)	24 (17)	7 (59)	7 (34)
Infrastructure **	27 (136)	20 (82)	4 (29)	3 (24)
Housing	10,763	5,935	1,976	2,852
Economic	541	483	20	38

*Natural and Cultural assets in parenthesis () represent total wetland acres

** Infrastructure assets in parenthesis () represent total road miles

Needs and Opportunities

Community needs and opportunities, shown in Table 3, were identified during initial Committee and Public Meetings as well as the review of existing planning documents. The NYRCR Planning Committee and Consultant Team will expand the list of needs and opportunities as the planning process continues and further research and analysis are completed. These issues have been organized into FEMA’s National Disaster Recovery Framework’s six categories of recovery support functions, which blend traditional repair efforts with long-range planning for recovery and growth.

Community Planning and Capacity Building

This recovery function addresses a community’s ability to implement recovery actions while planning for future storm events. It includes public education and preparedness, legislative and regulatory concerns for vulnerable populations, and building code and land use regulations that may influence future rebuilding and recovery.

Economic Development

A disaster can severely disrupt economic and business activities, and the development of new economic opportunities. This recovery function considers the needs of local business and institutions to recover or relocate following a storm event, and identifies development plans that may have been stalled as a result. It should also highlight investments that can provide both economic growth and greater resilience in the community.

Health and Social Services

This recovery function considers the strategies and management measures needed to ensure that health care facilities and essential social services are accessible at an appropriate level. These measures are specifically important to protecting the health and wellbeing of socially vulnerable populations. Long-term effects are also relevant, such as post-disaster health impacts on residents and recovery workers.

Housing

The housing recovery support function establishes needs and opportunities relative to community housing goals, prioritizing damaged and at-risk areas. The type and location of housing should consider current and expected demand, the availability of rental and non-rental units, and the range of housing available relative to community income levels. The effects of previous events on building code requirements can also significantly impact housing-related needs.

Infrastructure

Infrastructure needs and opportunities include a number of essential services, from flood control measures to wastewater treatment facilities. These issues should closely align with the community assets identified by the asset inventory, and recovery efforts should focus on opportunities to rebuild in a way that decreases vulnerability to future impacts.

Natural and Cultural Resources

This recovery function addresses damage to natural and cultural resources, and the actions that should be taken to preserve, rehabilitate or restore these assets or services to their initial state. Natural systems have been shown to mitigate storm impacts, and offer significant environmental and commercial benefits such as stormwater management and recreational opportunities.

Table 3: Community needs and opportunities identified by NYRCR Massapequas

RECOVERY FUNCTION	COMMUNITY NEEDS AND OPPORTUNITIES
Community Planning and Capacity Building	<ul style="list-style-type: none"> • N - Coordination of emergency warning systems • N - Coordinating of utility companies • N - Central location for emergency management as a source of information and assistance • O - Activities for teens
Economic Development	<ul style="list-style-type: none"> • N - Generators at designated gas stations • O - Provide additional access to downtown and LIRR stations from other communities and connect residents to jobs in other areas • O - Beautify commercial areas
Health and Social Services	<ul style="list-style-type: none"> • N - Large medical facility in closer proximity during emergency events • N - Police/emergency checkpoints • O - Medical options for seniors
Housing	<ul style="list-style-type: none"> • N - Security for vacated homes • O - Raise existing homes • O - Change construction codes to include building higher and elevating gas and electric meters
Infrastructure	<ul style="list-style-type: none"> • O - Improved power grid • O - Bury power lines and/or reinforce power line poles • O - Outflow pipes require backflow device and regular maintenance/inspection • O - Canal dredging and bulkhead raising (particularly at Colleran Park) • O - Installation of additional cell phone towers • O - Army Corps involvement • O - Bethpage Bikeway • N - Improved street lighting (more lights on each street and backup power for lights on major evacuation routes) • O - Solar powered charging stations for electric cars • N - Pump station back-up power to prevent flooding along major roadways
Natural and Cultural Resources	<ul style="list-style-type: none"> • O - Bulkheads along parks to prevent erosion • N - Enhance natural systems on the barrier islands to prevent inland flooding and raise awareness about the co-benefits of ecological preservation • N - Emphasize storm protection measures that enhance, rather than degrade, the local ecological system • O - Continue Tackapausha Preserve stormwater upgrades and pedestrian bridge repairs • O - Upgrade and improve access to Massapequa State Park/ Preserve, John Burns Park, Bayfront Park, Brady Park • O - Develop process for acquisition of severely damaged properties for flood mitigation, storm water retention, wildlife habitat, and recreation • O - Leverage cultural institutions (schools, libraries, community centers) as emergency information and meeting centers, as well as educational and awareness building centers

Key Projects and Strategies

The strategies included in the NYRCR Conceptual Plan were developed to achieve rebuilding goals, increase resilience and promote economic growth within the community of NYRCR Massapequas. At this stage of the planning process, many of the strategies currently outlined are a product of preliminary feedback and analysis, and focus more heavily on regional issues, and they will evolve as the planning process continues. After completion of the assessment and public outreach phase, the NYRCR Committee and Consultant Team will have the information necessary to develop a comprehensive set of strategies that better reflect the needs and opportunities of NYRCR Massapequas.

Strategies

The strategies outlined in this section, shown in Table 4, have been organized by the FEMA’s National Disaster Recovery Framework’s six recovery support functions, which include both traditional repair efforts and long-term planning goals. To the extent possible, they consider the risk faced by critical and non-critical community assets, the availability of funding and the potential synergies with other planned or ongoing initiatives.

Table 4: Strategies to achieve rebuilding, resilience, and economic growth

RECOVERY FUNCTION	COMMUNITY STRATEGIES
Community Planning and Capacity Building	<ul style="list-style-type: none"> • Provide incentives to stimulate the redevelopment of vacant, abandoned, and underused properties. • Plan for transit-oriented development and downtown revitalization, including initiatives to improve streetscapes and maximize access to public space. • Promote policies for economic growth, such as streamlined approval processes and updated land use regulations.
Economic Development	<ul style="list-style-type: none"> • Create an education and workforce training strategy to ensure that community members are prepared to take advantage of new opportunities in key growth sectors. • Rebuild and expand infrastructure to improve job access, revitalize downtown and transit hubs, and attract and retain businesses and a skilled labor force. • Provide incentives for green construction and renovation, affordable housing, and the development of more resilient neighborhoods.
Health and Social Services	<ul style="list-style-type: none"> • Expand healthcare services to meet the needs of diverse and growing population. • Create shared services for local governments and school districts to ensure adequate and equitable education funding. • Coordinate an emergency preparedness plan across the region.

RECOVERY FUNCTION	COMMUNITY STRATEGIES
Housing	<ul style="list-style-type: none"> • Create new housing opportunities, including affordable housing for the young and elderly population, and low-income households. • Maintain and support existing housing programs that assist first-time buyers, provide funds to purchase and rehabilitate vacant or abandoned properties, and promote affordable housing options. • Develop a housing plan to accommodate the region's diversifying population and the next generation of its residents.
Infrastructure	<ul style="list-style-type: none"> • Develop and expand transit options to reduce traffic congestion, provide greater regional connectivity, and make off-island connections more accessible. • Create local, dedicated funding sources for regional transportation and environmental infrastructure. • Upgrade and expand wastewater infrastructure, including sewage networks and treatment facilities, to meet future capacity and improve energy efficiency. • Develop a regional energy strategy that includes energy efficiency and conservation measures, increased renewable energy sources, and investment energy grid infrastructure. • Develop a regional waste strategy to reduce the amount of municipal solid waste generated, increase energy captured from waste and expand recycling programs.
Natural and Cultural Resources	<ul style="list-style-type: none"> • Establish a coordinated plan to protect and maintain the region's natural ground and surface water resources, including water conservation and increased pollution control/mitigation. • Evaluate existing erosion control and shoreline structures that may be detrimental to natural resources, and avoid adding additional structures that may interfere with coastal processes. • Create programs to increase environmental stewardship and reduce impacts of the real estate development and landscaping on ground and surface waters. • Develop and expand tourism activities and infrastructure related to the region's beaches and marine resources. • Establish and support regional development guidelines that preserve open spaces and protect the natural environment. • Develop arts and cultural programs to catalyze social and economic development.

Projects

The NYRCR Committee together with the community will identify and prioritize potential projects to implement the strategies outlined in the NYRCR Conceptual Plan. These projects, shown in Table 5, will address the replacement or repair of damaged structures, address exposure to risk and increase resilience, respond to current and future housing needs, or help to restore and grow the local economy. Some projects may also provide support for other strategies, and supply the resources or management measures needed for implementation. The project list below is based on initial discussions with the Committee, public agencies and existing planning documents. The list will be expanded and refined as the planning process continues.

Table 5: Potential projects for rebuilding and resilience in NYRCR Massapequas

NAME AND ASSET CLASS	PROJECT DESCRIPTION	RESULT OF SANDY?	RESULT OF OTHER EVENT/ PLAN?
Lifeline network [Infrastructure Systems]	Determine the critical access routes, or “lifeline roads” used within the community. If located in an at-risk area, elevate lifeline roads to provide routes for emergency evacuation during storm events. To maintain functionality during power outages, retrofit streetlights and signals along these routes to operate on solar power.	Yes	No
Underground utilities [Infrastructure Systems]	Work with LIPA/PSEG and local emergency service providers to identify underground electricity distribution lines in vulnerable or inaccessible areas. Flood-proof new underground distribution substations and equipment, and existing substations located in risk areas.	Yes	No
Tree trimming [Infrastructure Systems]	Work with LIPA/PSEG and residents to identify areas where additional or more frequent tree clearing is needed. In conjunction with utility line clearing efforts, create or contract a local tree removal service to take down dead or dying trees located near distribution lines.	Yes	No

NAME AND ASSET CLASS	PROJECT DESCRIPTION	RESULT OF SANDY?	RESULT OF OTHER EVENT/ PLAN?
Switch and feeder addition [Infrastructure Systems]	Install additional switches and feeders in areas with overhead lines to provide greater grid flexibility and the ability to isolate areas where a power failure has occurred. This can be combined with smart grid technologies to manage demand and increase response times during disasters or heavy storm events.	Yes	No
Distributed generation incentives [Infrastructure Systems]	Create incentives to support the installation of small-scale energy generation and energy storage technologies, such as solar photovoltaics and cogeneration plants. Appropriate technologies should be determined by building size and use type, and incentives should be structured accordingly.	Yes	No
Natural gas infrastructure modernization [Infrastructure Systems]	Work with National Grid to modernize natural gas distribution infrastructure. Identify and invest in implementable technologies to better regulate and isolate natural gas lines in the event of damage or leakage. Connect residents and businesses to gas lines where service is available, and expand service into areas of need.	No	No
Wastewater infrastructure program [Infrastructure Systems]	Elevate sewage-pumping stations and install back-up natural gas generators on site to maintain operations during a power outage. Create a program to help home and building owners install backflow preventers on lateral sewers, and install check valves on municipal sewer pipes and at outfall locations.	Yes	No
Utility-scale alternative energy sources [Infrastructure Systems]	Work with Nassau County, the State, and LIPA/PSEG to develop alternative transmission-level power sources.	No	Yes
Flood diversion and control [Infrastructure Systems]	Strategically locate structural and natural drainage features to divert flood waters into designated catchment areas. Commission a study to determine overland flow patterns in flood-prone areas to identify locations for drainage, detention and check-valves on outfall pipes.	Yes	No

NAME AND ASSET CLASS	PROJECT DESCRIPTION	RESULT OF SANDY?	RESULT OF OTHER EVENT/ PLAN?
Fuel Tanks Security [Infrastructure Systems, Natural and Cultural Resources]	Ensure that damaged underground oil tanks don't allow seepage into groundwater by transferring residents from fuel oil to natural gas. Require that all tanks are sufficiently secured to prevent leaks and damage. In conjunction with National Grid, provide additional incentives for business and residents to convert to natural gas heating systems.	Yes	No
Green infrastructure plan [Infrastructure Systems, Natural and Cultural Resources]	Work with neighboring hamlets and villages to create and implement a comprehensive green infrastructure plan, and create a shared ownership model for stormwater and wastewater infrastructure. Green infrastructure improvements can help reduce flooding and groundwater pollution, and enhance natural assets within the community.	Yes	No
Stormwater Management Program [Infrastructure Systems, Natural and Cultural Resources]	Work with neighboring hamlets, villages, and Nassau County to establish a region-wide stormwater management program to improve system-wide monitoring of stormwater drainage infrastructure to improve management and maintenance. Increase system capacity and use collected information to identify road elevations and drainage improvements on major roads for flood control and pollution reduction.	Yes	No
Emergency cellphone service [Infrastructure Systems, Health and Social Services]	Work with local cellular service providers and regulatory agencies to expand service areas and equip cell towers with emergency backup power. Cellular phones are a critical mode of communication during emergencies and current requirements for backup power are not sufficient to maintain service through a disaster or storm event.	Yes	No

NAME AND ASSET CLASS	PROJECT DESCRIPTION	RESULT OF SANDY?	RESULT OF OTHER EVENT/ PLAN?
Emergency parking [Infrastructure Systems, Health and Social Services]	Designate areas outside of flood zones to be used for off-street parking during flood events. Cars and other personal vehicles left in these areas will not be ticketed or towed, but can be safely stored for an amount of time deemed appropriate by the community or property owner.	Yes	No
Emergency animal shelters [Health and Social Services]	Work with local businesses and organizations to establish a refuge center for animals or families with animals to go to during a storm emergency or flood event. Establish a program to recruit volunteers, such as local veterinary professionals or students, to help manage the facility.	Yes	No
Permanent generators for critical facilities [Health and Social Services]	Install permanent generators on the roofs or upper floors of critical assets and evacuation sites to prevent flood damage during storm events. Natural gas or propane generators should be used when possible, as gasoline or diesel-powered units are vulnerable to fuel shortages.	Yes	No
Fire Department Emergency Preparedness [Health and Social Services]	Purchase additional fire response vehicles (to be used for resident evacuation on flooded streets and improved access to burning structures), as well as other additional emergency response equipment for each NYRCR area (such as portable generators, sand bags, chain saw, large portable water pumps, emergency power generators, heavy duty boat trailers, etc.) Ensure coordination with debris removal facilities.	Yes	No
Disaster Action Planning [Health and Social Services]	Improve local disaster action planning for emergency preparation and readiness, evacuation, and recovery efforts. Solicit input from public agencies, emergency service providers, residents and business owners and establish clear lines of communication between all stakeholders as the plan is developed.	Yes	No

NAME AND ASSET CLASS	PROJECT DESCRIPTION	RESULT OF SANDY?	RESULT OF OTHER EVENT/ PLAN?
Integrated communication network [Health and Social Services]	Create a single source for comprehensive information and emergency assistance. Establish a communication network that more effectively links the local government with emergency management agencies, faith-based groups, and non-profit organizations to direct aid and recovery efforts to the community's socially vulnerable populations.	Yes	No
Back-up generator system [Health and Social Services, Socially Vulnerable Populations]	Invest in a stockpile of portable generators that can be deployed to community assets and evacuation centers where permanent generators are unavailable or yet to be installed. The generator inventory should have sufficient capacity to supplement critical facilities, support community assets, such as vulnerable populations, that may not have backup power systems in place, and support a network of connective communication technologies.	Yes	No
Community shelter network [Health and Social Services, Socially Vulnerable Populations]	Ensure that emergency shelters are accessible and able to accommodate the needs of community members. Maintain at least two points of access to critical facilities such as schools and hospitals that may also function as shelters during a disaster. Ensure that parking capacity at emergency shelters is adequate for the expected number of evacuees travelling by personal vehicle.	Yes	No
Residential generator rebate program [Housing, Socially Vulnerable Populations]	Provide rebates for residential installations of natural gas or propane generators. As part of a homeowner energy education program, provide residents with an overview of the permitting process and outline regulatory requirements for installation.	Yes	No
Homeowner education program [Housing]	Re-energizing the grid after a power loss can place unexpected loads on building circuits and equipment, which may result in fire or explosion. Establish a homeowner energy education program to prevent accidents in the aftermath of a storm or disaster, provide incentives for smarter home controls, and inform the community about government grant programs.	Yes	No

NAME AND ASSET CLASS	PROJECT DESCRIPTION	RESULT OF SANDY?	RESULT OF OTHER EVENT/ PLAN?
Revise zoning for resiliency [Housing]	Revise local zoning regulations to allow residents to raise their homes and utility meters without penalty. Work with State, Town and County planning agencies to ensure that needs specific to the community's rebuilding efforts are not omitted or overlooked.	Yes	No
Post-Storm Housing Database [Housing]	Create a county-wide database of rental units and hotel rooms available to accommodate displaced residents. Use the database to identify areas with low vacancy and guide real estate development to bring more rental units online.	Yes	No
Energy retrofit program [Housing, Economic]	Establish a home retrofit program and create contractor incentives for energy efficient buildings. Equipping homes and buildings with better insulation, high performance windows, and energy-efficient mechanical systems can significantly reduce energy demand, saving money and reducing strain on the power grid.	Yes	No
Storm protection [Economic, Natural and Cultural Resources]	Invest in the construction of structural and natural mitigation measures to address high-tide flooding. Engage in beach nourishment and replenishment efforts to attenuate storm surges and protect the shoreline. Revise ownership models and permitting processes to prevent individuals from illegally elevating bulkheads.	Yes	No
Downtown masterplan [Economic, Natural and Cultural Resources]	Engage in a comprehensive masterplanning process for the community's downtown and commercial districts to encourage economic development. Work with business owners to establish business improvement districts in the community, and invest in public space improvements. Masterplanning efforts should be coordinated with and support green infrastructure initiatives.	No	Yes

Regional Perspectives

Many of the strategies and projects developed for the NYRCR Massapequas Conceptual Plan are applicable to other south shore communities, and coastal areas throughout Long Island. These initiatives respond to both the common risks and vulnerabilities facing coastal communities, and cross-cutting issues that affect the entire region. Coordinated implementation on an inter-municipal or regional scale can help NYRCR Massapequas leverage resources, opportunities, and support to meet the objectives outlined in the NYRCR Plan.

NYRCR Massapequas will need to work with neighboring hamlets and villages along the south shore to consolidate rebuilding and resilience efforts. The challenges facing Long Island's coastal communities extend across political jurisdictions and will need to be addressed by the region as a whole. Engaging in a regional planning process will allow NYRCR Massapequas and other south shore communities to share information and reinforce collective strategies. The final NYRCR Plan will identify projects and actions that are consistent with regional needs and opportunities, while upholding the vision of NYRCR Massapequas' future.



Figure 15 Long Island Rail Road station

Actions

Actions encompass the management measures required to implement projects and strategies. In contrast to projects, actions establish policies and guidance for strategies that reduce the exposure and vulnerability of assets to storm impacts. Six management measures were identified by the NYRCR Program to organize actions for increased resilience and risk mitigation within NYRCR Massapequas and across the region. As strategies and projects are developed for the NYRCR Conceptual Plan, these measures will be refined to better reflect the needs and opportunities in NYRCR Massapequas.

Conserve, Restore, and Enhance Natural Protective Features

These management actions use the natural landscape to promote safety and livability while reducing costs. Approaches include natural flood storage capacity, wetland conservation, and transfer of development rights.

Resilient Construction

These actions ensure that proper construction techniques are required to provide an adequate level of safety for structure and occupants. This includes new construction and resilient retrofitting, which may be necessary where existing development in risk areas cannot be relocated or adapted.

Structural Defenses

Structural defenses are natural or engineered constructions designed to resist storm impacts. They may act as a permanent safety measure or for temporary protection as a project or strategy is deployed.

Land Use Planning and Regulation

These actions can reduce storm impacts through incorporating resilience and sustainability measures into planning regulations. Land use management can increase resilience and enhance community value while protecting natural resources and lowering costs.

Market-Based Methods

Market-based actions reduce vulnerability by incorporating the cost of risk into land and land use costs. This is achieved by establishing prices, taxes and fees that account for the economic effect of storm impacts. As a result, owners and developers can evaluate the value of a location based on the cost of future use.

Increased Awareness and Information

Actions to increase information availability allow better decision making in the rebuilding and resilience-making process. This includes education and outreach programs that provide information and create engagement within the public and private sectors.

Implementation Structure

While the NYRCR Massapequas Planning Committee and Consultant Team has worked with the public to identify and prioritize key strategies for NYRCR Massapequas, implementation of these strategies ultimately rests with the appropriate agencies, organizations or actors who are authorized to administer federal funds and able to build the necessary programs or projects.

It may be beneficial to reflect on the opportunities and challenges presented by current governmental and service delivery models. There may be better ways to manage and implement necessary improvements within each community, at the inter-municipal or regional level. Numerous studies and reports, along with commentary from NYRCR Planning Committee members, suggest that governance reform and consolidation could be beneficial for Long Island. The recovery process offers an opportunity to step back, reflect, and align government services and bodies to the needs of South Shore communities.

To successfully implement the projects and strategies outlined in the NYRCR Conceptual Plan, NYRCR Massapequas will need to coordinate with the Town of Oyster Bay, Nassau County, and the State to meet collective recovery and resiliency goals. For major projects, the number of overlapping governmental jurisdictions and service areas within NYRCR Massapequas can make the implementation process difficult in some cases. Projects and strategies that affect shared services will require support from other communities within the service territory, and willingness on behalf of the service provider to participate.

Water-related projects such as the repair of bulkheads or other waterway structures will require approval from State, County and Village governments, and may need to undergo a comprehensive environmental review. The New York State Department of Environmental Conservation (NYSDEC) issues permits for projects that are in, or have an impact on wetlands and waterways. Most waterfront projects require a joint permit application to be filed with the NYSDEC and the U.S. Army Corps of Engineers (USACE). While this joint application streamlines the submission process, each agency processes the permit application separately, and the application must satisfy the separate concerns and requirements of both before being approved.

Coastal projects must also obtain a Coastal Consistency Certification from the New York State Department of State (NYSDOS) before a permit is issued by a State or Federal agency. The goal of this certification is to ensure that the proposed action will not detract from the policies set out in the State's Coastal Zone Management Act (CZMA). The CZMA also allows municipalities to create local coastal plans, termed Local Waterfront Revitalization Plans (LWRP) by the State. Additionally, the New York State Office of General Services must be consulted for any projects extending into or on State-owned lands. As most of the navigable bodies of water in New York are State-owned, a grant, easement or license from the Office of General Services will be required.

The Nassau County Department of Public Works is responsible for the design, construction, repair and maintenance of all streets and bridges under County jurisdiction. Coordination with the New York State Department of Transportation is required for improvements to NY27A, NY27, Carmans Mill Road, NY 105, and the Southern State Parkway. Town roads and parking fields within NYRCR Massapequas are maintained by the Town of Oyster Bay Highway Department. The Department regulates road improvement, opening and restoration projects, and issues permits for work performed within a Town right of way. Additionally, the Oyster Bay Highway Department is responsible for the cleaning and maintenance of catch basins and storm water drains located on or along Town sidewalks and roadways. The Highway Department also handles Hurricanes and flooding by clearing flood debris from roadways and parking fields, constructing barricades and closing streets.

The Nassau County Department of Public Works is also responsible for managing the design and construction of County parks and grounds, drains and drainage structures, sewers, and water infrastructure. The Nassau County Sewer and Stormwater Authority is responsible for the operation of Nassau County's two sewage treatment plants, the Bay Park Sewage Treatment Plant and the Cedar Creek Water Pollution Control Plant, both of which were damaged and suffered outages during Hurricane Sandy. A number of other independent treatment facilities also operate within the County. The Town of Oyster Bay municipal sewer district collects sewage generated in NYRCR Massapequas, and pumps it into County facilities for treatment.

NYRCR Massapequas' stormwater management system is primarily the responsibility of the Town of Oyster Bay. Stormwater in Nassau County is not collected by the sewer system and treated before discharge. Instead, it is collected in groundwater recharge basins or directed to stormwater outfalls located along the South Shore. The inter-municipal Nassau County Storm Water Management Program (NCSWMP) was established by the County, in conjunction with the NYSDEC, to provide a framework for municipalities to implement measures to manage stormwater runoff.

In NYRCR Massapequas, energy services are provided by a partnership between the Long Island Power Authority (LIPA) and the Public Service Enterprise Group (PSEG) energy company, which was selected in 2011 by LIPA to manage the Authority's electricity network. Energy infrastructure assets, such as distribution lines and transformers, are owned by LIPA and operated and managed by PSEG, which also manages third party service contracts. Natural gas service is provided by National Grid, who owns and operates the distribution system.

The NYRCR Massapequas Conceptual Plan is the first step in the rebuilding process. As the NYRCR Committee and Consultant Team moves through the planning and project development process, project implementation will be an important focus. The NYRCR Committee and Consultant Team will develop a responsibility matrix to guide the implementation of individual strategies and projects. This matrix will identify the agency or agencies responsible for permitting and approval, length of time and level of effort required for implementation.

It is possible that government management and services may need to change or evolve in order to respond to the realities presented by Hurricane Sandy and the recovery process. If governmental reform could be beneficial to facilitate implementation of the NYRCR Massapequas Plan, the NYRCR Consultant Team and the NYRCR Massapequas Planning Committee will note how governmental management and services can evolve to respond to these new realities.

Cost-Benefit Analysis

A cost-benefit analysis will be used by the NYRCR Consultant Team to identify and prioritize the projects and management actions proposed in the NYRCR Conceptual Plan. Each initiative will be considered in comparison to the relative costs and benefits achieved by the proposed measure. The analysis will result in a set of individual actions and projects that will be the most effective for strategy implementation, and achieve the greatest benefit to the community at the least cost.

Public Engagement

3



The strategies outlined in the NYRCR Plan ultimately will impact the quality of life for those who live and work in the communities of NYRCR Massapequas. As such, input from residents, business owners, and community leaders has been an important component of the planning process. The NYRCR Committee and Consultant Team has worked to provide multiple opportunities for public participation and community engagement. These opportunities include the creation of an integrated planning committee, a series of public meetings, and online outreach.

The Planning Committee

Community representatives serving on the NYRCR Massapequas Planning Committee work with the NYRCR Consultant Team and State representatives to develop material for the NYRCR Massapequas Conceptual Plan and manage the planning process. Representatives have had a major role in defining the geographic scope and vision for the community, and were critical to the community asset inventory. As the NYRCR Massapequas Plan progresses they will help develop key strategies, projects, and actions for future implementation. Planning Committee meets regularly and that all meetings are open to the public and meeting details are posted on the NYRCR Program website.

(www.stormrecovery.ny.gov/community-reconstruction-program/)

Public Information Meetings

Residents of NYRCR Massapequas and other stakeholders will participate in a series of four public meetings, now underway, to review the work of the NYRCR Planning Committee and contribute to the ongoing planning process. The first public meeting was held in on October 15, 2013. The meeting, which included an open house, presentation and small group discussions, introduced the NYRCR Plan concept to the community and provided an opportunity to review the community vision developed by the NYRCR Planning Committee. Participants worked to establish a community vision, identified community needs and opportunities, and suggested potential recovery and resiliency projects.



Figure 16 Community members discuss geographic scope at Public Meeting 1



Figure 17 Community members discuss assets at Public Meeting 1

The public meetings provide an opportunity for broad public involvement, and underpin the needs, opportunities and strategies developed in the NYRCR Conceptual Plan. As part of the planning process, additional public meetings will be scheduled and coordinated with the Massapequa Planning Committee and Community. As with Public Meeting #1, a combination of open house stations, presentations, and small working groups, when appropriate, will be employed to share information with and gather feedback from participants.

Public Meeting 2: Presentation and review of the NYRCR Conceptual Plan and development of ideas of projects, programs, and ideas for implementation.

Public Meeting 3: Presentation and review of the risk assessment to community assets, and feedback relating to the process and results.

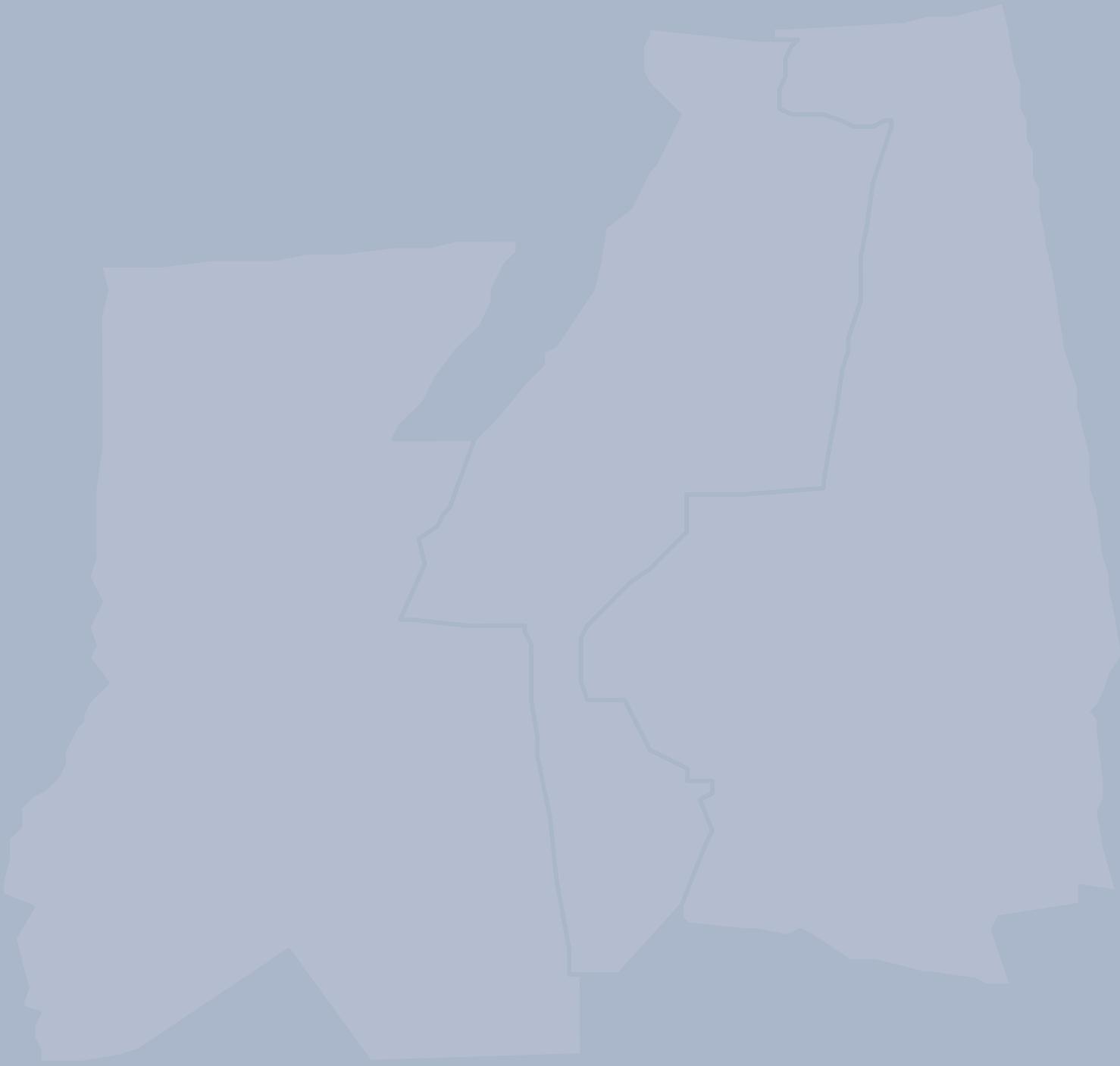
Public Meeting 4: Discussion of investment and action strategies.

NYRCR Website

Information relating to the NYRCR Massapequas planning process is actively posted on the NYRCR Massapequas website (<http://stormrecovery.ny.gov/nyrcr/community/massapequa-village-massapequa-park-and-east-massapequa>). This includes the details for upcoming committee and public meetings, news and announcements. As the planning process moves forward, documents prepared by the NYRCR Planning Committee and Consultant Team will be made available on the website to the general public. The public can submit feedback through this website.



Figure 18 Community members consider risk areas at Public Meeting 1



This NYRCR Conceptual Plan is only the beginning of the eight month NYRCR planning process. It represents the preliminary groundwork conducted to date by the NYRCR Committee and Consultant Team to understand the conditions, needs, and aspirations of the NYRCR Massapequas community. There is much work to be done to in the following months to ensure that the strategies, projects, and actions enumerated in future versions of the NYRCR Plan represent the most effective means to emerge a safer, stronger community in every way.

The NYRCR Planning Committee, State, and NYRCR Consultant Team will work diligently and cooperatively to continue our progress, consulting with the public at key stages in the process to ensure community input. The community will have the opportunity to review this NYRCR Conceptual Plan at an upcoming public meeting, and provide feedback on the NYRCR website. In the project’s next phase we will move into the more detailed risk assessment process, during which the third public meeting will be held, and begin to engage in a larger regional planning process.

NYRCR Massapequas was not alone in experiencing the impacts of Hurricane Sandy, and there are many initiatives that will need regional involvement and support. In the project’s last phase, the effort of the NYRCR Consultant Team will perform a cost-benefit analysis and focus on developing tangible strategies for investment and action. At this time, the public will be invited to the fourth and final meeting of the NYRCR planning process. The final NYRCR Plan will be prepared in March of 2014.

2013				2014		
September	October	November	December	January	February	March
Organize For Action						
Inventory Assets						
Determine Needs and Opportunities						
	Concept Plan					
		Risk Assessment				
		Engage in Regional Planning Process				
				Develop Strategies for Investment & Action		
				Complete NYRCR Plan		

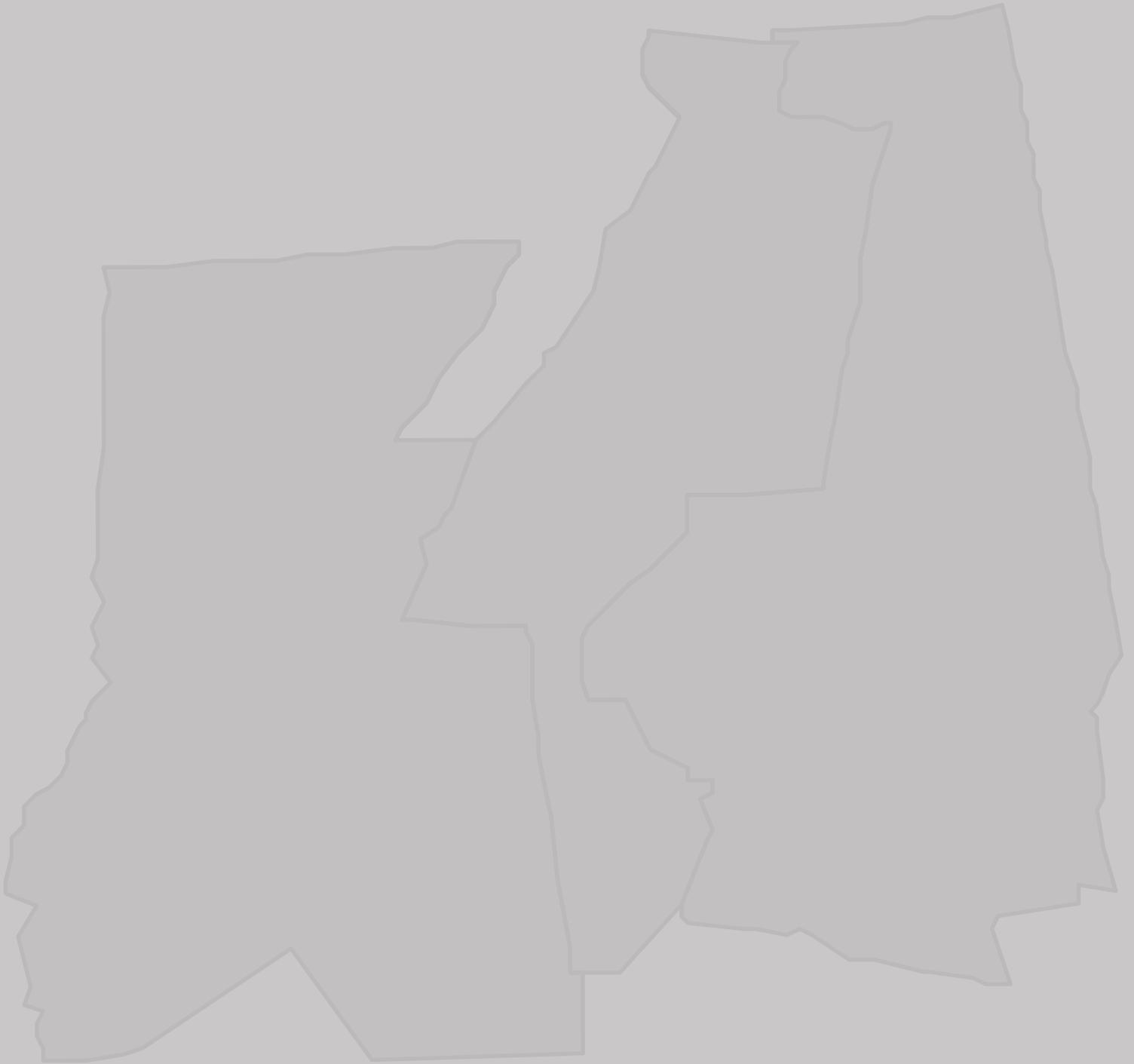
Figure 19 Project Timeline

Communities like NYRCR Massapequas who engage in and successfully complete a final recovery plan will be eligible to receive funding to support implementation of the projects and activities identified in their respective planning documents. This is NYRCR Massapequas' opportunity to leverage the insights gained in the face of significant storm damage into real, actionable initiatives that can protect and enhance our community.



Figure 20 John Burns Park - an opportunity to increase public access to the water

Appendix



Appendix

A1: Existing Plans and Studies

The NYRCR Consultant Team reviewed a number of planning documents focused on issues on Long Island and Nassau County. Table 6 lists the title, date of publication and author of previous work used for this study.

Table 6: Existing planning documents for the Long Island Region

DOCUMENT NAME	DATE PUBLISHED	AUTHOR
Nassau County Infill Redevelopment Feasibility Report	September 2013	Parsons Brinckerhoff, Nassau County Dept of Public Works, Regional Plan Association and NY-CT Sustainable Communities Consortium
Strong Island – Recovery & Resurgence – Strategic Economic Development Plan for Nassau and Suffolk Counties (Update)	September 2013	Long Island Regional Economic Development Council
Cleaner Greener LI Regional Sustainability Plan	April 2013	AECOM, Regional Plan Association
LI Comprehensive Economic Development Strategy	August 2012	Long Island Regional Planning Council and Long Island Comprehensive Economic Development Strategy Committee
New Vision for the LI Economy	November 2011	Long Island Regional Economic Development Council
Sustainable Strategies for LI 2035	December 2010	Long Island Regional Planning Council
Draft Nassau County Master Plan	October 2010	Nassau County

DOCUMENT NAME	DATE PUBLISHED	AUTHOR
South Shore Estuary Reserve Workplan Implementation- Estuary Public Use and Tourism Study	September 2010	Cashin Associates for Town of Oyster Bay & New York State Department of State
Places to Grow – An Analysis of the Potential for Transit-Accessible Housing and Jobs in Long Island Downtowns and Station Areas	January 2010	Regional Plan Association
Nassau County Consolidated Plan	2010	Nassau County
LI 2035 Visioning Initiative	December 2009	Long Island 2035 Study Team
Blue Water Trail Master Plan	2006	Nassau County
NYS Coastal Management Plan	2006	New York State Department of State
South Shore Estuary Reserve Comprehensive Management Plan	2001	South Shore Estuary Reserve Council
Coastal Fish and Wildlife Habitat Assessments	Annual	New York State Department of State
Community Profiles	Annual	Census Data
Feasibility Report for Colleran Park	Unknown	Village of Massapequa Park

