



NY RISING COMMUNITY RECONSTRUCTION PROGRAM

SOUTH VALLEY STREAM

NY RISING COMMUNITY RECONSTRUCTION PLAN

MARCH 2014



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Attributions

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Cover Photos: Valley Stream from Brook Road Park, Town of Hempstead property, Forest Road School Athletic Field, Brook Road Park, Valley Stream at 'The Path', 'The Path', Brook Road Park playground

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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 Planning Committee Meetings have been held, during

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

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.

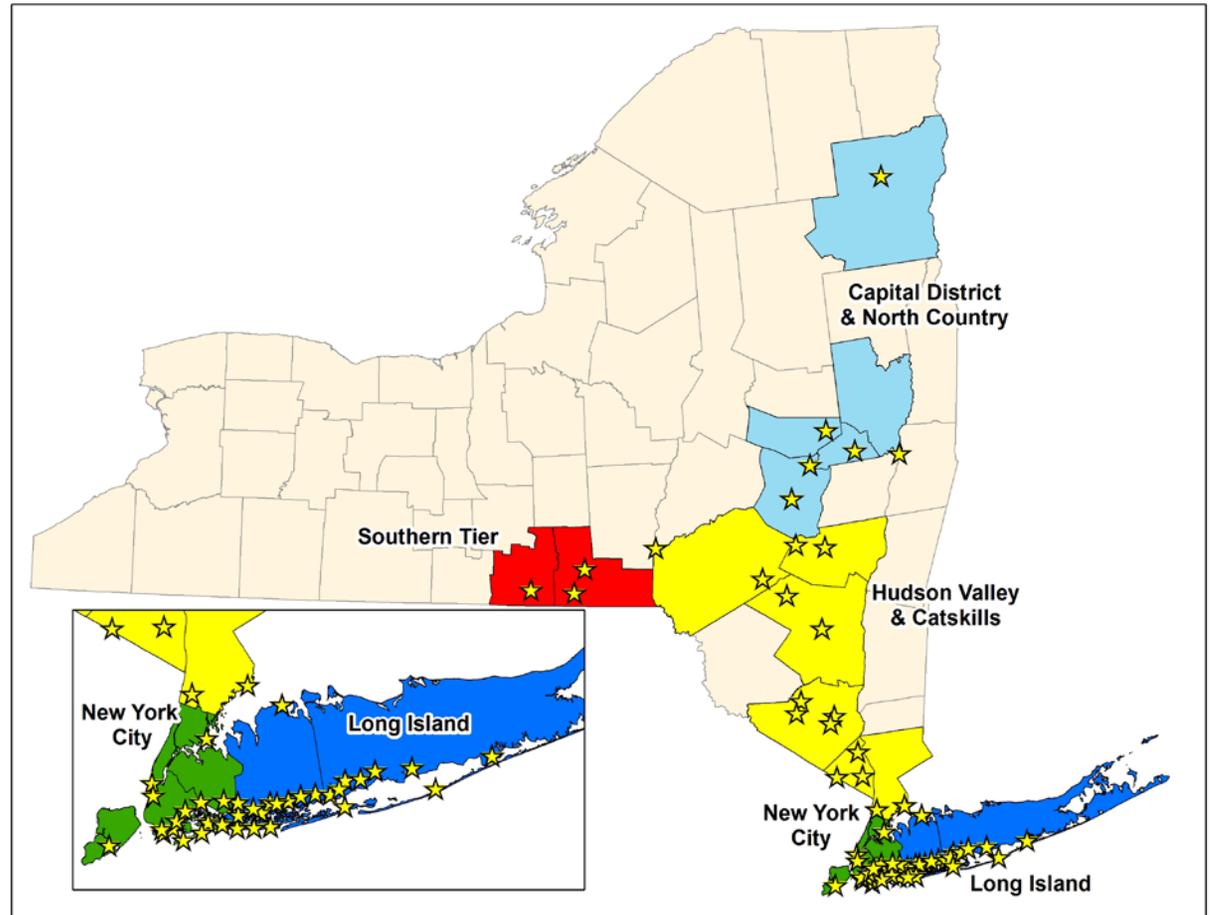
Throughout the planning process, Planning Committees were supported by staff from the Governor's Office of Storm Recovery (GOSR), planners from New York State (NYS) Department of State (DOS) and NYS Department of Transportation (DOT), and consultants from

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



NY Rising Community Reconstruction Program Communities*

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.

*Note: map includes those NYRCR Communities funded through the CDBG-DR program, including the NYRCR Communities announced in January 2014.

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 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 South Valley Stream is eligible for up to \$3 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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View looking north from Rosedale Rd Bridge to edge of Brook Road Park

Executive Summary

I. Overview

South Valley Stream is a hamlet of approximately 6,000 people along the southwestern edge of the Town of Hempstead in Nassau County, NY. It is bordered to the west by the Borough of Queens in New York City, and to the north by the incorporated Village of Valley Stream. The South Valley Stream NY Rising Community Reconstruction Community (Community) consists of two unincorporated neighborhoods, North Woodmere and Mill Brook, located to the east and west of Valley Stream, respectively. Both neighborhoods are characterized by post-War single family residential neighborhoods, schools, and neighborhood parks. Green Acres Mall, the Community's major economic asset, is located on the northern end of the Community. South Valley Stream's growth was driven by

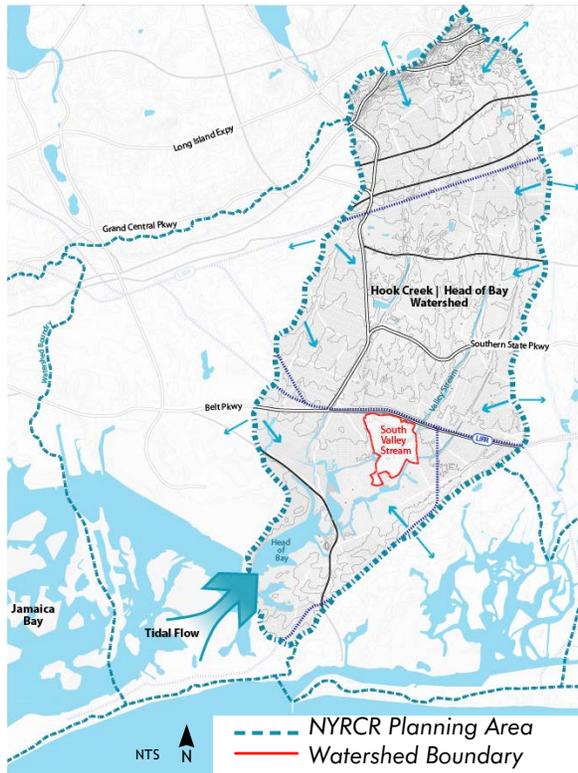
access offered by Sunrise Highway and the Long Island Railroad to the north.

Several creeks extend from Jamaica Bay northward into the South Valley Stream Community. Located south of the South Valley Stream Community, Hook Creek splits into three smaller creeks further north, all of which extend into the South Valley Stream Community. Valley Stream, the largest of these creeks, is a source of community identity and pride. However, Valley Stream, along with two other tributaries of Hook Creek (Watts Creek and Clear Stream), also increases the Community's vulnerability to flooding from tidal and precipitation storm events. The most dramatic of these events in recent memory was Superstorm Sandy. During Superstorm Sandy, the storm surge caused water levels in Jamaica Bay to rise and as a result of this also the water levels in

Hook Creek and its tributaries extending into the South Valley Stream Community. The water levels overtopped bulkheads, natural areas, and the existing floodgate at Rosedale Road, inundating both the Mill Brook and North Woodmere Neighborhoods. Flooding of the Community caused by overtopping of shoreline protection was exacerbated by stormwater accumulation as creek levels rose above stormwater outfalls, preventing the stormwater accumulated within the Hook Creek/Head of Bay regional watershed from being discharged into the creeks.

In total, more than 1,600 residential properties and 24 commercial properties within South Valley Stream were impacted by flooding during Superstorm Sandy. Since the storm, stream banks in South Valley Stream have continued to erode, and localized flooding occurs on a

South Valley Stream NY Rising Community Reconstruction Plan



Hook Creek / Head of Bay Watershed

regular basis. Beyond flooding, Superstorm Sandy severely impacted the Community’s electrical network, disrupting emergency response communications and leaving residents without power for up to seven weeks. Impacts of power outages were especially felt by the Community’s elderly, who were among the NYRCR Community’s most vulnerable, and many of whom required power for medical treatment.



South Valley Stream NYRCR Planning Area

II. Community-Driven Process

In September 2013, a committee of South Valley Stream residents and civic leaders, the NY Rising Community Reconstruction (NYRCR) Committee convened with the goal of creating a plan to help South Valley Stream rebuild from the damage caused by Superstorm Sandy and prepare for a more resilient future.

The Committee had six meetings, and all were posted on the program website and open to the public. Additionally, three Public Engagement Events were held, (with a fourth to come after the

release of this NYRCR Plan,) in which the public was invited to learn about the Committee’s work to date and to provide feedback on past and future work. These Public Engagement Events were heavily advertised to attract a diverse set of members from the Community.”

The following vision statement was created through this process:

As a civically minded and culturally diverse community, we will work towards creating a resilient South Valley Stream; founded upon a diverse economy,

protected and restored natural and man-made shoreline, and environmental stewardship.

Since that time, the NYRCR Committee has worked closely with a team of professional consultants, representatives of New York State, and several Nassau County and Town of Hempstead agencies to develop this NY Rising Community Reconstruction Plan.

III. Final Plan as Blueprint for Implementation

The NYRCR Plan (the Plan) details a series of ‘Proposed’ projects identified as having the greatest benefit in increasing South Valley Stream’s resilience to future climate related events. These projects would be implemented with \$3,000,000 in Community Development Block Grant-Disaster Recovery (CDBG-DR) funds allocated to South Valley Stream. The Plan also includes several ‘Featured’ Projects that are recommended for implementation through other identified funding sources. The NYRCR Plan is community-based, the product of a robust public engagement effort involving consensus-building amongst both residents and business owners. The Plan is also comprehensive, addressing six recovery support functions: Community Planning & Capacity Building; Economic Resilience; Health & Social Services; Housing; Infrastructure; and Natural & Cultural Resources.

With a fundamental focus on implementation, the NYRCR planning process incorporated extensive discussions with the Town of Hempstead and Nassau County, to confirm

that relevant agencies had confidence in each project’s ability to be implemented. The NYRCR Committee also coordinated with agencies operating at a regional level, including the NYRCR Rockaway East Community in Queens and the U.S. Army Corps of Engineers, and maintained an ongoing dialogue with parallel resiliency efforts, including Rebuild by Design. As a result, the projects featured in the NYRCR Plan are compatible with, supportive of, and complementary to these other efforts.

The NYRCR Plan is aimed at addressing both the short- and long-term resilience needs of the two communities. The Plan includes a menu of early action projects; medium-term projects that can be implemented within two to five years; and long-term actions that require resources beyond the NYRCR funding allocation, and are largely addressed through policy changes, planning projects, and advocacy initiatives.

The four Proposed and 11 Featured Projects included in the NYRCR Plan for South Valley Stream address each of the five strategies that emerged from the public engagement process and technical analysis:

1. Manage Tidal Flow

Although Superstorm Sandy was an unprecedented event, the sources and causes of flooding observed during Superstorm Sandy occur frequently (albeit on a smaller scale) during high tide events, rainstorms, and nor’easters. Due to the low elevation of the neighborhoods immediately adjacent to the creeks and throughout the Community, the shoreline in South Valley Stream provides

incomplete protection against certain levels of tidal inundation. Inundation from tidal waters occurs in some areas of the Community on a regular basis during spring tides. This is expected to increase as a result of climate change, which is anticipated to increase both the general sea level and the frequency of extreme events such as high wind-induced surges. Increasing resilience against tidal flow is thus a key component of improving the Community’s overall resilience.

To manage tidal flow, the Plan includes three Proposed Projects with local and regional benefits. **The Bulkhead Repair and Shoreline Restoration at Brook Road Park Project (A1)** would provide much needed repairs to the only park in Mill Brook, a significant community asset, while increasing its resilience to future storm events. This project would manage tidal flow by creating a vegetative resilient buffer island at the confluence of Valley Stream and Watts Creek, replacing failing bulkhead with vegetation and a rock edge, and constructing a sculpted berm tied into the higher elevation. A central part of the proposed park project is to partially replace bulkheads that were damaged by Superstorm Sandy with a landscaped berm integrated into the park design. The berm would offer a natural design solution to improve the parks’ protection from tidal surges, while enhancing the park’s visual appeal. The new berms, in combination with the repair of adjacent bulkheads, would create a barrier between the park and tidal flows up to approximately 7 feet elevation (10-year storm). The surrounding planted edge would provide flood protection, seating, and viewing, while vegetation would filter drainage from the park into the stream.

A second Proposed Project, **Natural Shoreline Restoration along 'The Path' (A2)**, would manage tidal flow along Valley Stream by creating a terraced pathway integrated within a naturally landscaped living shoreline along the creek. This would reduce erosion of the stream bank and minimize the exposure of adjacent property to tidal flows up to approximately 7 feet elevation (10-year storm). 'The Path' includes a living shoreline and green infrastructure such as bioswales and permeable pavements. These features would retain stormwater (and thereby reduce the stormwater accumulation within the Community) would also provide natural treatment of the runoff from impervious surfaces (such as streets and parking space) prior to discharging into the creek, thereby improving the water quality of Valley Stream. The Proposed Project would also improve the aquatic and terrestrial habitat along the creek by re-introducing native species. The result would be a natural, publicly accessible open space that provides a pedestrian connection, improves natural habitat, and re-establishes the Community's link with the stream while at the same time improving resilience through flood protection.

The effectiveness of shoreline improvements increases when shoreline protection is continuous and gaps are avoided or minimized. In recognition of the complexity of the technical and implementation issues involved in addressing the shoreline, much of which is privately owned, the South Valley Stream NYRCR Plan includes a regional Proposed Project: **the South Shoreline Improvement Program Study (R1)**. The study would look at methods for making coordinated improvements to achieve continuous shoreline

protection along the Town of Hempstead South Shore. The program would seek to reduce potential gaps in consistent shoreline protection levels. These may occur where private properties remain unimproved or are improved to a lower level of protection than the rest of the shoreline. The goal of the study would be to investigate funding mechanisms, streamline permitting, and identify options for incentivizing bulkhead repairs and living shoreline improvements that would contribute to continuous shoreline improvement. The NYRCR Committee recognizes the importance of this issue to other communities along the South Shore affected by flooding, and their larger goal is that the solutions derived from this study could serve as a model to address conditions in those communities as well. Finally, the Plan includes the **Corridor Restoration and Riverbank Stabilization along Valley Stream, Clear Stream, Watts Creek, and Fosters Brook Lower (A3)** as a Featured Project that would serve as a local pilot project for the South Shoreline Improvement Program, by repairing and elevating bulkheads or restoring living shoreline, where appropriate, along water bodies in South Valley Stream. Designing a more accessible shoreline would also provide increased public access, recreational use, and connectivity to the waterfront.

2. Retain Stormwater

South Valley Stream frequently experiences flooding during storms that are much less significant than events like Superstorm Sandy. Precipitation accompanied by everyday high tides, for example, generates recurring localized flooding of many local roads where the stormwater drainage system has inadequate capacity or is not operating properly

at lower elevations. South Valley Stream is also vulnerable to major flooding during large storms, which bring greater volumes of rainfall than occurred during Superstorm Sandy. This was evident during Hurricane Irene, which brought more than three times the amount of rainfall as Superstorm Sandy, causing stormwater flooding in low-lying areas. Capturing upstream stormwater is necessary to minimize peak stormwater flows entering South Valley Stream's stormwater infrastructure system and Hook Creek's three tributaries. In recognition of the importance of community involvement and education, to increasing the resilience of South Valley Stream, the Plan proposes a **Green Infrastructure and Living Shorelines Community Education Program (B1)**. This program would include public information, workshops, and school curricula development.

In addition to the above Proposed Projects, the NYRCR Plan also includes the following five Featured Projects to address stormwater management issues. **The Hydrologic and Hydraulic Study of the Hook Creek – Head of Bay Watershed Study (R2)** would provide a regional, watershed-level understanding of the hydrology affecting South Valley Stream that would contribute to the design of more effective flood management measures. This project would also inform the development of a **County-wide Stormwater Mitigation Plan (B4)** which would provide flood management solutions at a higher level of scale that would benefit both South Valley Stream and the region. The Plan would seek to improve the capacity of the stormwater infrastructure system through **Stormwater Infrastructure Upgrades (B3)**. In addition to existing infrastructure

upgrades, the Plan proposes nature-based solutions to retain and manage stormwater. This includes incentivizing green infrastructure implementation on residential property and public rights-of-way through a **Green Infrastructure Implementation Program on Residential and Public Property (B2)** and by encouraging **Green Infrastructure and Subsurface Stormwater Retention at Green Acres Mall (B5)**.

3. Reinforce the Power Grid

The power outages during and after Superstorm Sandy in South Valley Stream underscored the importance of making the power grid more resilient. It also highlighted the role the grid plays in allowing critical community resources to operate in the event of a future disaster, stabilizing communication systems, improving operations at warming and cooling centers, and helping schools resume service more quickly after disasters. To reinforce the power grid, the NYRCR Plan includes a **Microgrid Network Pilot Project (C1)**. This Featured Project includes the development of a microgrid network storm resistance plan, to provide backup power supply sources for homeowner benefit during a disaster. Another Featured Project would establish a **Community Assistance Center at the Forest Road School (C2)** to provide a place for residents - especially the area's elderly - to go to obtain resources after a disaster, and act as a safe location during extreme heat or cold weather.

4. Strengthen Communication and Coordination

Superstorm Sandy highlighted the importance of communication and coordination among civic and social organizations to the Community's post-Sandy recovery efforts. Despite the strong emergency response efforts of groups like the Mill Brook Civic Association, such efforts were hindered by disruption of communications networks during Superstorm Sandy. The Plan includes as a Proposed Project the establishment of a local **South Valley Stream Community Emergency Response Team (CERT) (D1)**. This would improve coordination between the Mill Brook Civic Association and Nassau County Office of Emergency Management. By strengthening local communication networks, this strategy would facilitate education and awareness about disaster preparedness and emergency response and help to identify vulnerable populations.

5. Maintain and Enhance Economic Viability

The economic stress caused by Superstorm Sandy has the potential to substantially impact the stability of South Valley Stream's residential neighborhoods. This is evidenced in the decrease in home values since Superstorm Sandy. **The Resilient Home Construction Incentive Program (E1)** is included as a Featured Project in the NYRCR Plan. The Program would maintain and enhance economic viability of South Valley Stream by incentivizing resilient design practices to strengthen the housing stock against the impacts of future storm events.

South Valley Stream: Proposed and Featured Projects

A. Manage Tidal Flow

- A1 Repair Bulkheads and Restore Shoreline at Brook Road Park [Proposed]
- A2 Restore Natural Shoreline along 'The Path' [Proposed]
- A3 Corridor Restoration and Riverbank Stabilization [Featured]
 - A3a Watts Creek
 - A3b Valley Stream: North, Southeast, Southwest
 - A3c Clear Stream
 - A3d Fosters Brook Lower

B. Retain Stormwater

- B1 Develop Community Information Regarding Green Infrastructure and Living Shorelines [Proposed]
- B2 Green Infrastructure Implementation Program on Residential and Public Property [Featured]
- B3 Stormwater Infrastructure Upgrades [Featured]
- B4 County-wide Stormwater Mitigation Plan with Community Education and Awareness [Featured]
- B5 Encourage implementation of Green Infrastructure and Subsurface Stormwater Retention at Green Acres Mall, Including Sunrise Multiplex Site [Featured]

C. Reinforce Powergrid

- C1 Implement Microgrid Network Pilot Project [Featured]
- C2 Establish Community Assistance at Forest Road School [Featured]

D. Strengthen Communication & Coordination

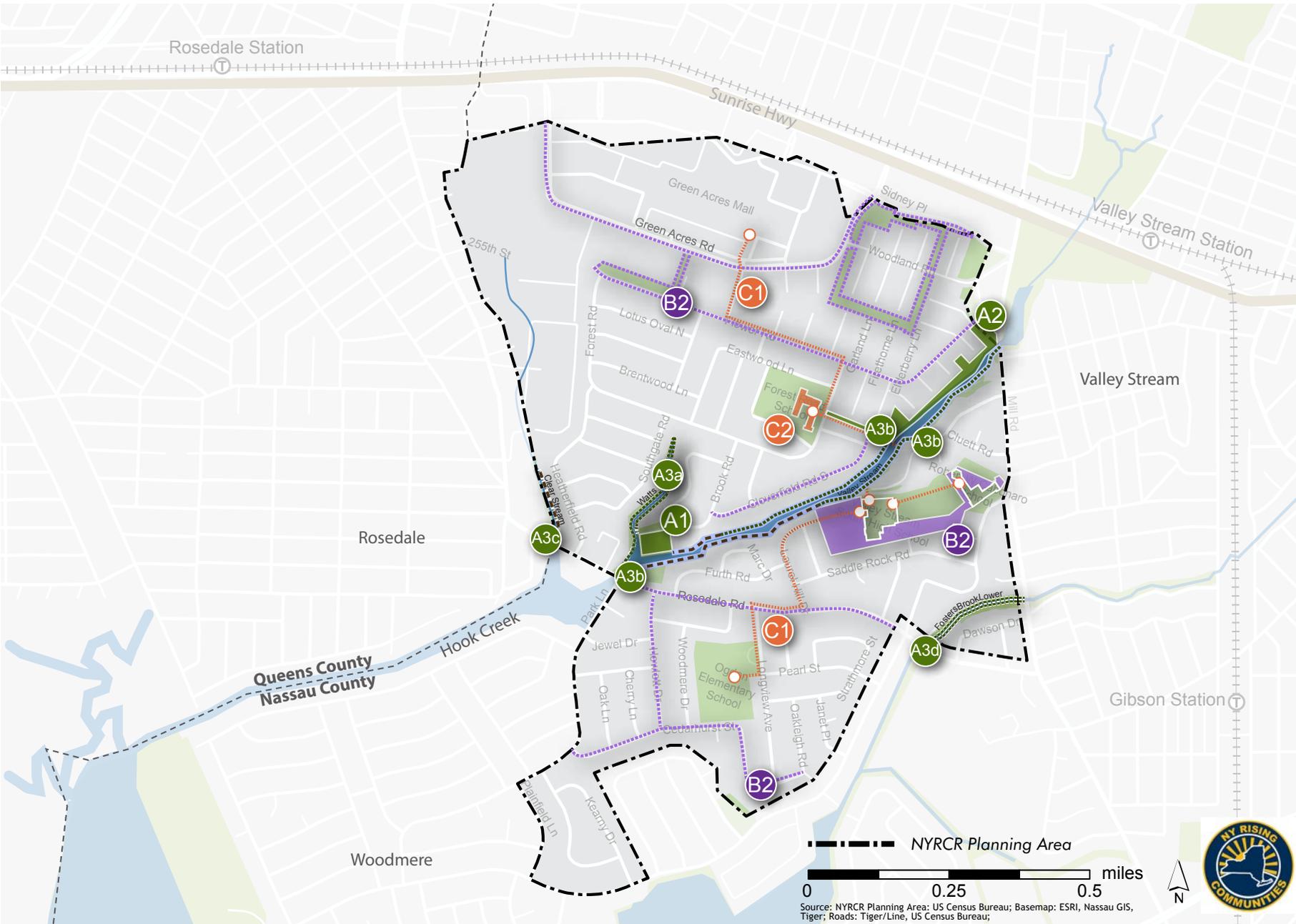
- D1 Establish A Community Emergency Response Team (CERT) [Proposed]

E. Maintain and Enhance Economic Viability

- E1 Resilient Home Construction Incentive Program [Featured]

R. Regional

- R1 South Shoreline Improvement Program Study [Proposed]
- R2 Coordinate with Hydrologic and Hydraulic study of the Hook Creek / Head of Bay Watershed [Featured]



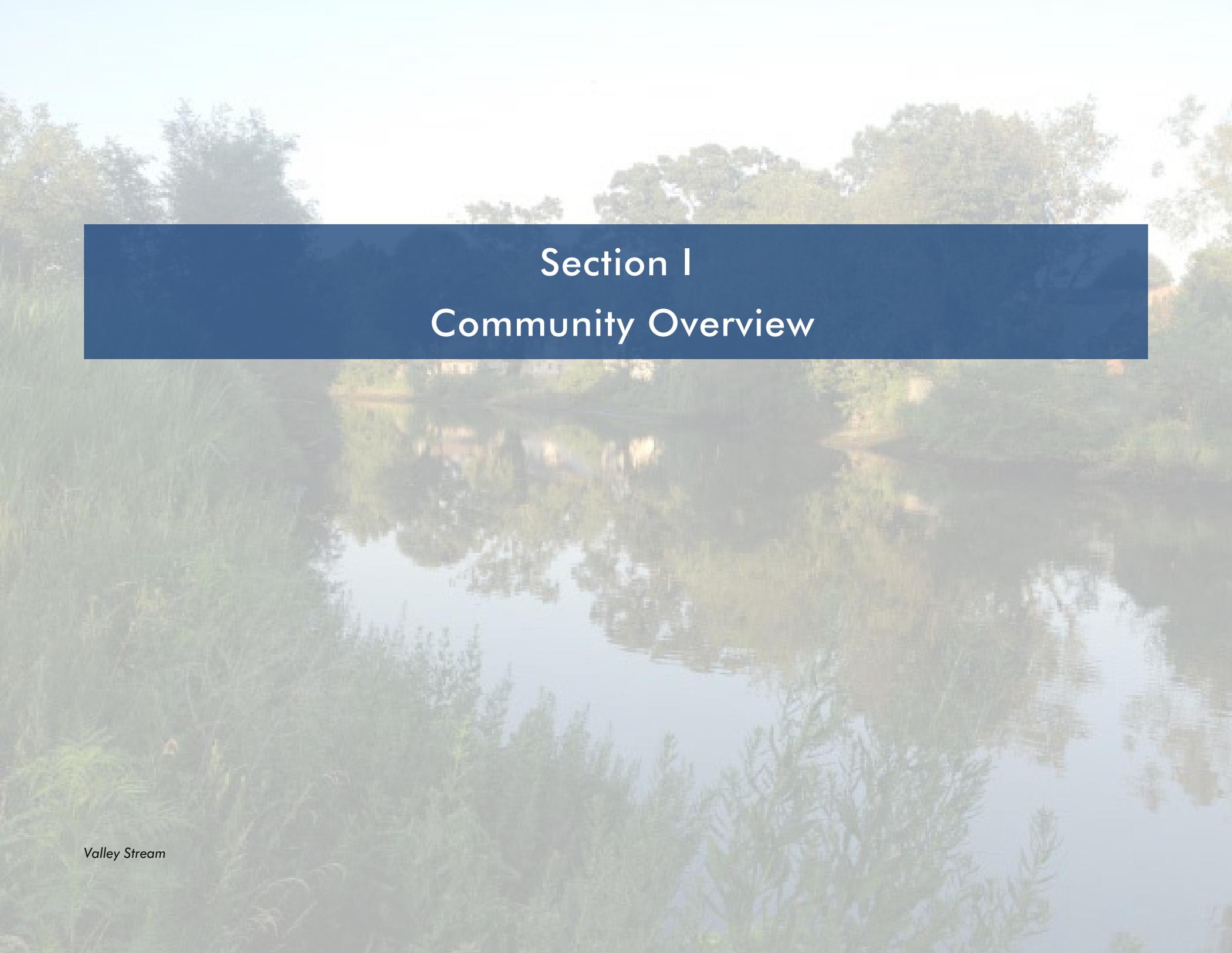
NYRCR Planning Area

0 0.25 0.5 miles

Source: NYRCR Planning Area: US Census Bureau; Basemap: ESRI, Nassau GIS, Tiger; Roads: Tiger/Line, US Census Bureau;



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Section I

Community Overview

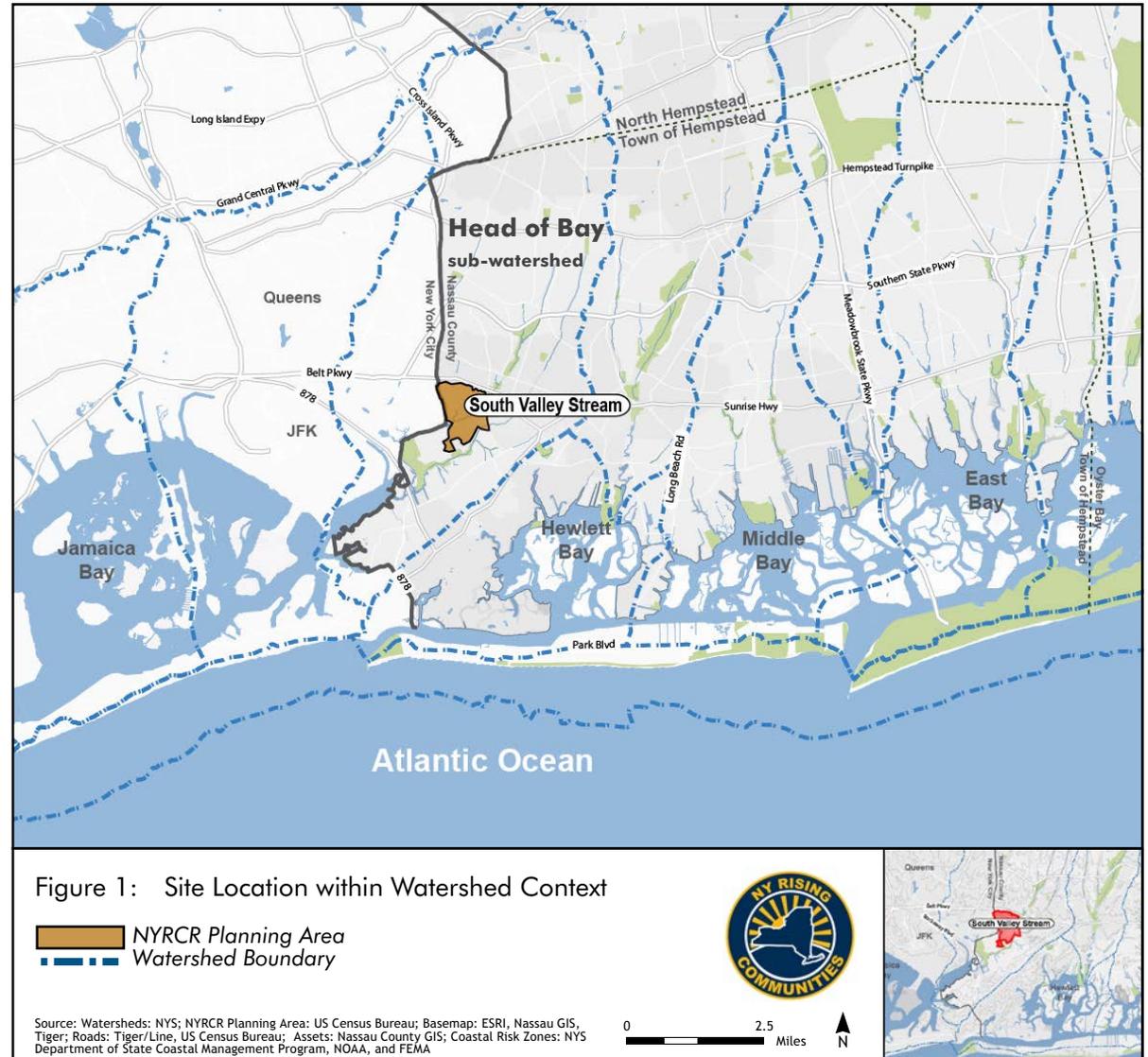
Valley Stream

A. Geographic Scope of NYRCR Plan

The NY Rising Community Reconstruction (NYRCR) Program South Valley Stream Community (Community), located in southwestern Nassau County, New York, encompasses the Hamlet of South Valley Stream including the Mill Brook and North Woodmere neighborhoods. The South Valley Stream Community is located in the southern part of the Town of Hempstead in Nassau County and lies just south of Sunrise Highway. The Community is bordered to both the north and east by the Village of Valley Stream. To the west is the Borough of Queens in New York City, and to the south are the Five Towns (Figure 1).

The South Valley Stream Community is named for and surrounded by water. It is bordered by Clear Stream to the west, and divided by Valley Stream, a tidally influenced water body which cuts through the Community in roughly northeast-southwest direction, with the Mill Brook neighborhood to the north and North Woodmere neighborhood to the south, as discussed in greater detail below.

The Community lies within the Head of Bay sub-watershed, which is part of the Atlantic Ocean/Long Island Sound watershed. Water flows from tributaries north of the Community into Mill Pond and from Mill Pond into Valley Stream (Figures 1 & 2). Valley Stream, Watts Creek, and Clear Stream combine into Hook Creek. Hook Creek flows into the Head of Bay (Jamaica Bay), which flows into the Atlantic Ocean.



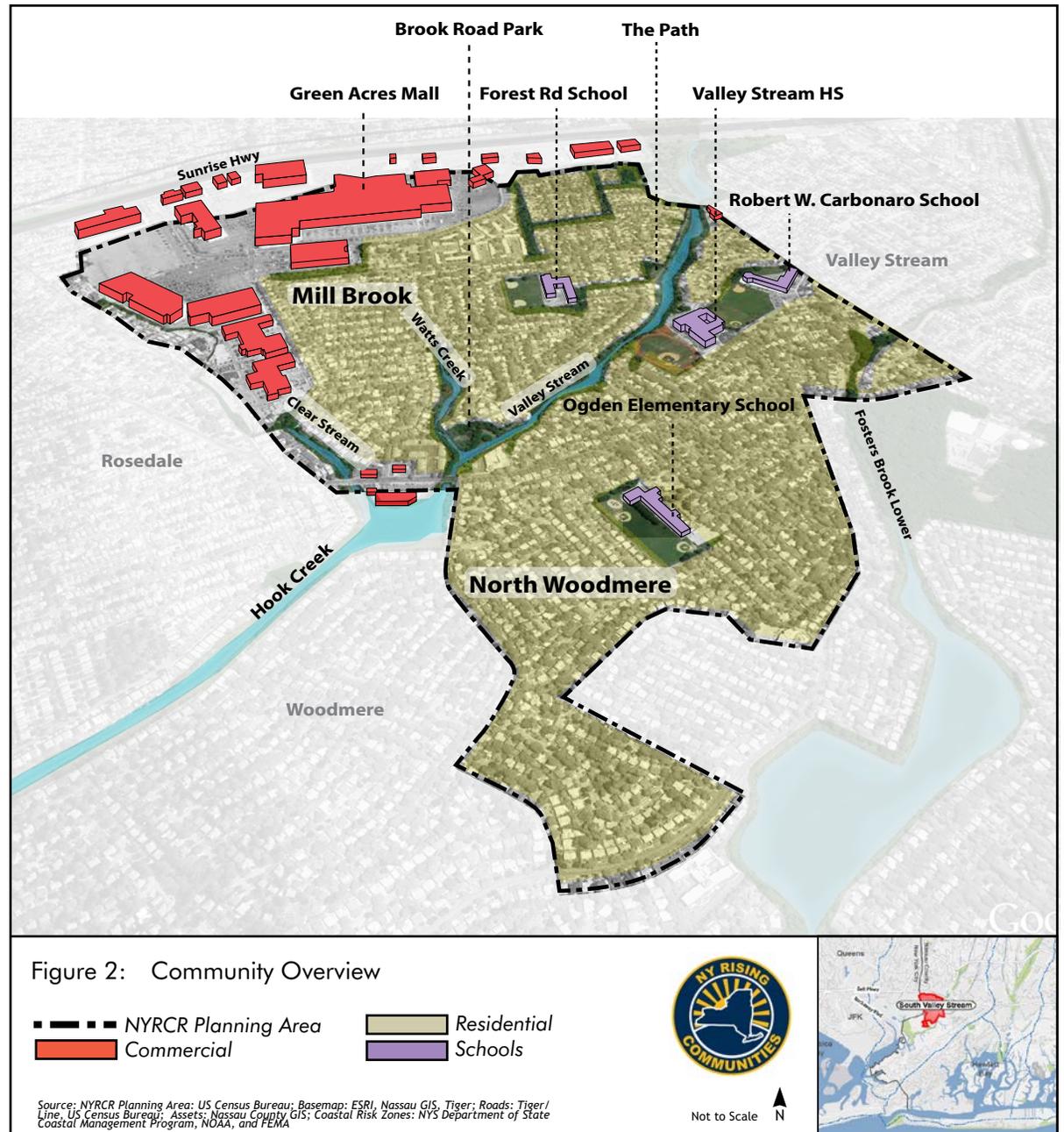
History and Land Use

North of the tidal creek known as Valley Stream is the Mill Brook neighborhood, a planned development of single-family residences built in the 1940s.¹ Originally called Green Acres, the community was built in two phases, 400 homes before World War II, and another 400 after the war. Green Acres Mall was built as part of the same development. Now known as the Mill Brook neighborhood, the development was planned as an answer to the newly arrived automobile age—limited through streets, culs-de-sac, several parks, and foot paths were all meant to limit outside traffic. The Mill Brook neighborhood is bordered to the north by Green Acres Mall, which serves as an economic driver for South Valley Stream (Figure 2). Access to the Mill Brook neighborhood is limited to two entry points: one via Old Central Avenue to Flower Road and one via Rosedale Road to Heatherfield Road.

South of Valley Stream is the neighborhood of North Woodmere, an unincorporated area of single-family residences that lies within South Valley Stream but is considered by some residents to be part of the Five Towns. Fosters Brook Lower, another tidal creek, divides North Woodmere from Woodmere. Woodmere is part of the Five Towns NYRCR Community.

Demographic Overview

According to the US Census, in 2010 there were 5,962 people, 1,969 households and 1,554 families in South Valley Stream.² The median household income in South Valley Stream is \$107,328, and the median income

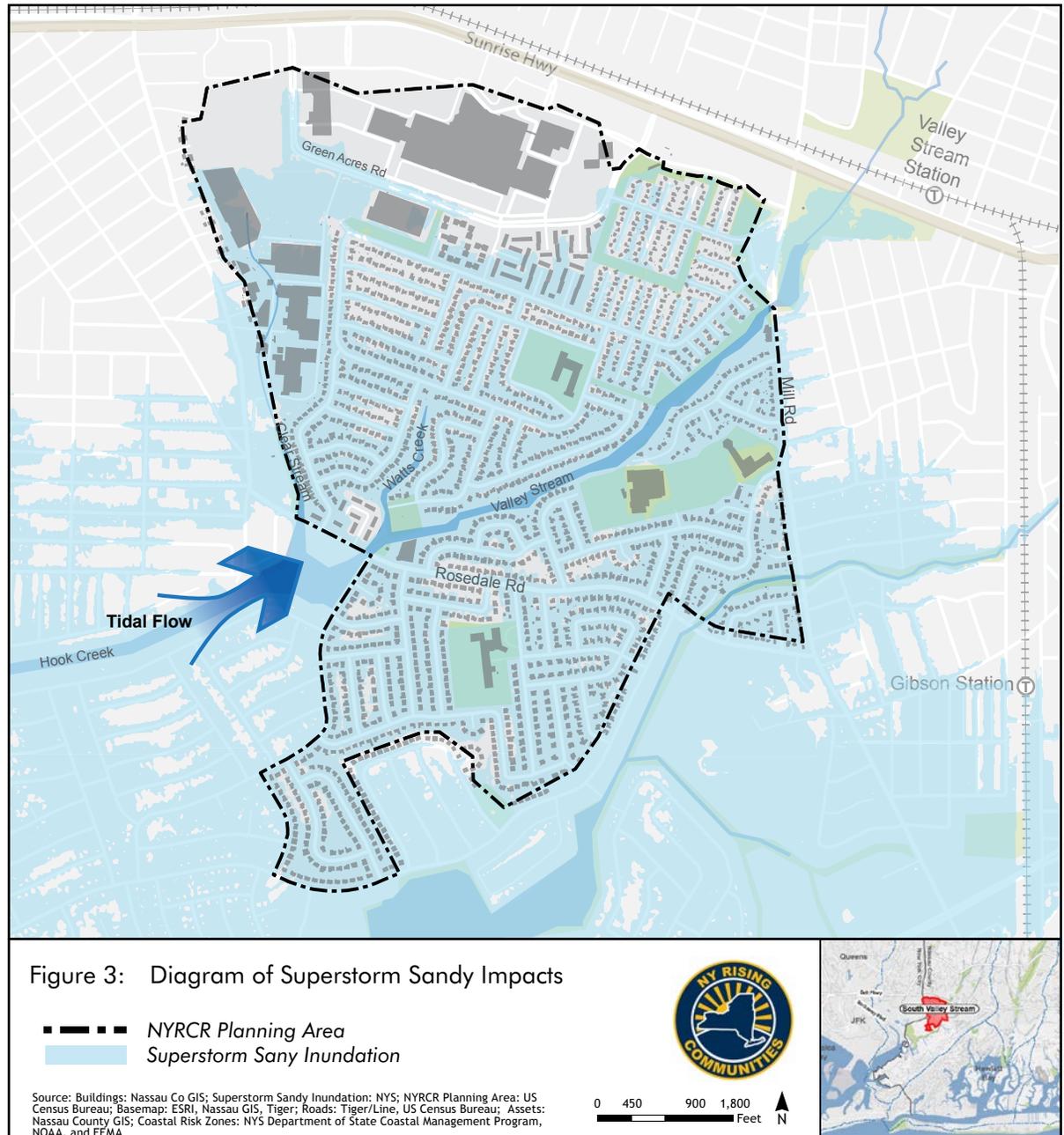


South Valley Stream NY Rising Community Reconstruction Plan

for a family is \$111,964. As determined by the Federal government, 6.3% of families and 8.3% of the total population in South Valley Stream are below the poverty line, including 7.7% of those under age 18 and 7.5% of those age 65 or older. None of the South Valley Stream residents are below the poverty line.³

South Valley Stream remains a planned residential community, with approximately 2,000 housing units, more than 96% of which are occupied and 75% are owner-occupied. Nearly 70% of the owned houses have a mortgage or loan, and the average household size is approximately three people.⁴ South Valley Stream is largely a bedroom community for New York City, given its accessibility to the Long Island Railroad (LIRR). Three Long Island Railroad stations are within one half-mile distance from the Community, with service along four commuter rail lines and a one-seat ride of approximately 30 minutes to Penn Station. According to the US Census, 2,051 South Valley Stream residents (43.2%) are employed in New York City, and the majority of the Community's workforce (96.3%) is employed outside of South Valley Stream, with only 80 residents employed in the Community.⁵

In total, there are 427 businesses in South Valley Stream, mainly located along the perimeter of the Community on Mill Road, Rosedale Road, and at the Community's major economic asset, Green Acres Mall. These businesses employ approximately 4,747 people; however, 4,667 (98.3%) lived outside of South Valley Stream.⁶



B. Description of Storm Damage

In October 2012, Superstorm Sandy ran along the east coast of the United States, bringing with it damaging winds and high tidal surges. Even though it was not categorized as a hurricane when it made landfall, Superstorm Sandy was large and dangerous, extending nearly 1,000 miles in diameter⁷. The storm was characterized by a combination of factors that are considered rare. It occurred during a “spring” tide, meaning a high tide that occurs during a full moon, which translated into higher storm tides and flooding. It picked up strength from the warm Atlantic Ocean down south, and as it traveled north, it hit a cold, arctic blast.⁸ The difference between Superstorm Sandy’s extremely low pressure and high pressure to its north increased wind speeds, heightening storm surge. On October 29, the storm made landfall in New York and hit the region directly,⁹ causing flooding and power outages in South Valley Stream.

Flooding in South Valley Stream during Superstorm Sandy largely resulted from a tidal storm surge that came through Jamaica Bay and flowed through Hook Creek in a northerly direction to Valley Stream, Clear Stream, and Watts Creek, overtopping bulkheads and overflowing stream banks and areas lower than the storm surge levels of three to six feet¹⁰ (Figure 3).

The residential neighborhoods of Mill Brook and North Woodmere were inundated, with the highest impacts to single-family residences in the proximity of Watts Creek and Valley Stream. Severe flooding occurred along Heatherfield,

Southgate, Brook, and Cloverfield roads, with inundation extending as far north as Flower Road. Athletic fields, such as those at Forest Road School were flooded, and most homes with basements or recessed driveways were severely impacted.

In August 2011, Hurricane Irene made landfall in New York. Although it was downgraded to a tropical storm, it produced heavy damage due to flooding, both from heavy rainfall and storm surge in coastal areas, as well as wind gusts in excess of hurricane force. In comparison to Superstorm Sandy, the impacts from Hurricane Irene were largely a result of precipitation and wind. Localized rainfall totals during Irene exceeded 10 inches in New York, with rainfall ranging from five to nine inches in Nassau County,¹¹ while storm tide levels reached 1.3 feet at the Battery.¹² According to FEMA, 470,000 residents were evacuated in Nassau and Suffolk Counties.¹³ South Valley Stream experienced localized flooding due to Irene, however the damage did not approach the scale of destruction experienced during Superstorm Sandy.

Feedback received during Public Engagement Events indicated that since Superstorm Sandy occurred, the Community has been experiencing tidal flooding on a more frequent basis. The general Mean High Water tidal datum closest to Jamaica Bay is approximately three feet, with Mean High Water spring tide elevations near four feet, which is higher than low-lying areas of South Valley Stream¹⁴. Bulkheads protect

against property erosion and can provide some measure of protection from tidal flooding. Bulkheads along the NYRCR Community’s shoreline vary in height and structural integrity. Superstorm Sandy, and previously Hurricane Irene, left several of the Community’s bulkheads in a poor condition. As a result, these bulkheads no longer provide adequate erosion protection during the average high tide flow.

During Superstorm Sandy, stormwater flows exacerbated tidal flooding. The Community is located at the confluence where tidal flow coming from the south (Jamaica Bay) meets with river flow from the Hook Creek / Head of Bay regional watershed to the north (Mill Pond). The storm surge raised water levels in the streams above the elevation of the stormwater outlets that discharge the area’s stormwater into the stream. Under such conditions, the already increased amount of water entering the storm sewer system could not exit the system at the same rate, thus resulting in flooding within the Community. Given its location close to the Bay, the groundwater table of South Valley Stream is very high, which reduces the area’s capacity for stormwater infiltration and causes basement flooding.

Both Hurricane Irene and Superstorm Sandy caused heavy damage to trees within the Community. This reduction in the number of trees after the storms decreased the amount of infiltration possible during a storm event, which contributes to stormwater flooding by increasing surface runoff. Due to flooding and downed

trees, the Superstorm Sandy severely disrupted the electrical network, leaving residents without power for up to seven weeks.¹⁵ Direct impacts on electricity infrastructure varied across South Valley Stream. The neighborhood near South Gate Drive experienced electricity outages for longer than one month due to the Long Island Power Authority (LIPA) substation that was flooded in Cedarhurst, while the neighborhood near Forest Road School was without power for 13 days. Vulnerable populations were especially impacted, particularly those dependent on steady electrical service to power medical devices or to refrigerate medications. High winds and water-logged soils also brought down trees and power lines during Hurricane Irene.¹⁶ Power outages were widespread in Nassau County, with more than 450,000 Long Island Power Authority Customers losing power across the Island.¹⁷

C. Critical Issues

Critical issues facing South Valley Stream are addressed in greater detail in the Assessment of Needs and Opportunities in Section II of this plan. In brief, Superstorm Sandy exposed several issues within the Community that the NYRCR Plan addresses. These critical issues, which can be categorized by the six Recovery Support Functions described below, were identified throughout the NYRCR Process during Planning Committee meetings, Public Engagement Events, and meetings with the Town of Hempstead, Nassau County, and New York State agencies. These issues helped to guide the development of the NYRCR Plan and the identification of Proposed and Featured Projects to address problems faced by the Community.

Community Planning and Capacity Building

Community Planning and Capacity Building refers to the ability of residents and businesses in South Valley Stream to organize, plan, manage, and implement recovery strategies. This recovery support function includes the role of local regulations in improving emergency preparedness and communications capacity during a disaster; collaboration between disaster recovery organizations; and the importance of resilience as an objective in planning processes.

The Committee considered the need for policy changes that impact stormwater management within the Community, as well as the importance of educational campaigns targeted towards residents and businesses.

Critical Issues for Community Planning and Capacity Building

- There is a need within South Valley Stream for greater coordination and communication at all scales, from residents, to local civic organizations, to Nassau County and Town of Hempstead jurisdictions. Homeowners in the Community helped to provide critical information about ongoing erosion and stormwater flooding; however, they could benefit from additional information about the ways resilient design elements and green infrastructure during rebuilding, enhance the economic value and resiliency of the Community.
- Local community-based organizations, such as the Mill Brook Civic Association, serve as important advocates for the Mill Brook neighborhood. However, an additional critical issue in South Valley Stream is the need for increased coordination between Nassau County and the Town of Hempstead with the Mill Brook Civic Association. Further, there is no equivalent group in operation to represent the North Woodmere neighborhood.
- Some of the impacts that extreme weather and climate change have on South Valley Stream occur on a regional level. Nassau County and the Town of Hempstead can help to address this issue by adopting the recommendations put forth by existing regional plans that seek to increase resilience to extreme weather and climate change.

Economic Development

The Committee recognized that increasing the Community's economic resilience was about improving the ability of the area's key retail and commercial businesses to recover after major disasters. Economic resilience is important to South Valley Stream for three key reasons. First, businesses that are able to recover quickly after disasters are more likely to keep their doors open in the future. Second, if businesses are closed for extended periods of time, employees will suffer from lost wages, even as they struggle to recover themselves. Third, businesses in South Valley Stream provide important services that residents need so they can also quickly recover. Further, businesses provide necessary revenue that can support local government operations.

Critical Issues for Economic Development

Many local businesses in South Valley Stream were unprepared for Superstorm Sandy. Continuity of operations for local businesses is critical after a disaster to both provide recovery support functions and prevent lost wages. Small businesses in particular would benefit from expanded resources, such as capacity-building for disaster recovery and business continuity planning, to help local businesses reopen after disasters and to provide incentives to encourage residents to shop locally.

Health and Social Services

Health and Social Services organizations provide critical resources to the Community, especially socially vulnerable populations. Organizations, such as health care facilities, senior centers, religious institutions, and civic organizations, provide resources for members of the Community, but are even more important to the well-being and ability to recover from disasters for people with disabilities and limited mobility, low-income populations, and elderly populations.

The Committee considered the impact on vulnerable populations of all projects, from infrastructure projects that protect critical assets, to the capacity and resilience of individual Health and Social Services assets. The Committee identified maintaining electrical power and communications during disasters as an important need. This need is addressed by Proposed and Featured Projects that improve upon the existing electrical grid and increased the capacity of existing health and social services organizations to respond to disasters.

Critical Issues for Health and Social Services

Critical Issues related to Health and Social Services cover a broad range of factors in improving South Valley Stream's ability to recover from future disasters, including activities of the Mill Brook Civic Association, communications systems, schools, disaster recovery services, and assistance for socially vulnerable populations.

While the Mill Brook Civic Association operates

a block-captain system to provide education and assistance within the Mill Brook neighborhood, other neighborhoods in the area could benefit from similar resources, especially North Woodmere.

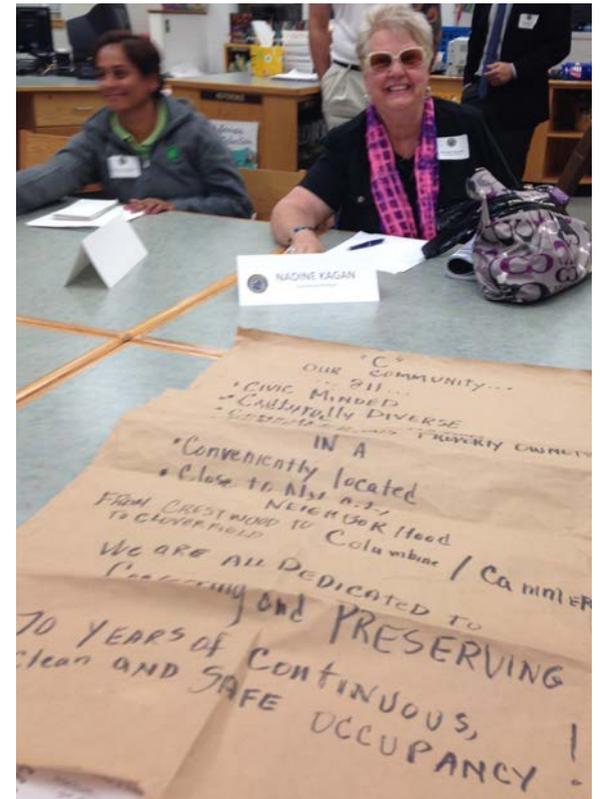
Residents in South Valley Stream suffered after Superstorm Sandy due to failures in the communications network. Reliance on grid power for such as important system is a critical issue that poses additional risk in the event of future storms.

After Superstorm Sandy local schools struggled to return to service, preventing school children from returning to their daily routine. School buildings could also serve an additional function as heating and cooling centers if the facilities are made more resilient to severe weather and power outages.

Finally, socially vulnerable populations, especially the elderly, children and people with disabilities or limited mobility are dispersed throughout South Valley Stream, which complicates efforts by local emergency responders to provide recovery services when critical communications systems are down or roads are blocked. Community-based organizations could expand their coordination with Nassau County Office of Emergency Management to identify the location of vulnerable populations.

Housing

Neighborhoods in the Community's high and extreme risk areas continue to be at risk of catastrophic flooding, such as experienced during Superstorm Sandy. Homeowners in these same neighborhoods are also facing very significant increases in flood insurance rates and declining property values due to flood risks, which pose a threat to neighborhood vitality.



Committee Member ideas for community vision

The Committee recognized the need to encourage resilient design and construction practices for home improvement projects and new home construction as a roadmap for a faster recovery, to mitigate future risks and address potential declines in property value.

Critical Issues for Housing:

The risk of future damage to residential properties is a critical issue in South Valley Stream for multiple reasons. Future flood risks present potential danger to property in the event of another extreme storm such as Superstorm Sandy; however, the Community is also at risk of declining property values due to the flood risks that Sandy exposed. Economic incentives for homeowners to repair and retrofit their homes for increased resilience can help to resolve both of these issues.

Infrastructure Systems

Infrastructure refers to the strategies that the Committee has identified to restore, repair, and manage essential services, such as stormwater systems, transportation networks, and coastal defenses.

The Committee recognized that while some infrastructure projects could be implemented within the NYRCR Program allocation for South Valley Stream, other projects would require additional study, significant regional coordination, and greater capital investment. Therefore, the Infrastructure strategies proposed by the Committee contain a combination of short- and medium-term projects for implementation, along with long-term studies that will ultimately provide the framework for

a comprehensive approach to more resilient infrastructure in South Valley Stream.

Critical Issues for Infrastructure

Critical Issues relating to infrastructure are both local and regional in nature, impacting stormwater systems and the resilience of the power grid. Local stormwater systems are prone to backups due to heavy rains and high tides. Improving ongoing maintenance of existing drainage structures, planning for maintenance of new drainage structures, and installation of tide gates or check valves on stormwater outfalls are all important issues to address. On a regional basis, it is critical for stormwater mitigation efforts to be coordinated and inclusive of stormwater retention projects in upstream communities.

Deficiencies in the electrical grid led to widespread power outages in South Valley Stream and across Long Island after Superstorm Sandy. This issue may be resolved by creating a more resilient power supply network that utilizes renewable energy and micro-grid networks.

Natural and Cultural Resources

Natural and Cultural Resource recovery support functions address the management of natural and cultural resources from a risk reduction and economic development perspective.

The Committee placed a great deal of emphasis on the role that green infrastructure can play in reducing stormwater flooding. In particular, the Committee supported strategies that restore living shorelines and encourage installation of green infrastructure on private property.

Critical Issues for Natural and Cultural Resources:

The water bodies that pass through South Valley Stream suffer from erosion, destabilized riverbanks, and loss of tree cover. These issues all contribute to sedimentation of Valley Stream, Clear Stream, Watts Creek, and Fosters Brook Lower. Erosion and sedimentation may cause debris to block stormwater outfalls, contributing to flooding during heavy rain events. “The Path” is a key natural resource asset that requires improved tree maintenance and reforestation.

Although South Valley Stream as a whole has significant tree cover and parks that provide pervious surfaces, there are also several areas with large impervious surfaces that lead to stormwater runoff and impact the residences in South Valley Stream. In particular, the parking lot at Green Acres Mall contributes to significant runoff in the Community.

E. Relationship to Regional Plans

Regional Perspective

South Valley Stream's geographic location within the Town of Hempstead and proximity to neighboring jurisdictions means that regional plans and projects may have significant relevance for the Community's NYRCR Plan (Figure 4); thus, regional plans and projects in neighboring jurisdictions may have significant relevance for NYRCR Plan.

The Committee's membership reflects the many different issues and stakeholders within the Mill Brook and North Woodmere neighborhoods. The open nature of NYRCR Planning Committee meetings encourages collaboration with other regional initiatives and strengthens the lines of communication with the Nassau County and Town of Hempstead.

Current and proposed projects, such as the ongoing Mill Pond eco-restoration, the recently approved rezoning of regional shopping malls, and the proposed repair of the nearby Mill Road Pump Station, will impact the proposed reconstruction strategies developed through the NYRCR planning process.

Noted regional initiatives and organizations reviewed during or engaged through this process include:

- US Army Corps of Engineers (USACE);
- National Park Service Gateway/Jamaica Bay (National Park Service);
- New York State Coastal Management

Program;

- New York State Department of Environmental Conservation;
- Long Island Regional Economic Development Council;
- Long Island Regional Planning Council;
- Long Island South Shore Estuary Reserve;
- Cleaner Greener Consortium of Long Island;
- Long Island Regional Economic Development Council Infrastructure Working Group;
- Nassau County;
- Nassau Urban County Consortium;
- NYRCR Jamaica Bay Regional Working Group;
- Five Towns NYRCR Planning Committee; and
- Town of Hempstead.

Many challenges and reconstruction strategies identified are beyond the oversight of the South Valley Stream Planning Committee. Therefore, it is important that the NYRCR Process is inclusive of community, Federal, State, County, and Town agencies that have jurisdictional authority in South Valley Stream and surrounding NYRCR Communities.

Reconstruction strategies have been evaluated by the NYRCR Planning Committee on a regional basis, rather than in a vacuum. The Committee has considered both current and proposed projects as well as parallel planning efforts

such as the Long Island Regional Economic Development Council (LIREDC) Regional Plan. In addition, collaboration with Planning Committees in other parts of Nassau County as well as New York City and Long Island has led to coordinated reconstruction strategies that can serve multiple Recovery Support Functions across NYRCR Community boundaries.

Regional Plans and Studies

Several plans, policies, procedures, and resources exist that address the present conditions, regulatory framework, community goals and issues, and resilience opportunities in South Valley Stream. These resources have been produced by a variety of stakeholders including public agencies at all levels (federal, state, county, and town), regional planning groups, nonprofit organizations, academic institutions, community residents, and private groups. A list of relevant regulatory and advisory documents is included below.

Regulatory

- Federally approved Significant Coastal Fish and Wildlife Habitats (NYS DOS, NYS DEC, 2008)
- New York State Coastal Management Program and Final Environmental Impacts (NYS DOS, 1982 to 2006)
- Environmental Conservation Law, § 17-0301, Part 885: Nassau County Waters (NYS DEC)

South Valley Stream NY Rising Community Reconstruction Plan

- Nassau County Department of Public Works Drainage Requirements (Nassau County DPW)
- Nassau County Stormwater Management Program Plan (Nassau County DPW, 2009)
- Town of Hempstead Adopted 2014 Budget (Town of Hempstead, 2014)
- Town of Hempstead General Code (including legislation adopted through 12-10-2013)
- Nassau County Multi-Jurisdictional Hazard Mitigation Plan (Nassau County, 2007)
- Nassau County 2013 Annual MS4 Report (Nassau County Stormwater Coalition, 2013)
- Nassau Urban County Consortium 5 Year Consolidated Plan (Nassau County, 2010)
- Nassau County Infill Redevelopment Feasibility Study: Cultivating Opportunities for Sustainable Development (Nassau County, Regional Plan Association, and NY-CT Sustainable Communities Consortium, 2013)
- NYC Plans (NYRCR process as well others)

Advisory

- Hurricane Sandy Rebuilding Strategy (U.S., Hurricane Sandy Rebuilding Task Force, 2012)
- USACE Continuing Authorities Program (USACE)
- The Atlantic Ocean/Long Island Sound Basin Waterbody Inventory and Priority Waterbodies List (NYS DEC, 2011)
- Water Body Inventory for the South Shore Long Island Watershed, Water Body Inventory for the Western Long Island Sound Watershed (NYS DEC, 2011)
- Long Island Regional Economic Development Council Strategic Plan (LIREDC, 2011)
- The Long Island Index: "Places to Grow" (Long Island Index, 2010)
- Long Island Infrastructure Priorities to Recover from Hurricane Sandy (Long Island Association, 2012)
- Cleaner Greener Long Island (CGCLI, 2013)
- Long Island 2035 Sustainability Plan

Nassau County Stormwater Management Program Plan (2009)

The Nassau County Stormwater Management Program (NCSWMP) includes a listing of Best Management Practices (BMPs) that have been implemented by the County and a coalition of local municipalities to achieve the regulatory standard of reducing pollutants in the County's stormwater to the maximum extent practicable. Initial measurable goals and an implementation

schedule were developed for each of the BMPs in the NCSWMP.

While the NCSWMP plan emphasizes practices to limit discharge of pollutants into Nassau County waterways, additional education and assistance campaigns should also help homeowners, businesses, and municipalities improve stormwater control facilities to prevent flooding. In many locations within South Valley Stream, improved maintenance and controls of stormwater drainage equipment could prevent flooding during extreme events such as Superstorm Sandy and during more frequent heavy rain events.

Nassau County Hazard Mitigation Plan (2007, current update in progress)

The Nassau County Hazard Mitigation Plan provides a description of various hazards, identification of assets in hazard areas, estimated damages in assessment areas (including assets exposed to storm surge), development trends in hazard areas and capabilities and resources. Asset information and community specific recommendations are developed for some communities however this information is sparse for South Valley Stream. Implementation strategies and mitigation measures must be drawn from recommendations for neighboring communities. This document also lists federal technical assistance and funding programs to assist in long-term recovery.

The Town of Hempstead, which assumes jurisdictional control over South Valley Stream, contributed to the development of the 2007 Hazard Mitigation Plan. When the county officially submits the plan, the residents can take

an active role in reviewing the draft revisions to ensure that risks exposed by Superstorm Sandy are addressed for South Valley Stream.

Long Island Regional Economic Development Council Strategic Plan (2011, update in 2012, 2013)

The Long Island Regional Economic Development Council Strategic Plan (LIREDCSP) is a long term economic development strategy that outlines a list of priority projects to advance key strategies for innovation, education, economic development, sustainability, and improved infrastructure.

Infrastructure strategies include: Revitalize downtowns and commercial centers; Repair and upgrade aging infrastructure; Create new housing opportunities; Promote new government policies to foster economic growth. Natural Asset Strategies include: Improve sustainable agriculture enterprises; Improve the Economic Potential and Employment Opportunities of Fisheries and Aquaculture; Enhance Ecotourism Activities and Infrastructure.

While none of the priority projects are located within South Valley Stream, businesses within the area should advocate for future attention by the LIREDC, especially to gain additional support and funding for economic development projects recommended by this NYRCR Plan.



Figure 4: NYRCR Jamaica Bay Regional Working Group Map

Cleaner Greener Long Island Regional Sustainability Plan (2013)

Cleaner Greener Consortium of Long Island is a group of municipalities and non-governmental organizations organized to articulate a community based vision for a more sustainable future. The Cleaner Greener Long Island Regional Sustainability Plan (CGLI) is intended to serve as a common point of reference for local governments, non-governmental organizations, businesses and residents. It includes initiatives for implementation, objectives

and performance targets, as well as a wealth of baseline information (in the appendices) that can be incorporated into comprehensive plans, management plans, zoning, and other planning and strategy initiatives.

Goals and strategies were developed for the following subject areas: Economic development and workforce housing; energy; transportation; land use and livable communities, waste management; water management; governance and implementation.

NYRCR Jamaica Bay Regional Working Group

From Sea Gate on the western edge of the Southern Brooklyn Peninsula, to South Valley Stream at its headwaters in Nassau County, communities in and around Jamaica Bay suffered enormous damage from Superstorm Sandy. The Bay, known as a unique ecosystem in an urban landscape, is famous for its salt marsh islands, intertidal flats, horseshoe crabs, and migratory birds that use the area as a critical refuge during their seasonal travels. Beyond the water, Jamaica Bay is surrounded by woodland and forests that host a wide array of wildlife. This dynamic system has attracted people for generations, and many of its surrounding communities are partially defined by their close proximity to Jamaica Bay's waters. However, this proximity also served as a hazard during Superstorm Sandy. At the height of the storm, the Bay swelled and water flowed through a network of creeks and streams, infiltrating neighborhoods and inundating homes, businesses and roadways.

As described in the Description of Storm Damages section of this Plan, Superstorm Sandy had a devastating impact on communities, and individual NYRCR Committees have developed strategies to rebuild and become resilient to future storm risks. At the same time, communities in and around Jamaica Bay realize the need for collaboration. Understanding that projects and other actions in one area can have profound impacts across the estuary, these communities have sought to create a unified, collective voice in support of resiliency efforts throughout the Bay. Mindful of the communities' call for

cooperation, the Governor's Office of Storm Recovery created the Jamaica Bay Regional Working Group (JBRWG), a collection of representatives from the NYRCR communities closest to Jamaica Bay, shown in Figure 5. The JBRWG views this final plan as the vehicle for its collective voice in support of ongoing and emerging resiliency efforts by stakeholders in Jamaica Bay.

The JBRWG believes that collaboration with agencies active in Jamaica Bay, namely the U.S. Army Corps of Engineers (USACE) and the National Park Service (NPS) is paramount. Through various habitat restoration projects, in addition to coastal protective measures along the Rockaway Peninsula, USACE has long been a committed partner in the sustainability of Jamaica Bay. Moreover, because of its management of the Gateway National Recreation Area, NPS has an ongoing interest as a responsible steward of its federally protected lands.

The JBRWG supports the following USACE and NPS projects, which would further protect communities in and around Jamaica Bay from future storm hazards:

- Breezy Point/Roxbury Long-Term Comprehensive Edge Protection – This project envisions a system of dunes, berms, marsh restoration, raised roads, floodwalls and baywalls, partially on NPS land, for comprehensive protection of the Breezy Point and Roxbury communities. This would include work at the Cove, as well as the property lines along the cooperative, including Breezy Point Tip.

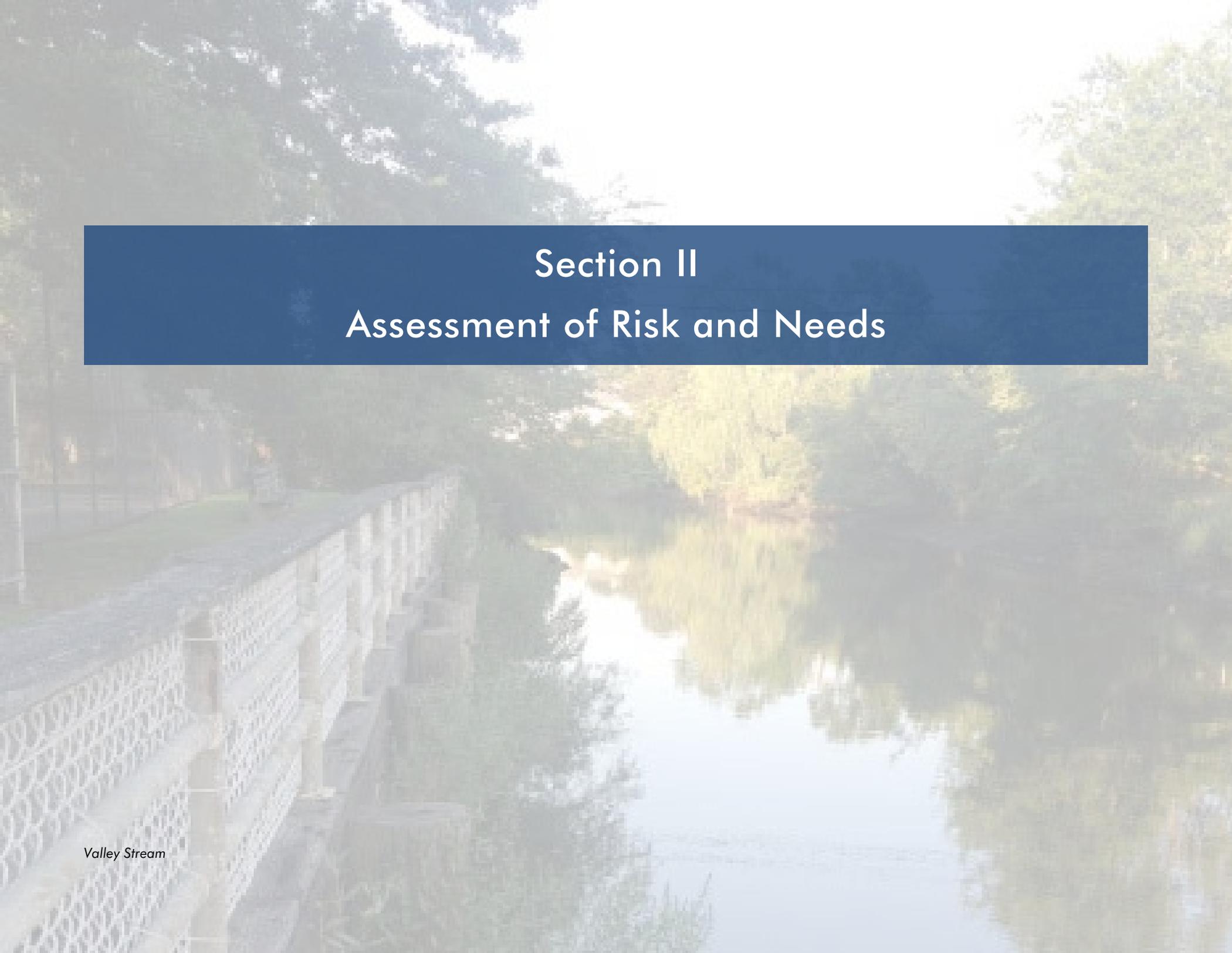
- Breezy Point Comprehensive Flood Protection System – This proposed dune system would provide sustainable, natural flood and erosion protection utilizing the area's existing natural features. The plan is comprised of an ocean side double dune system and complementary set of bayside flood and erosion protections that are designed to safeguard the community from future storm events. An application for this project was formally submitted by the State to FEMA on March 20, 2014, through FEMA's Hazard Mitigation Grant Program (HMGP).
- Broad Channel Shoreline Protection – A potential project from the Broad Channel NYRCR committee is a "Resiliency Campus," a rebuilding program to enhance the resiliency of several important community centers damaged during Sandy. The NPS property line hugs the campus site, the northwest quadrant of the neighborhood, and interventions here would further protect these community assets.
- Edge Protection for Upper Jamaica Bay – The JBRWG supports the inclusion of protective measures for communities located in upper Jamaica Bay, including Gerritsen Beach, Sheepshead Bay, and Manhattan Beach, in the USACE East Rockaway Inlet to Rockaway Inlet Reformulation Study. This would include protections for Plumb Beach and the water body of Sheepshead Bay, which were points of entry for storm surge during Superstorm Sandy.

- Howard Beach Shoreline Protection – The New York State Department of Environmental Conservation (NYS DEC) is currently working toward designing and implementing protective strategies on NPS property in lower Spring Creek. The Howard Beach NYRCR committee has also proposed work on NPS property at Upper Spring Creek, Charles Memorial Park, and Shellbank and Hawtree Basins.
- Rockaway East and West Bay and Coastal Protection – A system of bay walls, groins, and dunes are being implemented to protect Rockaway West. The JBRWG also supports additional bayside protections including bulkheads and natural solutions at vulnerable locations in Rockaway East, along the western, northern, and eastern shoreline of Arverne, in Sommerville, and in Bayswater. Additionally, Jacob Riis Park, the westernmost boundary of the Rockaway West Planning Area geographic scope, remains NPS property. The JBRWG supports work at this location, through either dunes along the beachfront or berms within the property, and believes the project would ensure protection of the entire community.
- Surge Barrier at Rockaway Inlet – The JBRWG supports New York City Special Initiative for Rebuilding and Resiliency’s (SIRR) call for the USACE to initiate an expedited study to examine the feasibility of developing a surge barrier and alternative measures at Rockaway

Inlet as part of the previously mentioned Rockaway reformulation study.

Lastly, the JBRWG supports the Science and Resiliency Institute at Jamaica Bay, a partnership among academic institutions, government agencies, nongovernmental organizations and community groups dedicated to the promotion and understanding of resilience in Jamaica Bay and its surrounding communities. Institutions taking part include: Columbia University, Rutgers University, SUNY Stonybrook, Stevens Institute of Technology, Cornell University, CUNY, NASA Goddard Institute for Space Studies, the Wildlife Conservation Society, and New York Sea Grant. The Science and Resiliency Institute at Jamaica Bay was created in response to a RFEI (Request for Expression of Interest) put out by the NPS, City of New York, and Trust for Public Land, with grant funding from the Rockefeller Institute.

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Section II

Assessment of Risk and Needs

Valley Stream

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SECTION II: ASSESSMENT OF RISK AND NEEDS

The process of completing the NY Rising Community Reconstruction Plan (NYRCR) Plan for South Valley Stream was largely framed by the Community’s critical assets and the risks faced due to disasters like Superstorm Sandy. Assessing the value and status of the Community’s assets is a vital component of the NYRCR Plan because these assets include facilities, institutions, and networks that are essential to day-to-day life, rapid disaster recovery, and long-term resilience in South Valley Stream. In defining the assets to be reviewed in this planning process, the NYRCR Planning Committee (Committee) especially considered assets that were critical or locally significant and which provide services for socially vulnerable populations.

To create a plan that protects critical assets, the Committee also considered the relative risk that these community assets face. By developing an Asset Inventory and Risk Assessment, the Committee was able to identify those assets at highest risk for negative impacts from future storm events. Identifying the assets at highest risk helped the Committee to understand the Community’s needs and opportunities. This information empowered the Committee to develop projects that reduce the risk of these assets. The Asset Inventory and Risk Assessment Process is illustrated in Figure 5: Asset Inventory and Risk Assessment Process.

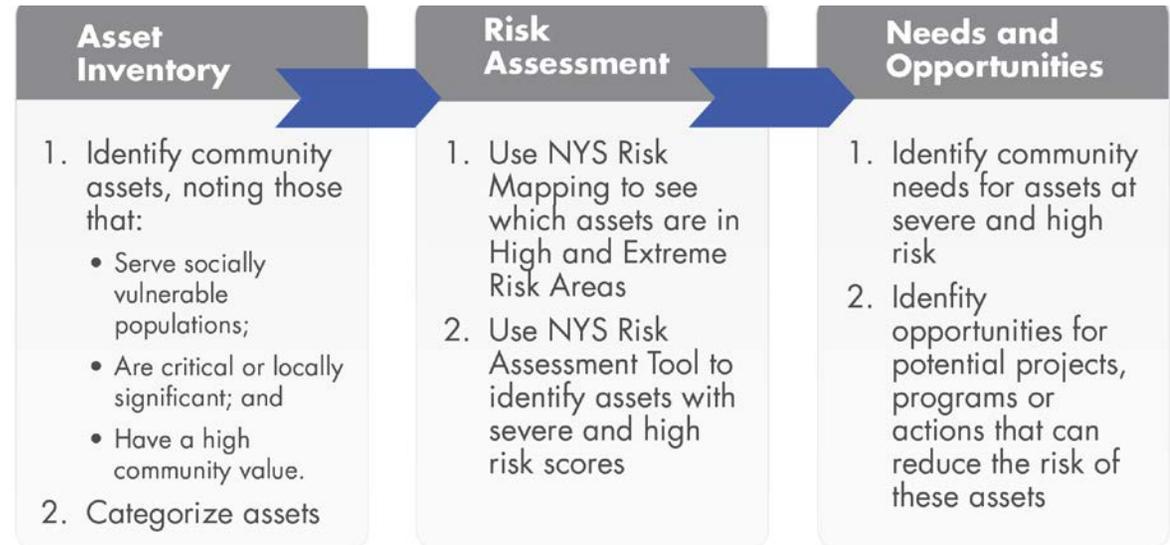


Figure 5: Asset Inventory and Risk Assessment Process

The Asset Inventory and Risk Assessment were conducted to measure the current risk levels of assets in South Valley Stream. Because the goal of the risk assessment is to determine those assets at highest risk, the Asset Inventory and Risk Assessment were limited to all assets within extreme and high risk areas (Figure 5: NYS Risk Assessment Map), as well as critical or locally significant assets within the entire Community. This risk assessment will serve as a baseline for determining the risk-reduction benefits of potential NYRCR projects.

A. Description of Community Assets and Assessment of Risk

To become a more resilient community South Valley Stream must identify ways to strengthen and protect its social, economic and natural resource assets that have been, or will be, affected by coastal hazards. The NYRCR Plan seeks to ensure that reconstructed assets and new post-storm construction are more resilient and can better withstand the impacts of future storms.

The Committee has identified several assets that were either impacted by Superstorm Sandy, are at risk of being impacted by future storms, or provided critical recovery functions for residents and businesses in the inundation zone. Assets were defined in the Conceptual Plan according to the following categories:

- Economic;
- Health and Social Services;
- Housing;
- Natural and Cultural Resources;
- Infrastructure Systems; and
- Socially Vulnerable Population.

Assets were identified through a series of exercises that involved community input, research, and analysis, including:

- Discussions at NYRCR Committee Meetings;
- Feedback at Public Engagement Meetings;
- Meetings in the local communities with Committee members, local officials, and community members;

- Site tours; and
- Data Analysis.

The following presents a summary of the assets at risk within the South Valley Stream Community identified through the above assessment process.

New York State Risk Maps

As defined by NYS DOS for the NYRCR Program, risk is the chance that an asset will be damaged or destroyed by flooding in future storm events. Assessing the risk to the South Valley Stream Community's assets provides a context for developing reconstruction strategies and projects that would reduce these risks.

NYS has developed risk assessment area mapping to define areas at risk from coastal hazards in relation to their topography, FEMA flood zones, previous storm surge inundation, sea level rise, National Weather Service (NWS) shallow coastal flooding advisory thresholds, and natural shoreline features. The resulting coastal risk assessment areas illustrate a wide range of coastal risk in South Valley Stream as measured for regular precipitation and extreme storm events as well as for future storms amplified by projected sea level rise. The risk maps are categorized into three levels of risk: extreme, high, and moderate (Figure 6: NYS Risk Assessment Map).

The Risk Assessment Maps were used in the NYRCR Plan for the South Valley Stream Community to show the corresponding risk

(extreme, high, and moderate) for each of the asset categories.

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. Extreme risk areas include:

- FEMA V zone, areas subject to inundation by the 1% annual flood risk zone with additional hazards associated with storm-induced waves.
- Shallow Coastal Flooding per the National Oceanic and Atmospheric Administration (NOAA) NWS's advisory threshold.
- Natural protective feature areas susceptible to erosion.
- Sea level rise - Added three feet to the Mean Higher High Water (MHHW) shoreline and extended this elevation inland to point of intersection with ground surface.

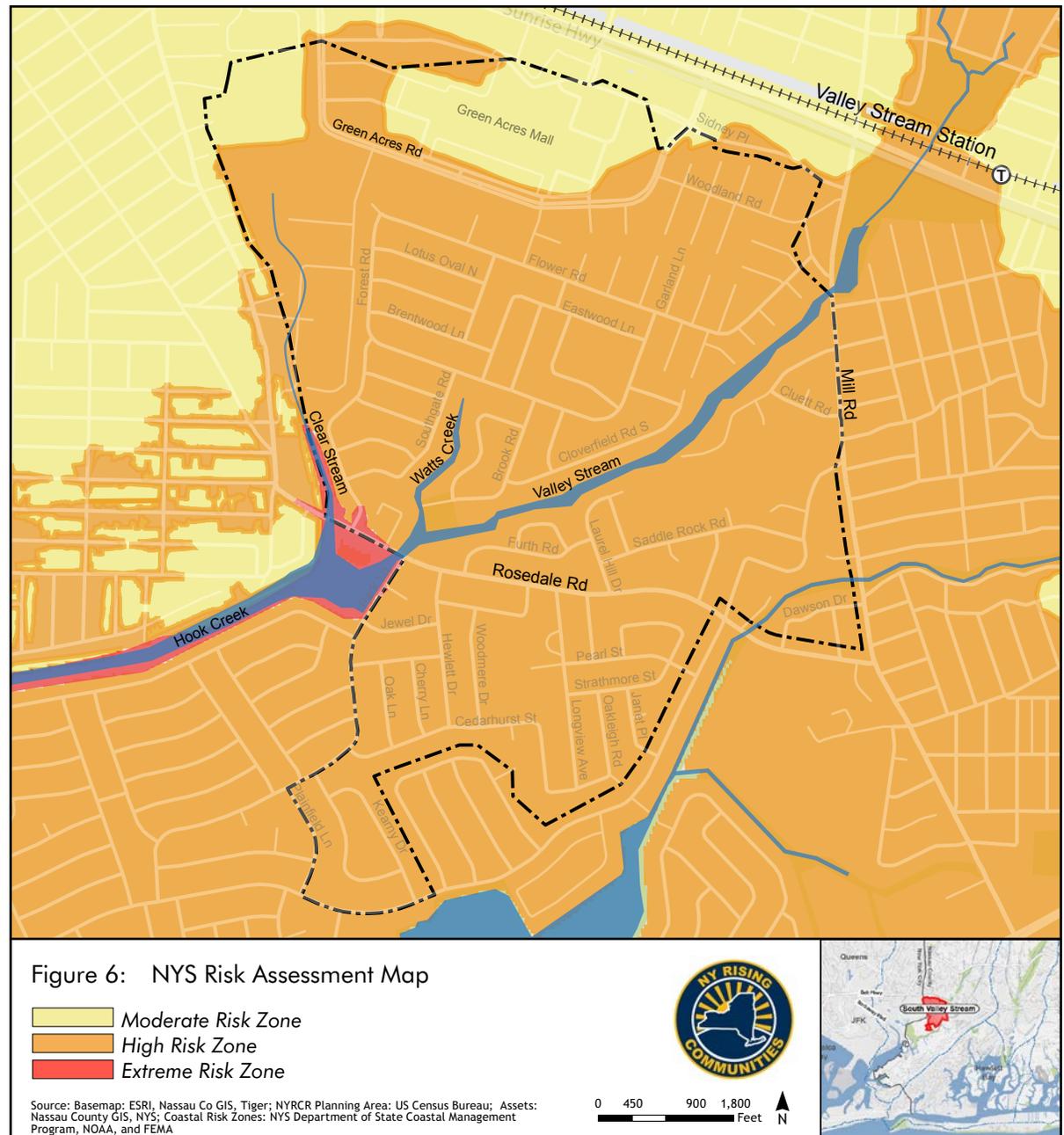
High Risk Areas: Areas outside the extreme risk area that are currently at infrequent risk of inundation or at future risk from sea level rise. High risk areas include:

- Area bounded by the 1% annual flood risk zone (FEMA V and A zones).
- Sea level rise - Added three feet to NOAA NWS coastal flooding advisory threshold and extended this elevation inland to point of intersection with ground surface.

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. Moderate Risk Areas include:

- Area bounded by the 0.2% annual risk (500-year) flood zone, where available.
- Sea level rise - Added three feet to the Base Flood Elevation for the current 1%.
- Annual risk flood event and extended this elevation inland to point of intersection with ground surface.
- Area bounded by Sea, Lake and Overland Surges from Hurricanes (SLOSH) Category 3 hurricane inundation zone.

The risk maps illustrate that the entirety of the South Valley Stream Community is at risk for future coastal storm events. The majority of the Community is located in the high risk area, with a small but significant extreme risk area located near where South Valley Stream crosses under Rosedale Road and the Chase Bank. The area at lowest risk is Green Acres Mall, which sits in the moderate risk area.



Economic Assets

Economic assets include employment hubs and downtown centers, ranging from large retail stores to industrial complexes, small businesses, service establishments, and tourism destinations. Figure 7 illustrates economic assets within South Valley Stream.

The primary economic assets in South Valley Stream are the Green Acres Mall, with anchor stores Macy's and Sears, and the adjacent Green Acres Plaza, with several large retailers such as Home Depot and BJ's Wholesale Club. The mall has a variety of small and large businesses and restaurants and serves as an employment hub. Additional economic assets are primarily located along Rosedale Road and Mill Road, including the Chase Bank on Rosedale Road. Economic assets outside of the Community on which residents rely include Key Food and the Parkdale Pharmacy on Rosedale Road as well as businesses along Sunrise Highway.



Chase Bank

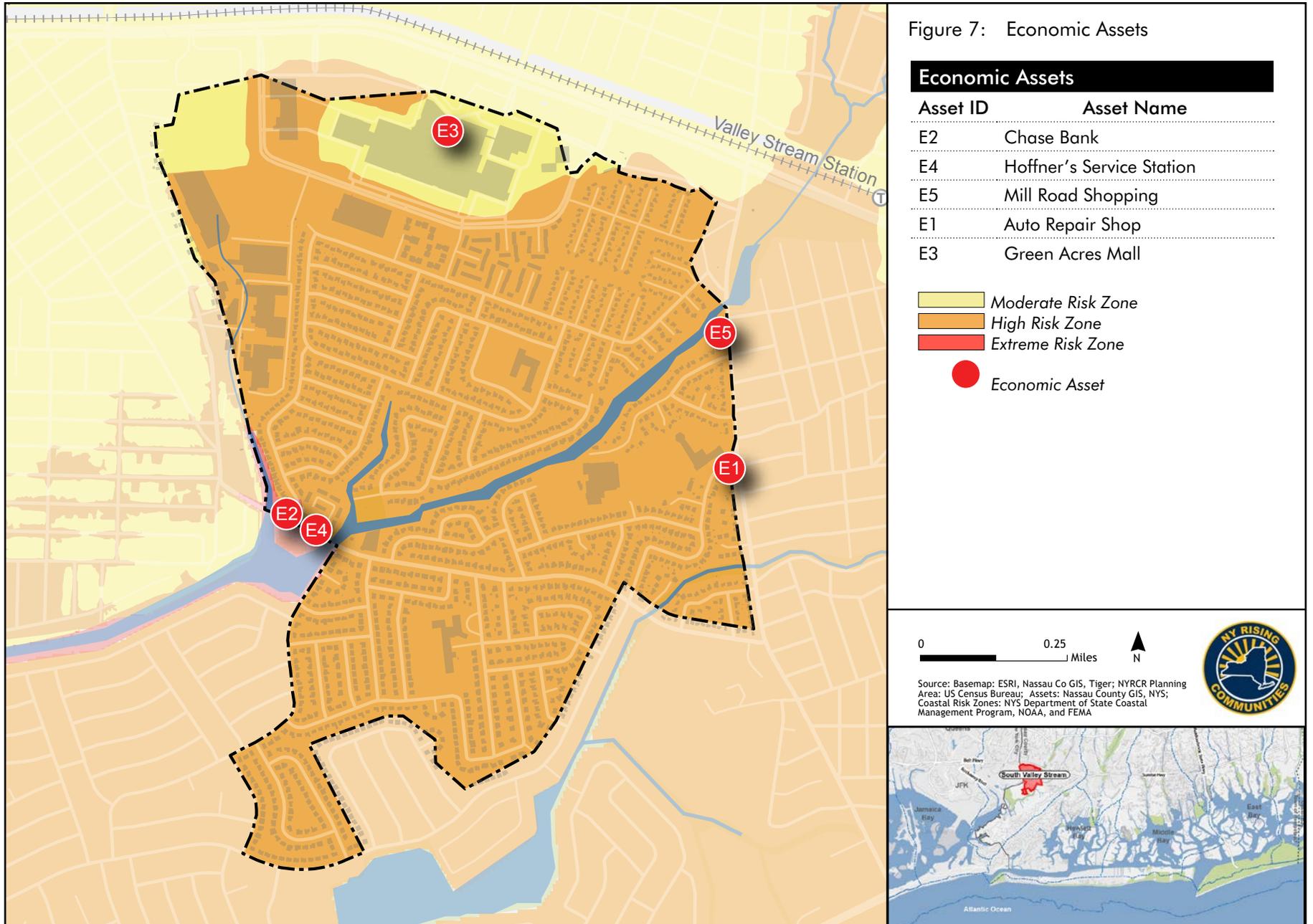


BJ's Wholesale Club



Green Acres Mall

Figure 7: Economic Assets





Mill Brook Neighborhood

Housing Assets

Housing in South Valley Stream is largely divided into two neighborhoods of single-family residences, the Mill Brook neighborhood north of Valley Stream and North Woodmere south of Valley Stream. As shown in Table 1: Housing Tenure Comparison, 2013, they are primarily owner-occupied neighborhoods with very few vacant properties. Multi-family housing assets include the Condominiums on Vanderbilt Way and Mayfield Apartments (Figure 8: Housing Assets).

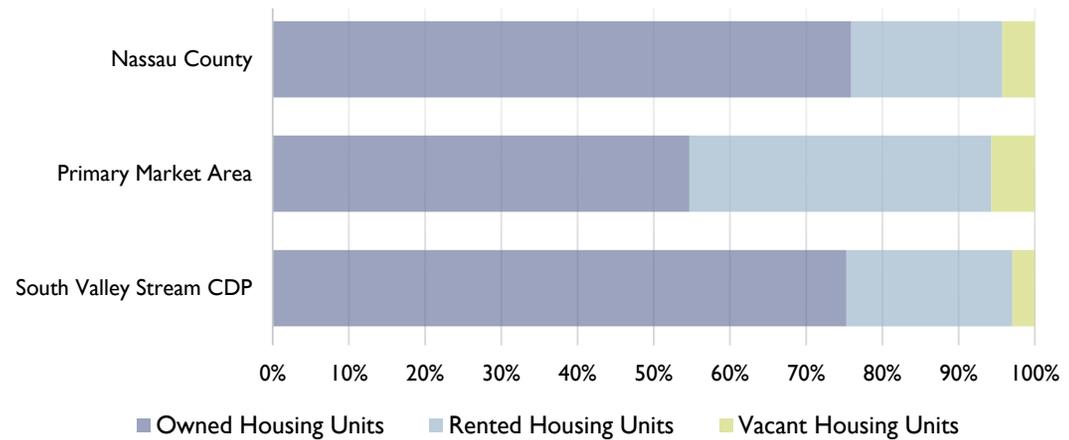
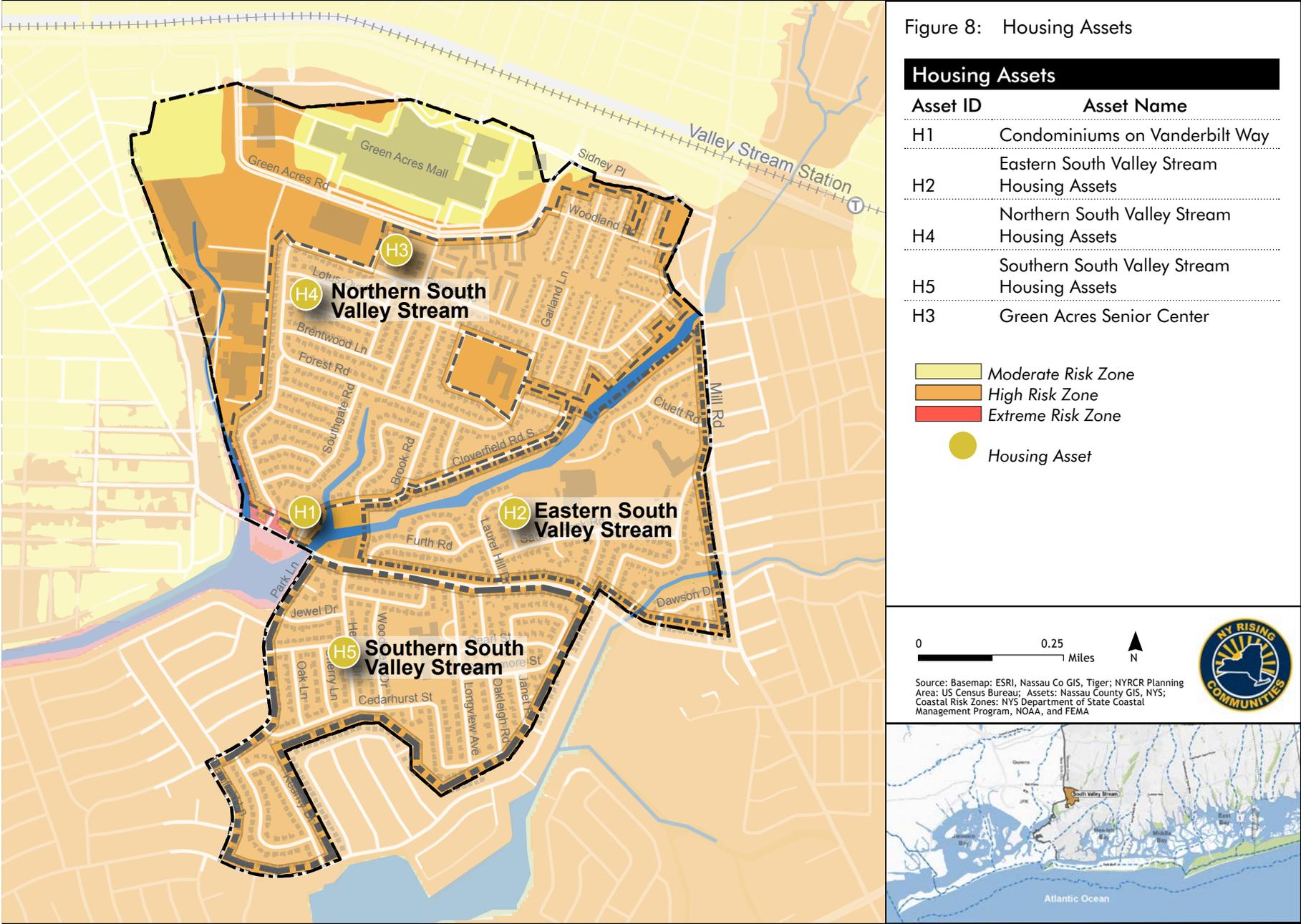


Table 1: Housing Tenure Comparison, 2013

Source: US Census Bureau, Esri Community Analyst; 4ward Planning Inc., 2013

Figure 8: Housing Assets





Valley Stream South High School and Robert W. Carbonaro Athletic Fields

Health and Social Services Assets

Health and Social Services assets include schools, health care facilities, day care and elder care, government buildings, media and communications, and first responders such as police, fire, and rescue. Identified health and social services assets are shown in Figure 9: Health and Social Services Assets.

The South Valley Stream Community has several schools, including the Forest Road School, Valley Stream South High School, Robert Carbonaro School, and Ogden Elementary School, as well as day care centers such as Yale Academy After School, Harbor Kidz and Forbin Francoise (Figure 9). Forest Road School serves as a hub for community

activity in the Mill Brook neighborhood and hosts Mill Brook Civic Association meetings and NYRCR Committee meetings. Various residential medical offices and personal health care services assets at high risk are dispersed throughout the Mill Brook neighborhood. Other health and social services on the periphery of the Community, include Sunrise Family Foot Care, Valley Stream Medical Office, and pharmacies at Wal-Mart and Target, as well as Parkdale Pharmacy. Health and social services assets also include government services and emergency operations, which in South Valley Stream is limited to the Nassau County Police outpost at Green Acres Mall, serviced by the Fifth Precinct.



Valley Stream South High School

Figure 9: Health and Social Services Assets

Health and Social Service Assets

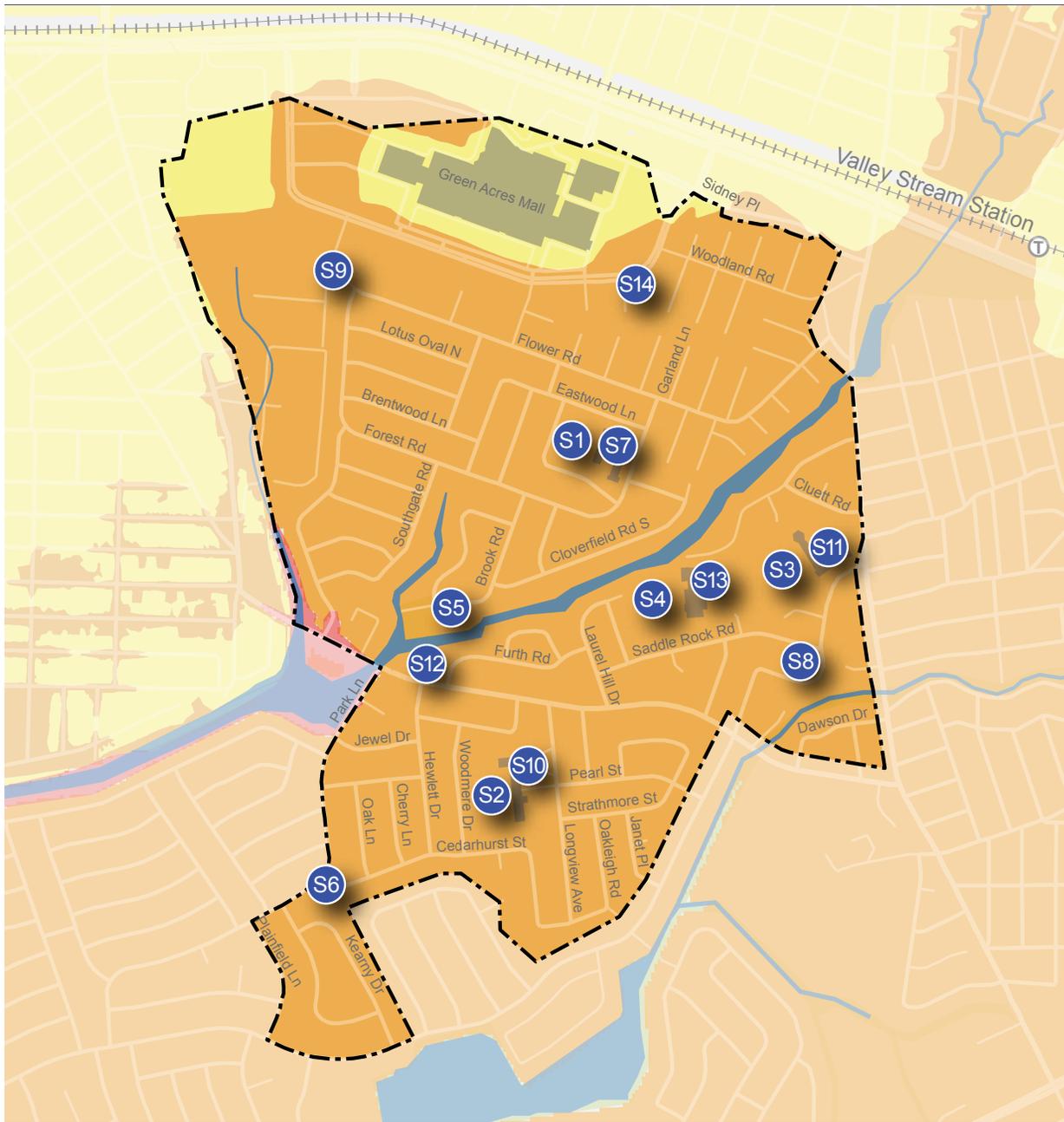
Asset ID	Asset Name
S4	Athletic Fields (Valley Stream South High School)
S5	Physical Therapy
S6	Forbin, Francoise Daycare
S12	Shalhevet High School (at Temple Hillel)
S13	Valley Stream South High School
S1	Athletic Fields (Forest Road School)
S2	Athletic Fields (Ogden Elementary School)
S3	Athletic Fields (Robert W. Carbonaro School)
S7	Forest Road School
S8	Harbor Kidz Day Care
S10	Ogden Elementary School
S11	Robert Carbonaro School
S9	NCPD Booth I
S14	Yale Academy

Moderate Risk Zone
 High Risk Zone
 Extreme Risk Zone

Health and Social Services Assets

0 0.25 Miles ▲ N

Source: Basemap: ESRI, Nassau Co GIS, Tiger; NYRCR Planning Area: US Census Bureau; Assets: Nassau County GIS, NYS; Coastal Risk Zones: NYS Department of State Coastal Management Program, NOAA, and FEMA

Infrastructure Systems Assets

Infrastructure systems include transportation such as roadways and transit, stormwater, wastewater and water supply infrastructure, gas stations and solid waste and recycling facilities. The NYRCR Plan includes infrastructure systems located within South Valley Stream, but also considers those systems located outside of the Community, to the extent that impairment of those assets due to flooding would affect community assets or functions.

Key roadways include Sunrise Highway to the North, Mill Road to the east, and Rosedale Road, which cuts across the Community from east to west, as well as the only two entrances to the Mill Brook neighborhood at Flower Road and Heatherfield Road (Figure 10: Infrastructure Assets). The stormwater and storm sewer systems are comprised of pipes maintained by the Town of Hempstead under local roads, which feed into larger mains and pump stations maintained by Nassau County.

Infrastructure assets also include fuel distribution. The only gas station within the planning area is Hoffner's service station. Several gas stations immediately outside the study area are also critical, including the Shell Station located in an extreme risk area on Rosedale Road.

One LIPA substation was identified in the Community, located on an elevated platform near Green Acres Mall. According to LIPA, this substation was not damaged. Several transmission lines operating at 69 and 33 kV supply power to substations in the communities of South Valley Stream and Five Towns.

It is important to note that, flood and erosion defense works are not considered assets for the purpose of the Asset Inventory and Risk Assessment. Bulkheads, seawalls, and rip rap are not assets, but rather erosion control measures that affect the exposure of an asset and adjacent assets and properties to storms or other hazards. For further discussion on bulkheads and exposure, please see Section II-B. Assessment of Risk to Assets and Systems: Exposure.



Rosedale Road



Green Acres Mall Substation



Gulf Gas Station

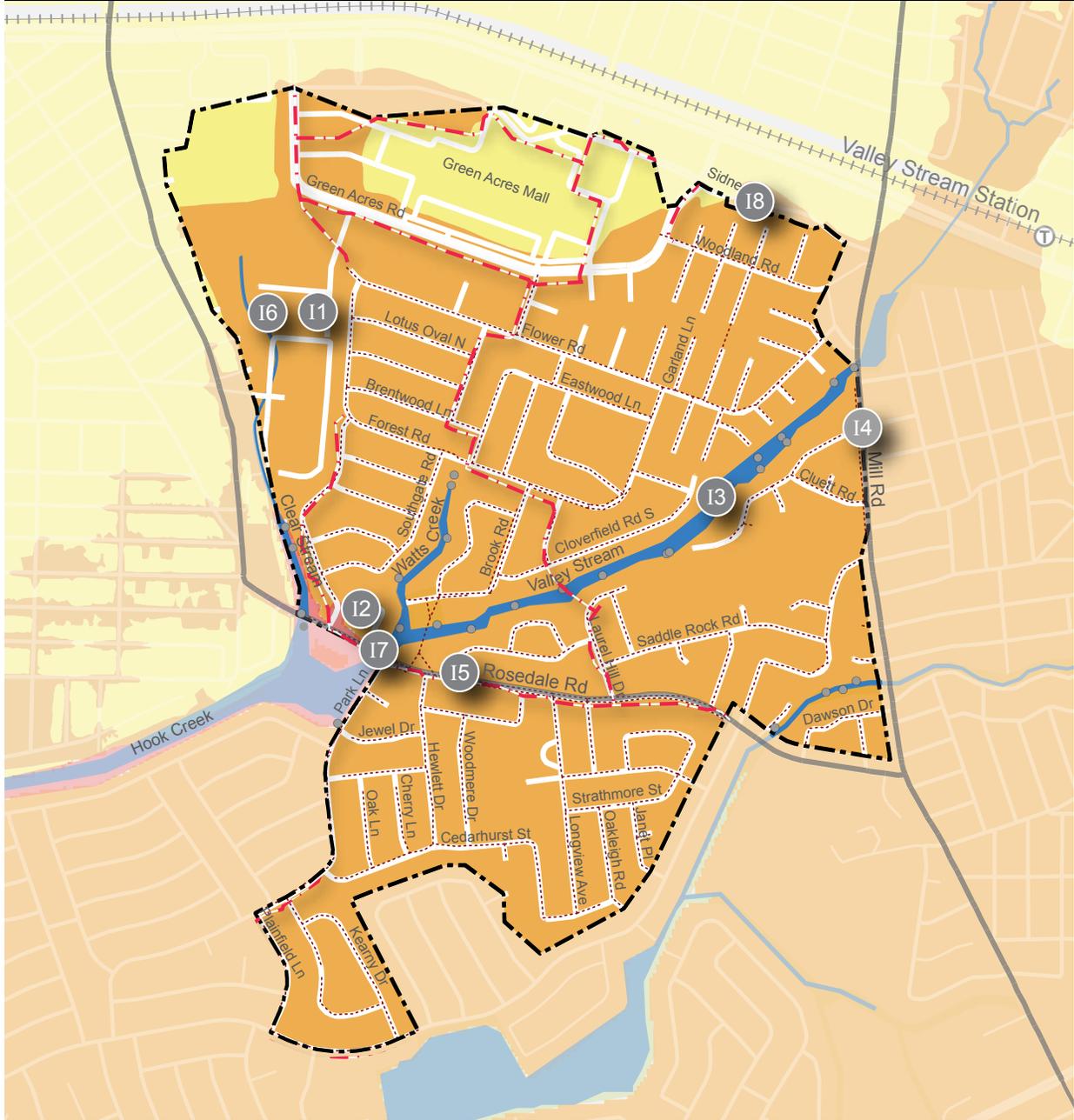
Figure 10: Infrastructure Assets

Infrastructure Assets

Asset ID	Asset Name
I2	Gulf Gas Station
I5	Rosedale Rd
I6	STC Five LLC Antenna
I4	Mill Rd_High
I3	Jedwood Place Pedestrian Bridge
I7	Rosedale Road Bridge
I1	101 Green Acres Road Remediation Site
I8	Green Acres Mall Substation
●	Storm Sewer Outfall
- - -	Sewer Pipe
- . - . -	Water Supply System
Light Yellow	Moderate Risk Zone
Orange	High Risk Zone
Red	Extreme Risk Zone
●	Infrastructure Asset

0 0.25 Miles N

Source: Basemap: ESRI, Nassau Co GIS, Tiger; NYRCR Planning Area: US Census Bureau; Assets: Nassau County GIS, NYS; Coastal Risk Zones: NYS Department of State Coastal Management Program, NOAA, and FEMA



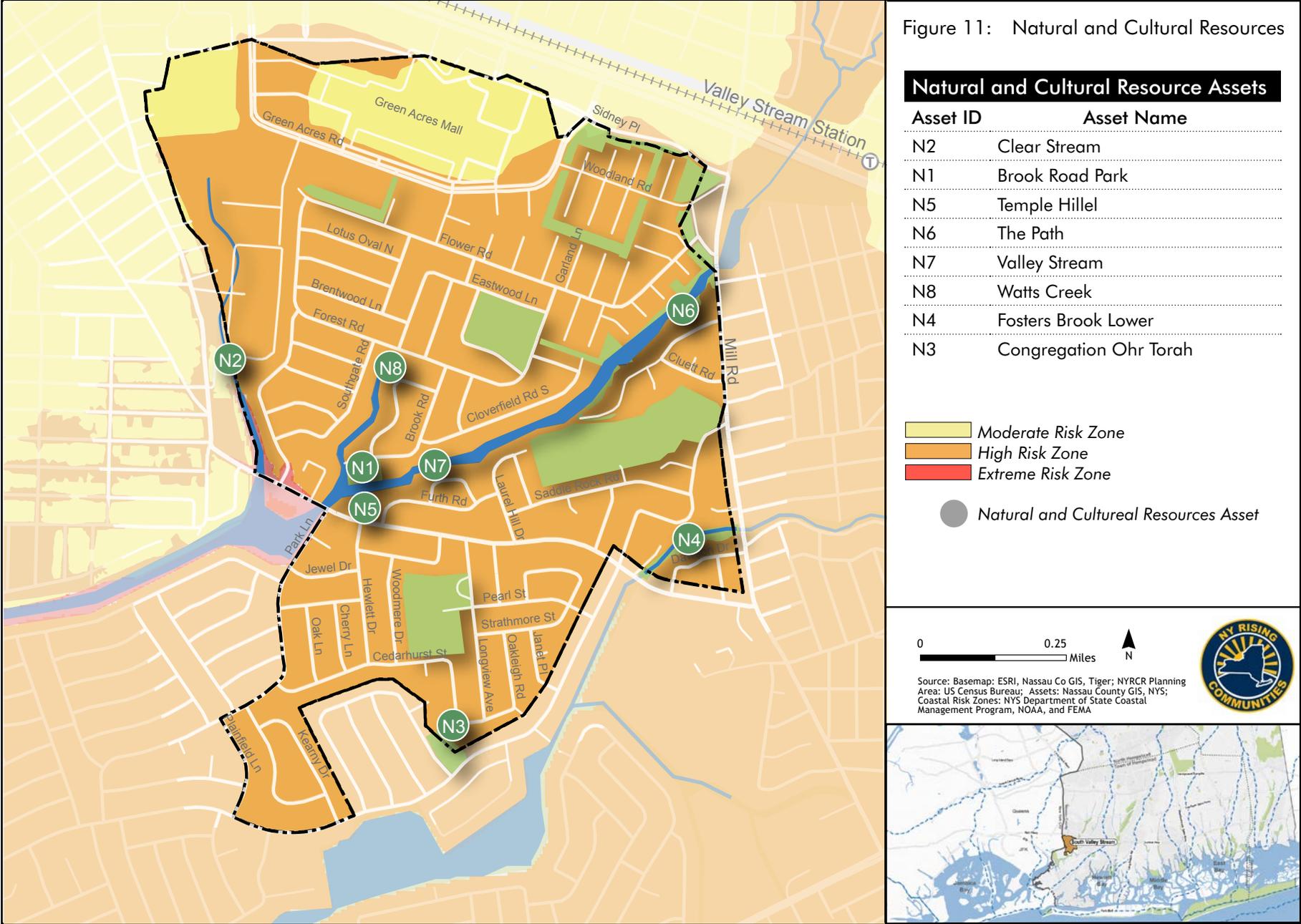
View looking north from Rosedale Rd Bridge to edge of Brook Road Park

Natural and Cultural Resources Assets

Natural and Cultural Resources include a diverse range of assets from natural and ecological habitats, wetlands and marshes, parks, recreation, and open space, to museums, libraries, historic landmarks, and religious establishments. Water is both a valuable natural resource and a key risk factor in South Valley Stream, with water bodies including Valley Stream, Watts Creek, Clear Stream, and Fosters Brook Lower. Several parcels of undeveloped land and walking paths in the northeastern end of the Mill Brook neighborhood are owned by the Town of Hempstead, as well as "The Path," a greenway walking path along Valley Stream at the end of Cloverfield Road North (Figure 11: Natural and Cultural Resources).

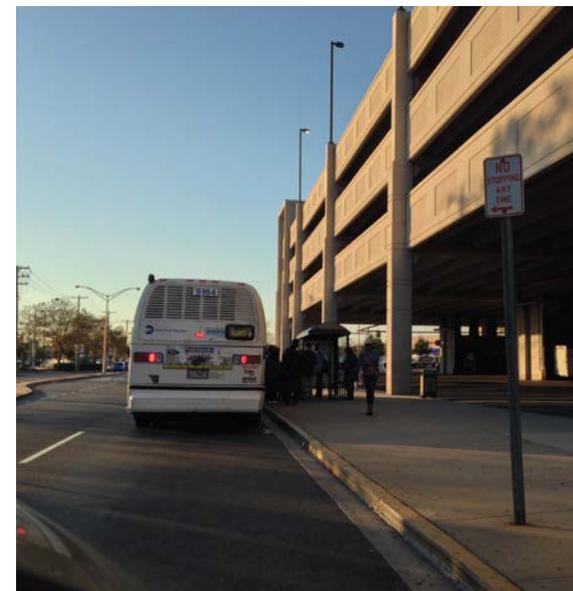
South Valley Stream has several recreational assets, including the Forest Road School Ball Fields and Brook Road Park, both of which were flooded during Superstorm Sandy. The fields at Valley Stream South High School, Ogden Elementary School, and Robert Carbonaro School are also recreational assets, while cultural resources include Temple Hillel and Congregation Ohr Torah. The Pagen-Fletcher House is outside of the study area but is an important historical resource for the Community.

Figure 11: Natural and Cultural Resources





Brook Road Park play equipment



Bus Stop at Green Acres Mall

Assets that Serve Socially Vulnerable Populations

Socially vulnerable populations in South Valley Stream are concentrated among children, elderly populations (over age 65), and people with disabilities or limited mobility. Elderly populations are dispersed throughout high-risk neighborhoods and concentrated in the Green Acres Senior Center on Flower Road.¹⁸

Facilities providing services to children include two day care centers, three elementary schools, and Valley Stream South High School (Figure 12). All of these facilities are within high-risk areas. The percentage of elderly residents and children under nine years old is the same at 16%. Elderly and people with limited mobility are clustered between Green Acres Road and Cloverfield Road. The majority of young children and lower income residents live in the

Mill Brook neighborhood between Green Acres Road and Flower Road.¹⁹

For the purposes of this planning process, low-income households are generally defined as those with an annual income of less than \$35,000²⁰. One in four households earn less than \$35,000 per year, and one in 10 residents do not own a vehicle. The Mill Brook neighborhood contains a larger share of low-income households (40% of households in Mill Brook) than North Woodmere (less than 10% of households in North Woodmere). Similarly, households with no access to a vehicle are concentrated in Mill Brook. The share of households that lack access to a car ranges from 11 to 19% in the block groups within Mill Brook, compared to less than 1% in North

Woodmere. South Valley Stream does not have a substantial number of non-English-speaking households.²¹

South Valley Stream's elderly populations primarily reside in the southern and central areas. Approximately 26% of the southernmost block group in North Woodmere consists of elderly populations, while more than 23% of the block group near Cloverfield Road South in Mill Brook consists of elderly populations. Within South Valley Stream, the Mill Brook neighborhood is composed of the greatest share of children under the age of nine, with more than 26% of the population in the area near Green Acres Road South consists of young children.

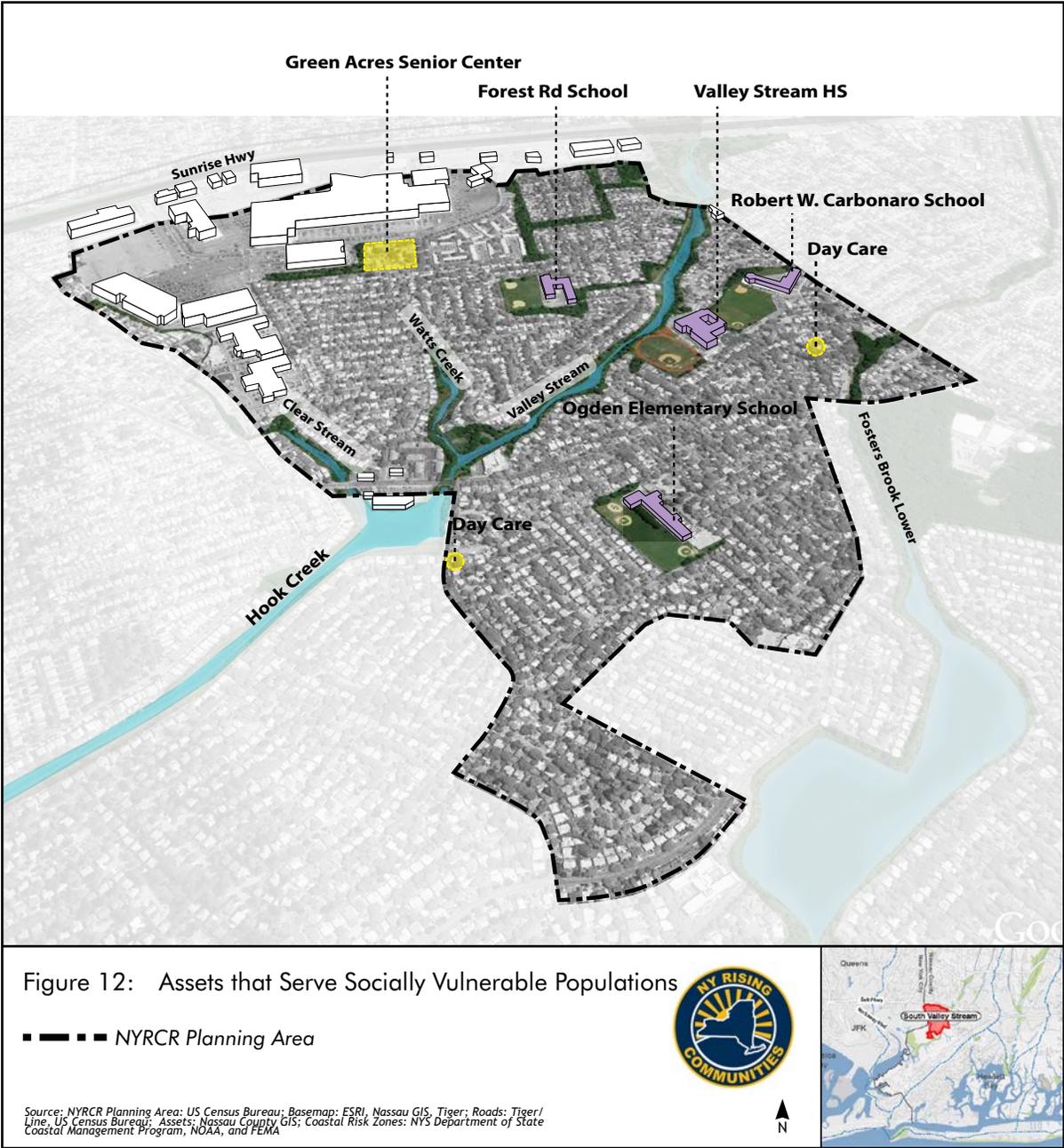


Figure 12: Assets that Serve Socially Vulnerable Populations

--- NYRCR Planning Area

Source: NYRCR Planning Area: US Census Bureau; Basemap: ESRI, Nassau GIS, Tiger; Roads: Tiger/Line; US Census Bureau; Assets: Nassau County GIS; Coastal Risk Zones: NYS Department of State Coastal Management Program, NOAA, and FEMA

Critical and Locally Significant Assets

Special consideration was given to identifying critical or locally significant assets, the loss or impairment of which would compromise essential services for the South Valley Stream Community. According to the Federal Emergency Management Agency (FEMA), critical facilities are essential to the health and welfare of the whole population and are especially important following hazard events.²² Examples of critical facilities 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, generating plants and other principal point of utility lines, evacuation shelters, schools, and other uses that house vulnerable populations.

FEMA-defined critical facilities may not include the full range of assets considered critical by the Community. Therefore, the NYRCR Plan also identifies locally significant facilities that are considered critical by other federal agencies, state, and local officials, and the Committee. Together, these two groups of critical assets provide a more complete picture of risk to important assets. Figure 13 illustrates the critical and locally significant facilities within South Valley Stream.

Critical and Locally Significant Assets

Asset ID	Health and Social Services Assets
S7	Forest Road School
S10	Ogden Elementary School
S11	Robert Carbonaro School
S12	Shalhevet High School (at Temple Hillel)
S13	Valley Stream South High School
S14	Yale Academy
S9	NCPD Booth I
Infrastructure Systems Assets	
I4	Mill Rd
I5	Rosedale Rd
I2	Gulf Gas Station
I3	Jedwood Place Pedestrian Bridge
I7	Rosedale Road Bridge
I6	STC Five LLC Antenna
Housing Assets	
H3	Green Acres Senior Center
Natural and Cultural Resources Assets	
N2	Clear Stream
N8	Watts Creek
N4	Fosters Brook Lower
N7	Valley Stream

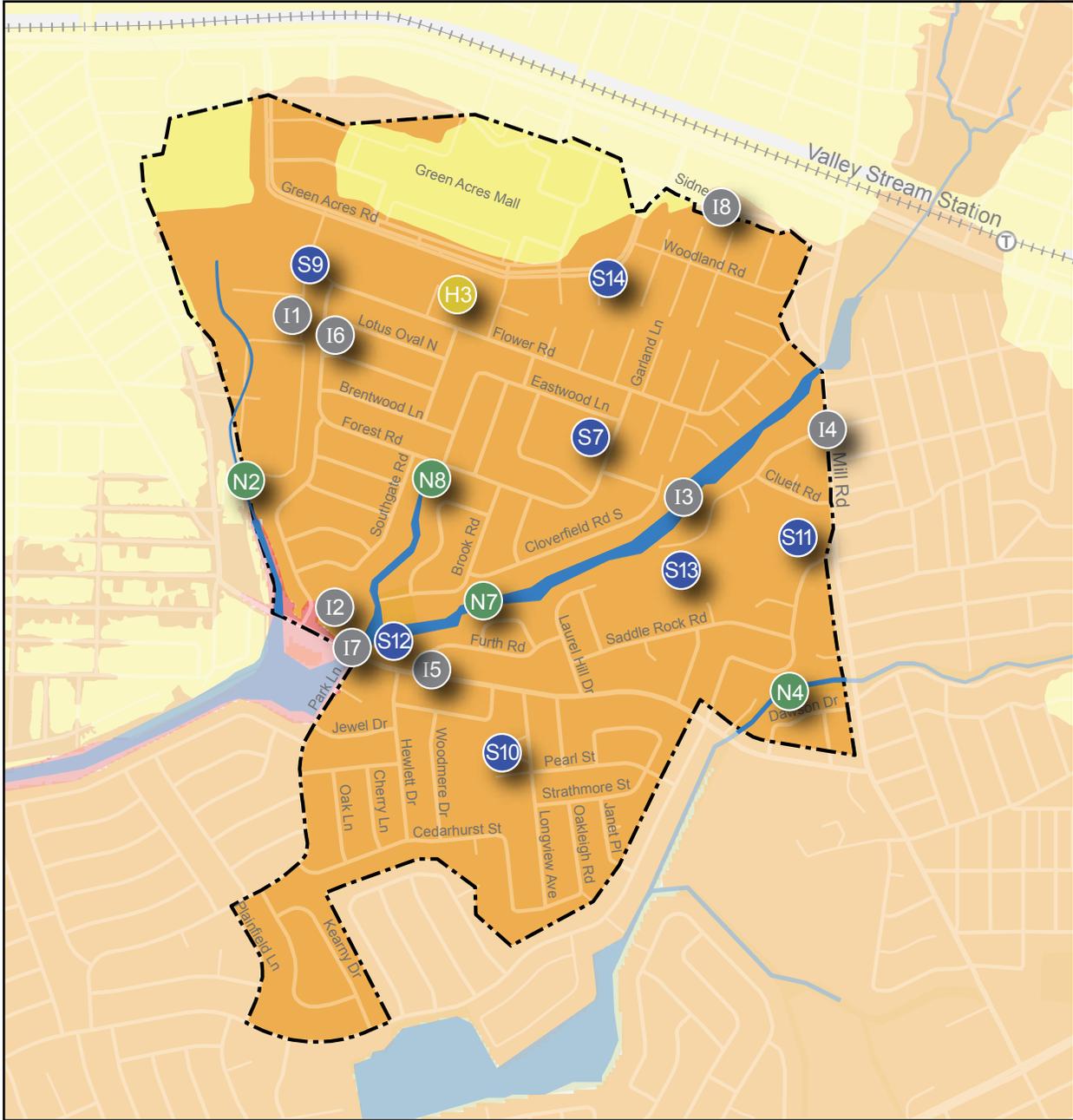


Figure 13: Critical and Locally Significant Assets

- Moderate Risk Zone
- High Risk Zone
- Extreme Risk Zone

- Housing Asset
- Health and Social Services Asset
- Infrastructure Asset
- Natural and Cultural Resources Asset

0 0.25 Miles



Source: Basemap: ESRI, Nassau Co GIS, Tiger; NYRCR Planning Area: US Census Bureau; Assets: Nassau County GIS, NYS; Coastal Risk Zones: NYS Department of State Coastal Management Program, NOAA, and FEMA



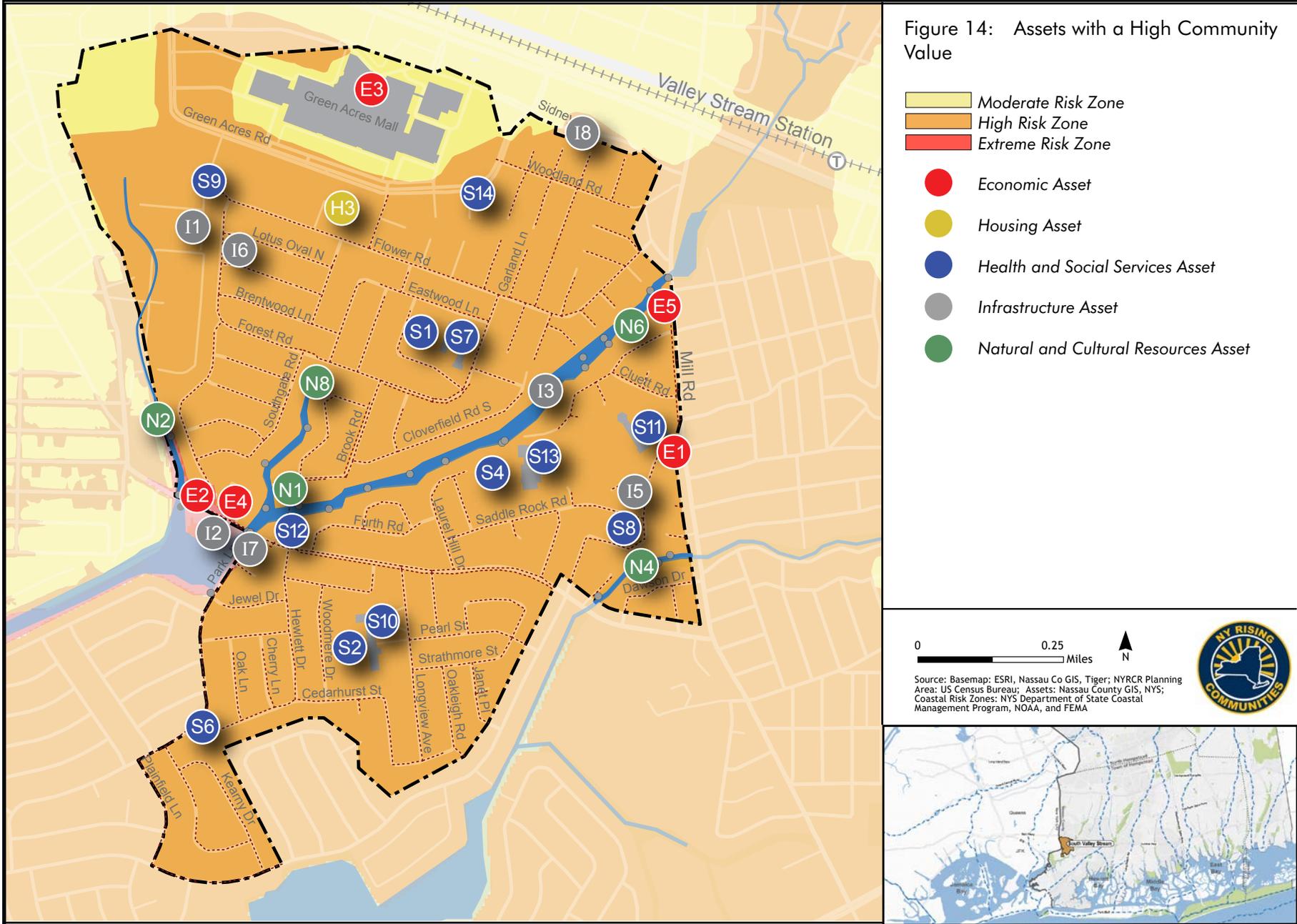
Assets with High Community Value

The preparation of the NYRCR Plan was a participatory planning process that incorporated input from both the Committee and the broader public. Therefore, Community preferences and appraisal weighed heavily in determining which assets the NYRCR Plan identified as important for protective interventions. In the context of the Risk Assessment Tool, “community value” means the value of the asset to the Community expressed as high, medium, or low. The following assets have a high community value:

- Assets noted as important to protect by the Committee and public;
- Critical facilities and locally significant facilities;
- Facilities that serve socially vulnerable populations;
- Key elements of infrastructure systems (e.g., gas stations and certain roadways);
- Emergency Operations and Response Facilities;
- Schools and Community Facilities; and
- Significant Economic assets.

Figure 14: Assets with a High Community Value illustrates assets with a high community value in South Valley Stream.

Assets with a High Community Value			
Asset ID	Economic Assets	Asset ID	Housing Assets
E1	Auto Repair Shop	H3	Green Acres Senior Center
E2	Chase Bank	Infrastructure Systems Assets	
E3	Green Acres Mall	I3	Gulf Gas Station
E4	Hoffner’s Service Station	I10	Rosedale Road Bridge
E5	Mill Road Shopping	I12	Sewer Pipe
Health and Social Services Assets		I13	STC Five LLC Antenna
S6	Forbin, Francoise Daycare	I15	Stormwater Outfall
S8	Harbor Kidz Day Care	Natural and Cultural Resources Assets	
S7	Forest Road School	N1	Brook Road Park
S1	Forest Road School Athletic Fields	N6	The Path
S10	Ogden Elementary School	N5	Temple Hillel
S2	Ogden Elementary School Athletic Fields	N2	Clear Stream
S11	Robert Carbonaro School	N8	Watts Creek
S12	Shalhevet High School (at Temple Hillel)	N4	Fosters Brook Lower
S13	Valley Stream South High School		
S4	Valley Stream South High School and Junior High School Athletic Fields		
S14	Yale Academy		
S9	NCPD Booth I		



B. Assessment of Risk to Assets and Systems

Quantifying Risks: Coastal Hazard and Risk Assessment Tool

The risk to each asset has been quantified using a tool developed by NYS DOS. This risk assessment provides a baseline level of risk for each group of assets. The reduction in risk caused by implementing a potential project will be a key determinant of the risk-reduction benefit generated by that project.

For the purposes of the Coastal Hazard and Risk Assessment Tool, the *Asset Inventory and Risk Assessment* was limited to critical or locally significant assets within the South Valley Stream Community and all assets within extreme and high risk areas.

Assets within the tool are grouped by:

- Asset Category;
- Systems, noting key elements of each system (e.g., “Roadway Network” and “Lawson Ave.”);
- Location (e.g., municipality, close proximity); and
- Similar Exposure and Risk Characteristics (e.g., NYS Risk Area).

Risk is an expression of *hazard*, the likelihood and magnitude of a future storm; *exposure*, or the moderating effect of topographic and shoreline features; and *vulnerability*, the ability of an asset to resist damage from a future storm event for each group of assets.

Hazard

Hazards are storms that are typical for the region, not unlikely or unpredictable events. South Valley Stream faces varying types of hazards:

- Frequent, low-intensity storm events, such as average rainfall, causing stormwater drainage issues and stormwater induced flooding in the 100-year floodplain.
- Infrequent, high-intensity storm events, such as above average rainfall, northeasters, or hurricanes, causing storm surge and tidally induced flooding in the 500-year floodplain.
- Combinations of stormwater and tidal flooding.
- High winds, possibly in combination with either type of hazard above.
- Long-term hazards posed by bank erosion and sea level rise.

Because the magnitude of storm events increases as the likelihood decreases (i.e., 100-year storms have higher magnitude than 10-year storms), the hazard increases as the likelihood goes down. The hazard score is defined as follows:

Very likely or expected to occur. Low intensity event. >90% probability of occurring

Likely to occur. Moderate intensity event. 66-90%

About as likely as not (possible). High intensity event. 33-66%

Unlikely to occur. Very high intensity event. 10-33%

Highly unlikely, but conceivable. Extreme intensity event. 1-10%

For the purpose of preparing the NYRCR South Valley Stream Plan, the design storm event is a 100-year storm (1% annual chance of occurring). According to NYS DOS guidance, the hazard score for a 100-year event is 3, which is therefore the hazard score noted for all assets in the risk assessment.

Exposure

South Valley Stream is exposed to tidal flooding rising from Jamaica Bay through Hook Creek and Motts Creek past Rosedale Road to Clear Stream, Watts Creek, Valley Stream, and Fosters Brook Lower. As demonstrated by Superstorm Sandy’s inundation of low-lying areas, much of the community south of Sunrise Highway is exposed due to lower elevations. The high point of South Valley Stream is the Green Acres Mall at an elevation of 18 feet, which slopes downward to an elevation of two feet at Watts Creek, and as low as zero at Valley Stream. Exposure to tidal flooding is heightened by sandy soils with a high erosion rate along Watts Creek and limited shoreline defenses along all water bodies, putting the waterline in frequent, even daily contact with neighboring

homes and parkland. These local topographic and shoreline conditions increase the impacts of tidal flooding and coastal hazards on the assets identified by the Community, notably on the residential neighborhoods of Mill Brook and North Woodmere.

Exposure is an expression of the local topographic and shoreline conditions that tend to increase or decrease the effects of coastal hazards on assets. Exposure is determined by evaluating landscape attributes for assets. Landscape attributes are features of the landscape that lie between an asset and the source of flood waters, which may reduce the exposure of the assets to flooding. The following landscape attributes were evaluated for each group of assets in South Valley Stream:

- Erosion Rate;
- Beach Width;
- Shore Defenses;
- Vegetation;
- Dunes or Bluffs; and
- Soils.

For definitions of these landscape attributes, see Section V: Additional Materials.

The resulting exposure score for each group of assets considers the risk area in which the asset is located and the landscape attributes that influence the assets’ potential for storm impacts, as described above. Assets that are closer and more exposed to hazards are at greater risk than those that are less exposed.

Vulnerability

At the community level, South Valley Stream is significantly vulnerable to the impacts of storm events given its low elevation in relation to base flood elevation. Vulnerability is an expression of the assets’ ability to return to service after a storm. Vulnerability relates to both the assets’ material strength relative to the coastal hazard and its regenerative capacity. Based on feedback from Committee members and the public during the preparation of the conceptual plan, a vulnerability score was defined for each group of assets as follows:

Insignificant: Limited Interruption.

Minor: Service loss of less than 1 week.

Moderate: Service loss 1-4 weeks.

Significant: Service loss greater than 1 month.

Major: Permanent loss.

Vulnerability scores were subsequently confirmed by the Committee. The average vulnerability score within South Valley Stream is 3, with most assets (63% of asset inventory) experiencing a service loss of one to four weeks after Superstorm Sandy. Assets along Rosedale Road experienced greater loss of service of over one month (24% of asset inventory), while Green Acres Mall and assets within its vicinity located in a moderate risk area experienced the lowest loss of service of less than one week (13 % of asset inventory).

Risk Scores

The Risk Score for each group of assets is determined by multiplying its hazard, exposure, and vulnerability. The Coastal Hazard and

Risk Assessment Tool automatically generates this risk score, which represents the relative risk of the assets in the South Valley Stream Community. Note: risk scores include some subjective analysis and should not be compared from one community to another.

Risk = Hazard x Exposure x Vulnerability

Risk scores can range from 1.5, the lowest score reflecting negligible or residual risk, to 75, the highest score reflecting severe risk. These ranges are broken down as follows:

Residual (Risk Score <6)

Residual risk scores result from both low exposure and vulnerability; however, if assets are critical or have a very high community value, actions may be warranted to reduce their risk.

Moderate (Risk Score 6 - 23)

A moderate risk score represents that the assets may suffer moderate to serious storm impacts, but that adaptation may be of a lower priority because either exposure or vulnerability is low.

High (Risk Score 24 - 53)

Risk scores in the high range are indicative of conditions that could lead to significant negative impacts from a storm, and actions should be taken to reduce the assets’ vulnerability and restore the assets’ coastal protections.

Severe (Risk Score >53).

A severe risk score represents that the assets are in a dangerous situation and that both exposure and vulnerability should be reduced.

South Valley Stream NY Rising Community Reconstruction Plan

Risk scores help identify assets with increased potential for storm damage and serve as one of many factors in developing the potential reconstruction strategies and projects included in the NYRCR Plan; see Section IV: Implementation—Project Profiles for further discussion on project evaluation. In addition to the risk score, other contributing factors in determining which assets should be addressed and how immediately they should be addressed include:

- The assets' contribution to life safety;
- If the asset(s) are critical or locally significant;
- The assets' community value;
- Environmental services provided by the assets;
- Economic contribution of the assets;
- Availability or alternative assets or facilities; and
- The capacity of the assets to adapt.

See Section V: Additional Materials for the complete Coastal Hazard and Risk Assessment Tool for the South Valley Stream Community.

Assets and Risks

Economic Assets

Figures 15 & 16 illustrates the risk of each group of Economic Assets included in the Asset Inventory and Risk Assessment.

Economic assets located along Rosedale Road and Mill Road lie in extreme risk areas and suffer from routine flooding. Of these, Chase Bank and Hoffner's Service Station are at extreme risk for future inundation. Hoffner's Service Station is regularly flooded during minor precipitation events. Key Food, an asset located just outside of the Community, lies within the extreme risk area, and when inundated, causes loss of service to the only grocery store within walking distance of the Mill Brook neighborhood. Small businesses in a strip shopping mall along Mill Road are also at high risk. Among the economic assets in South Valley Stream, the Green Acres Mall and Plaza are at moderate risk due to their higher elevation and greater distance from tidal flooding conditions than other economic assets in the Community.

Health and Social Services

Figures 16 illustrates the risk of Health and Social Services Assets included in the Asset Inventory and Risk Assessment.

Several schools in South Valley Stream are located in the high risk area, including Shalhevet High School, Valley Stream South High School, and Robert W. Carbonaro School. A day care near Valley Stream South High School and a physical therapy practice near Brook Road

Park are also at high risk (Figure 16). These assets are especially vulnerable due to the absence of protective vegetation and shore defenses around them. Most of the schools in South Valley Stream are at moderate risk such as Forest Road School, Ogden Elementary School, and Robert W. Carbonaro School. The Nassau County Police Department Booth 1, a FEMA-designated critical facility that serves the Fifth Precinct, is at moderate risk.

Housing Assets

Figures 16 illustrates the risk of Housing Assets included in the Asset Inventory and Risk Assessment, grouped by location, NYS Risk Area, and similar exposure characteristics.

Multi-family housing assets include the Vanderbilt Way Condominiums, which straddle the high and extreme risk areas, and are at high risk for future inundation. With two access roads both susceptible to flooding, the Mill Brook neighborhood is at high risk for future hazards, with Heatherfield Road at extreme risk where it borders Hook Creek. North Woodmere is also located entirely within a high-risk area. In general, single-story homes throughout South Valley Stream and those with basements or driveways below ground elevation are also particularly vulnerable.

Infrastructure Systems

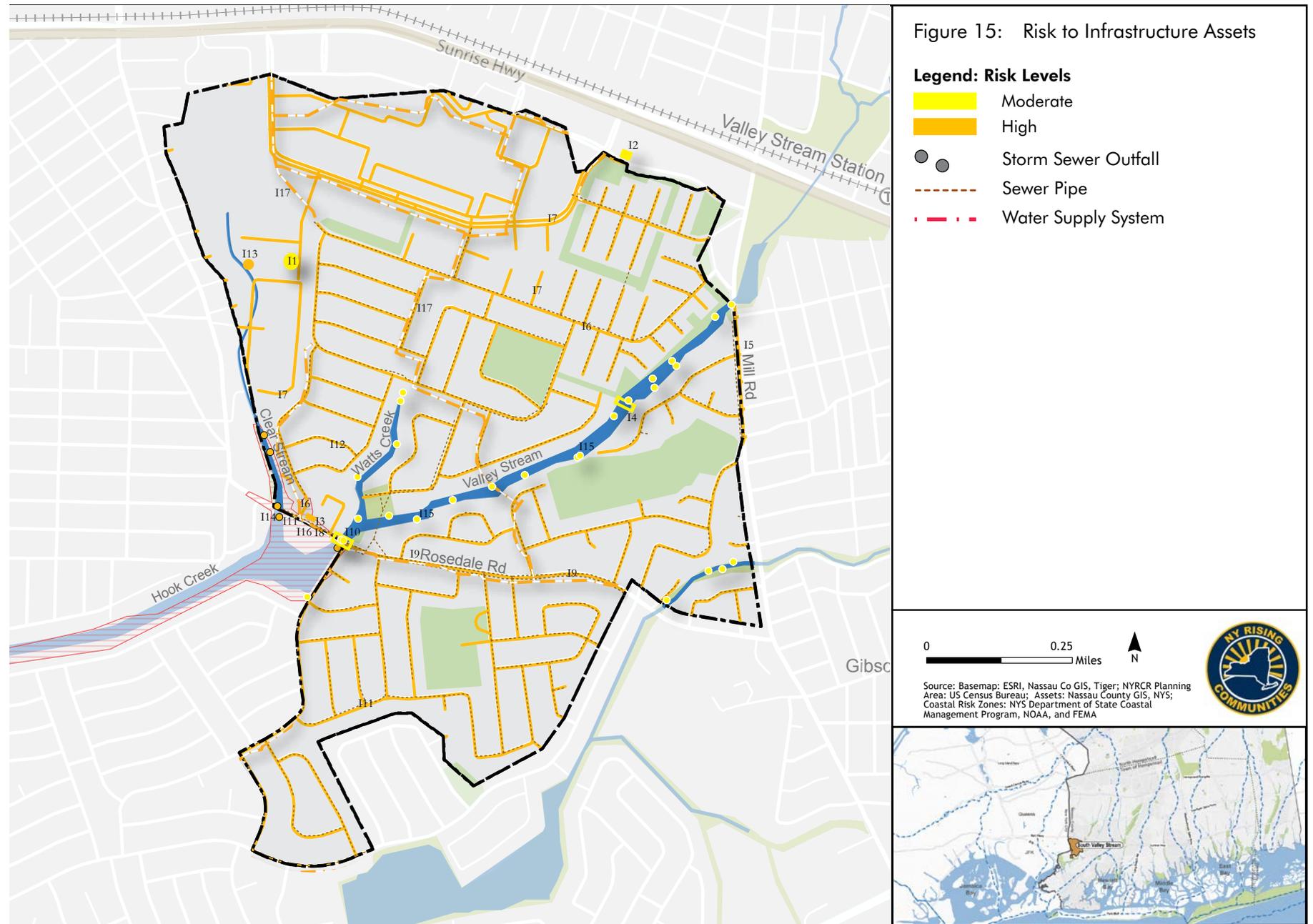
Figure 15 illustrates the risk of Infrastructure Systems Assets included in the Asset Inventory and Risk Assessment. As noted above, each infrastructure system (e.g., roadway assets) was analyzed as a group, and key segments of these

infrastructure systems that were noted as locally significant by the Committee (e.g., Rosedale Road) were analyzed separately.

The stormwater and sewer systems suffer varying degrees of extreme to moderate risk, and while their specific localized conditions are unknown, the storm sewer system in its current condition generally appears to be inadequate to handle high volumes. The storm sewer system within the Community was built in some cases half a century ago when upland development was not as dense as it is today. The existing system was constructed to handle flows from past development patterns and is not sized for current or future needs.

Sewer pipes throughout the South Valley Stream community are at high risk, as is the roadway network. Key elements of the roadway network are Rosedale Road and Mill Road, which are the main transportation arteries for the Community and are both at high risk. They also provide access to the only two entrances to the Mill Brook neighborhood, via connecting arterials Heatherfield Road and Old Central Avenue to Flower Road.

Fuel shortages after Superstorm Sandy increased the vulnerability of most assets beyond the infrastructure systems class, especially the ability of businesses to open and residents to recover from the storm. Therefore, all gas stations within South Valley Stream were noted as locally significant, including the Gulf Gas Station on Rosedale Road and the Shell Station located on Rosedale Road just outside of South Valley Stream but within the Five Towns Community.



Infrastructure Assets: Risk Level		
Asset ID	Asset Name	Risk Level
13	Gulf Gas Station	High
16	Roadway Assets_Extreme	High
18	Rosedale Rd_Extreme	High
111	Sewer Pipe_Extreme	High
116	Water Supply System_Extreme	High
17	Roadway assets_High	High
19	Rosedale Rd_High	High
112	Sewer Pipe_High	High
113	STC Five LLC Antenna	High
114	Stormwater Outfall_Extreme	High
117	Water Supply System_High	High
15	Mill Rd_High	High
14	Jedwood Place Pedestrian Bridge	Moderate
110	Rosedale Road Bridge	Moderate
115	Stormwater Outfall_High	Moderate
11	101 Green Acres Road Remediation Site	Moderate
12	Green Acres Mall Substation	Moderate

Legend: Risk Levels

- Residual
- Moderate
- High
- Severe

Electric utility systems maintained by the Long Island Power Authority are critical assets at especially high risk, including the substation on Flower Road, as power outages following Superstorm Sandy reportedly lasted for longer than one month. Limited natural gas infrastructure is maintained by National Grid. The only noted communications antenna in South Valley Stream is also at high risk.

Natural and Cultural Resources

Figure 16 illustrates the risk of Natural and Cultural Resources Assets included in the Asset Inventory and Risk Assessment.

Brook Road Park and the fields at Valley Stream South High School, Ogden Elementary School, and Robert Carbonaro School are all recreational assets located in the high risk area. Temple Hillel is also at high risk for future inundation. Congregation Ohr Torah and Fosters Brook Lower are at moderate risk, but both are close to Motts Creek and the Congregation Ohr Torah is located on filled wetland.

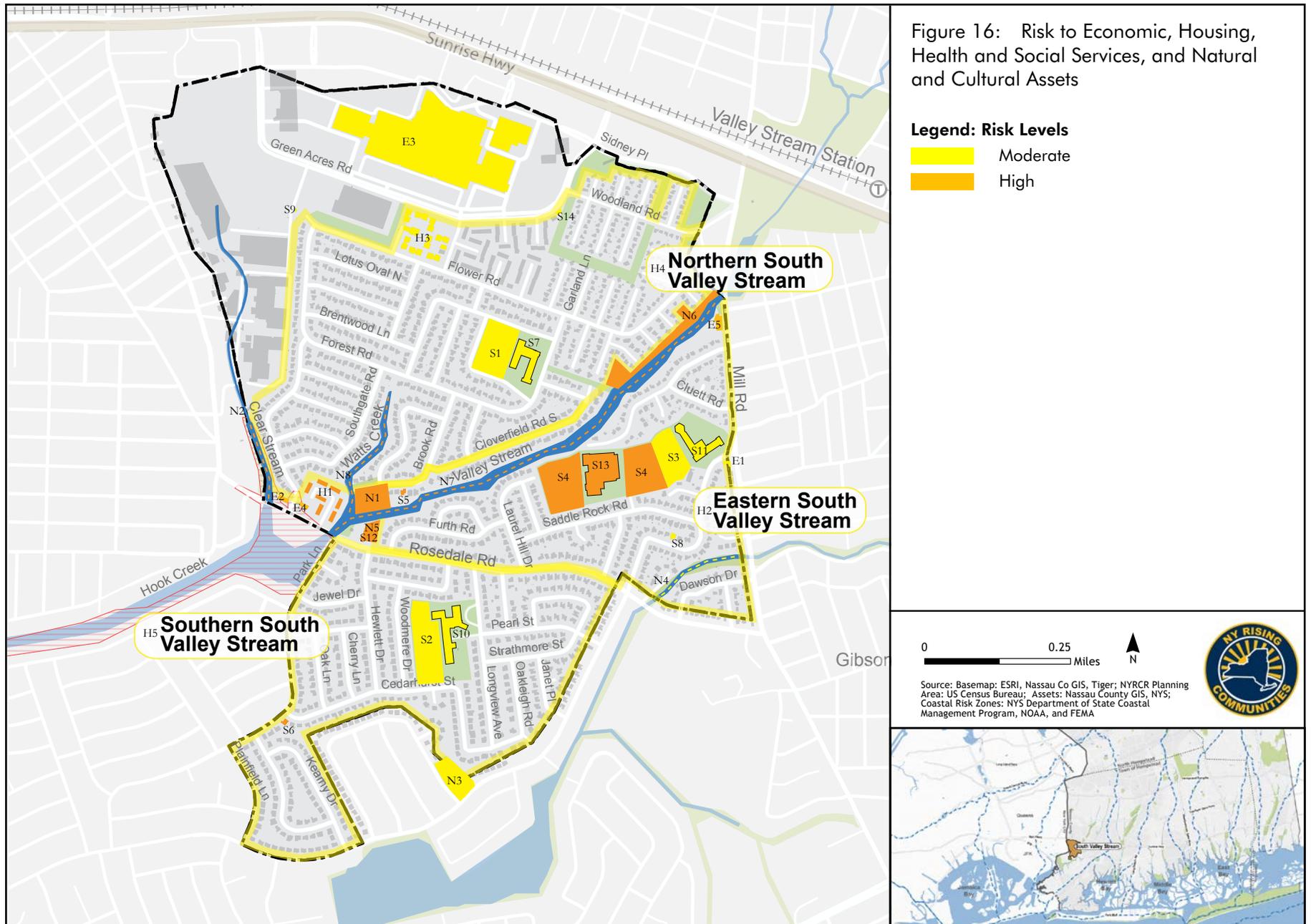
Socially Vulnerable Populations

Figures 16 illustrates assets serving socially vulnerable populations included in the Asset Inventory and Risk Assessment.

The Forbin Francoise day care center, Shalhevet High School, and Valley Stream South High School are all at high risk for future storm events. Shalhevet High School and Valley Stream South High School are highly vulnerable because they are located along Valley Stream; however,

Valley Stream South benefits from being built at a slightly higher elevation. Forbin Francoise day care center is located further inland but can experience flooding from both Valley Stream to the north and Fosters Brook lower to the south.

Facilities at moderate risk include Ogden Elementary School, Forest Road School, Robert Carbonaro School, and Harbor Kidz Day Care. The Green Acres Senior Center and Yale Academy are at comparatively lower risk, but are still considered at moderate risk for future storm events.



Economic Assets: Risk Level

Asset ID	Asset Name	Risk Level
E2	Chase Bank	High
E4	Hoffner’s Service Station	High
E5	Mill Road Shopping	High
E1	Auto Repair Shop	Moderate
E3	Green Acres Mall	Moderate

Housing Assets: Risk Level

Asset ID	Asset Name	Risk Level
H1	Condominiums on Vanderbilt Way	High
H2	Eastern South Valley Stream Housing Assets	Moderate
H4	Northern South Valley Stream Housing Assets	Moderate
H5	Southern South Valley Stream Housing Assets	Moderate
H3	Green Acres Senior Center	Moderate

Health and Social Service Assets: Risk Level

Asset ID	Asset Name	Risk Level
S4	Athletic Fields (Valley Stream South High School)	High
S5	Audrey L. Gulian, Physical Therapy	High
S6	Forbin, Francoise Daycare	High
S12	Shalhevet High School (at Temple Hillel)	High
S13	Valley Stream South High School	High
S1	Athletic Fields (Forest Road School)	Moderate
S2	Athletic Fields (Ogden Elementary School)	Moderate
S3	Athletic Fields (Robert W. Carbonaro School)	Moderate
S7	Forest Road School	Moderate
S8	Harbor Kidz Day Care	Moderate
S10	Ogden Elementary School	Moderate
S11	Robert Carbonaro School	Moderate
S9	NCPD Booth I	Moderate
S14	Yale Academy	Moderate

Natural and Cultural Resource Assets: Risk Level

Asset ID	Asset Name	Risk Level
N2	Clear Stream	High
N1	Brook Road Park	High
N5	Temple Hillel	High
N6	The Path	High
N7	Valley Stream	High
N8	Watts Creek	High
N4	Fosters Brook Lower	Moderate
N3	Congregation Ohr Torah	Moderate

Legend: Risk Levels

- Residual
- Moderate
- High
- Severe

C. Assessment of Needs and Opportunities

Superstorm Sandy exposed the greater system-wide inadequacy of existing flood mitigation and protection systems in South Valley Stream, as well as the need for more robust comprehensive planning. The objective of the Needs Assessment is to evaluate the potential for increased resilience in the short, medium, and long term in South Valley Stream. The following section builds upon the initial evaluation of the needs and opportunities within the Community, which was presented in the NYRCR Conceptual Plan. This more detailed Assessment of Needs and Opportunities was refined through additional analysis of the assets and risks within the Community and demographic and economic data and through input from the Committee and the public.

For each of the six Recovery Support Functions, the following Needs Assessment has identified areas in which South Valley Stream could improve its resilience to major storms and other disasters. This analysis incorporates input that the Committee received at Planning Committee Meetings and Public Engagement Events and has helped to guide the Committee identify strategies to guide the process and projects that will contribute to resilience in South Valley Stream.

Community Planning and Capacity Building

To assess needs for Community Planning and Capacity Building, South Valley Stream was studied for its ability to:

- Mobilize storm recovery activities;
- Adequately educate residents; and
- Implement long-term plans to mitigate storm damage.

Public education and awareness in relation to emergency preparedness emerged as a critical need due to the presence of disbursed vulnerable populations and because so many residents did not evacuate prior to Superstorm Sandy making landfall. Existing regional plans that included South Valley Stream were studied for their specific focus on resilience to major storms. The Needs Assessment also reviewed Nassau County and Town of Hempstead programs and land use policies that impact resilience on the Community.

Community Planning and Capacity Building Needs

Nassau County is currently in the process of updating the Nassau County Multi-Jurisdictional Hazard Mitigation Plan (Hazard Mitigation Plan). While the Hazard Mitigation Plan was originally implemented in 2007, the current update is meant to help prioritize mitigation projects in the future, using the risks exposed by Superstorm Sandy as a way to learn more about potential damage from natural disasters in the future.²³ As a community that was heavily

impacted by the flooding caused by Superstorm Sandy, representatives from South Valley Stream should play an integral role in providing data to the Nassau County Office of Emergency Management. The development of an updated Hazard Mitigation Plan presents an opportunity for South Valley Stream to gain additional resources and attention from Nassau County in creating plans to protect the community from future storms.

Nassau County also has other programs to help residents, including those in South Valley Stream, remain prepared for extreme weather and other disasters. For example, the SWIFTREACH program, instituted by County Executive Edward Mangano, sends information and emergency notification updates to email addresses and cellphone numbers. The Town of Hempstead provides a similar emergency notification system, Swift911.

Community Planning and Capacity Building Opportunities

To provide more effective education campaigns, South Valley Stream has an opportunity to benefit from the institutional resources possessed by the Town of Hempstead and Nassau County, as well as the local knowledge of the Mill Brook Civic Association. Greater coordination between the Town and the County with local community-based organizations can help to better educate residents and improve disaster preparedness and recovery. Improved communication, information sharing, and awareness can help to facilitate emergency



Green Acres Mall

response by connecting external resources to those in need.

To improve public education and preparedness, South Valley Stream can build upon a strong network of community-based organizations, civic pride, and neighborhood education to strengthen outreach. The Mill Brook Civic Association has served as an advocate for residents in South Valley Stream, and Project Hope has proven to be a critical asset in reaching people impacted by Superstorm Sandy across Nassau County. Efforts such as these could be combined to help connect relief organizations with a greater number of residents.

Economic Resiliency

Although the business community in South Valley Stream includes a variety of small businesses, Green Acres Mall is the clear retail anchor. Since opening as a super-regional center in 1956,²⁴ Green Acres Mall has been an important asset in that it provides the greatest share of tax dollars in the Community. The Mall and surrounding retailers were the least impacted of all economic assets in South Valley Stream, as they are located on higher ground. Therefore, as a large facility with backup power at only moderate risk, Green Acres Mall could serve a higher utility for disaster recovery.

Even though the residential neighborhoods within South Valley Stream are physically cut off from the mall, the Community relies on this retail anchor for both services and for the tax revenue that it provides to schools in the Community. However, in the long-term, over-reliance on Green Acres Mall could create vulnerabilities in South Valley Stream from heavy dependence on a single economic asset, especially since national trends show a decline in the popularity of malls in an era of online retail²⁵. The long-term viability of the mall is important to South Valley Stream from a fiscal standpoint. The Mall's tax contribution of more than \$13 million to local schools is a vital component of long-term economic resilience in South Valley Stream.²⁶ Without the property taxes generated by the mall, local property tax rates would likely have to increase dramatically to support the cost of existing public services, including emergency management and infrastructure investments. Therefore, the South Valley Stream Community should be ready to respond in a proactive rather than a reactive manner should the mall follow national trends of decline. (Note: for details on

property tax contributions by Green Acres Mall, see Section V: Additional Materials).

Further, the Community should see to support smaller, local businesses, especially those which were damaged by Superstorm Sandy. These businesses include those along Rosedale Road and Mill Road, some of which are also subject to routine flooding.

Economic Resiliency Needs

- Ensure local businesses have the business continuity resources they need to reopen as a result of a storm event.
- Market local businesses and make sure that residents are aware when local businesses reopen following a storm event.²⁷
- Consider whether certain businesses (for example, the small businesses located on Rosedale Road) could be relocated to a non-flood prone location.
- Diversify the tax base by supporting new businesses that will help fill employment and tax base gaps should Green Acres Mall decline with market trends.

Economic Resiliency Opportunities

- Opportunity to engage developers to look at mutually beneficial redevelopment opportunities for commercial and industrial vacancies within (and on the border of) South Valley Stream. As of fall 2013, vacant properties were located on West Sunrise Highway (four vacancies), in the Airport Industrial Office Park (one vacancy), and in a Green Acres Mall Pad Site.²⁸
- Consider commercial opportunities for

services, entertainment, and dining to diversify the tax base.

- Create an economic development plan for South Valley Stream to guide future growth.

Health and Social Services

In the event of a future disaster that impacts South Valley Stream, it is critical that public health, health care facilities, and essential social service needs are restored to best serve businesses and residents in the Community. The Committee gave extra focus to the needs of assets that serve socially vulnerable populations, including children, the elderly, and people with disabilities or limited mobility.

Health and Social Services Needs

Nearly the entire area of South Valley Stream was inundated by Superstorm Sandy. Although some structures within the Community were built at a higher elevation and avoided flooding, many organizations that serve socially vulnerable populations were impacted by the storm due to building damage, impassable roads, and power outages.

Health and Social Services assets in South Valley Stream could better provide comprehensive services after future storms if they were able to improve their means of communication, emergency recovery capabilities, and ability to operate after extreme conditions have passed.

Communication issues in South Valley Stream fit into three primary categories: education and preparedness, resilience to power outages, and reaching vulnerable populations. Education

and preparedness is an issue that relates to all residents in South Valley Stream. The Mill Brook Civic Association assigns block captains to coordinate neighbors; however this program does not extend to the North Woodmere neighborhood and could benefit from improved technology and face-to-face interaction among neighbors. Power outages are a persistent risk during extreme weather, making it critical to develop communication strategies that are not dependent on grid-based power sources. Vulnerable populations, such as the elderly and people with disabilities or limited mobility, are dispersed throughout South Valley Stream. There is a need to create a database to make sure that individual residents are accounted for after an emergency.

Emergency recovery in South Valley Stream necessitates the siting of facilities in accessible locations on high ground that provide resources to local residents in the event of significant flooding, power outages, extreme heat events, nor'easters, or other disasters. These facilities require the capability to serve as heating and cooling centers during power outages and when residents are unable to return to their homes following a flood event.

It is important for Health and Social Services assets, especially South Valley Stream's schools, to be able to withstand extreme weather events and bounce back quickly from disasters. The schools fulfill critical functions and provide resources to local children and their families and these facilities during recovery.

Assistance is necessary during evacuation and emergency response for elderly populations,



Identifying Housing Needs and Opportunities

children and people with disabilities or limited mobility. The Nassau County Office of Emergency Management (OEM) is a key resource for evacuation and emergency response. However, OEM has experienced difficulty in identifying dispersed vulnerable populations that reside in private homes and are not concentrated in senior communities or other health care facilities.

Increased individual awareness of nearby vulnerable community members could complement Nassau County's formal emergency assistance protocols. With this understanding, the Community could better coordinate with the County for emergency operations and disaster response and could be better prepared to respond to conditions that may not qualify as a severe emergency but could still be disruptive, especially to vulnerable residents.

Health and Social Services Opportunities

South Valley Stream is well-placed to promote the independence and preparedness of socially vulnerable populations in the event of future disasters. Strategies that could be considered to build upon existing social networks in the Community range from having emergency response plans, to utilizing existing infrastructure to serve residents during emergencies, to creating a system of tracking socially vulnerable populations within the Community.

Active civic organizations within the Community can help to establish more formal emergency response and recovery plans. The Mill Brook Civic Association and parent-teachers associations at the Hewlett-Woodmere Union Free School District and the Valley Stream Union Free School District are all heavily involved in their communities and well-connected to a network of residents. By creating a coordinated disaster plan, these groups could provide education and resources to many households in South Valley Stream. Further, the existence of an established Civic Association in Mill Brook presents an opportunity to expand this organization’s reach by partnering with residents in North Woodmere. Of particular impact would be an expansion of the Mill Brook Civic Association’s block captain program.

Green Acres Mall could also serve as a critical resource in the event of a future disaster. The mall has existing backup power supplies and could serve as an informal heating and cooling center. Residents also used the mall’s parking lot for storing personal vehicles during and in the aftermath of Sandy, making it a potential location for future emergency parking.

Because of its deep connections to the Community, the Mill Brook Civic Association could assist the County in identifying vulnerable populations using social networks within Mill Brook and North Woodmere. By working with local organizations such as the Mill Brook Civic Association to locate the most vulnerable people during a storm event, the County could better monitor the need for assistance. In addition, LIPA maintains a list of vulnerable residents, which could be used by Nassau County OEM to locate vulnerable populations, pending the resident’s authorization to share this information with the County.

Housing

The Assessment of Needs and Opportunities for Housing guided the Committee’s process in developing strategies to achieve local housing goals. This section takes into account both the impact of Superstorm Sandy on residential areas within the Community and the impact of projected housing trends on future risk to residents in South Valley Stream.

Housing Needs

As a result of damage from Superstorm Sandy, some homes in South Valley Stream still require repair, additional housing is necessary for displaced residents. Further, homes need to be repaired in a way that makes them more resilient against future storm events, to maintain the residential, neighborhood character of South Valley Stream. A more resilient housing stock could help stabilize property values and preserve neighborhood integrity.

The Storm highlighted the need for improved coordination of evacuation for vulnerable populations prior to storm events, identification of where vulnerable populations reside, and improved provision of resources to these populations following storm events.

Housing Opportunities

Immediate opportunities exist for short-term repairs and physical flood prevention measures to houses that continue to flood regularly, such as dry-proofing or wet-proofing. However, more lasting solutions are required for long-term recovery, such as relocation of utilities or removing recessed garages and basements. Therefore, homeowners could benefit from

incentives to undergo home retrofits that improve the resiliency of South Valley Stream’s housing stock.

In addition, the Community could advocate for strengthening residential building codes for storm resilience. This would also contribute to a sense of safety and trust in South Valley Stream’s housing stock. Housing values are a concern to some residents of South Valley Stream, but long-term recovery presents an opportunity to increase property values by making homes more resilient against future storm events. The Community could examine housing trends to see which issues can be addressed, in a context-appropriate manner, by future residential development.

Lastly, South Valley Stream could capitalize on the opportunity presented by its close knit social infrastructure of the Mill Brook Civic Association to identify vulnerable populations and implement evacuation strategies for vulnerable populations.

Infrastructure

Improving infrastructure was identified as a primary need in the Community. Upgrades could strengthen coastal protections, improve storm drainage water capacity, expand storm drain networks, and build a more reliable power grid and transportation network system. These infrastructure improvements will benefit the local planning area and will add to the resiliency of neighboring communities.

The Assessment of Needs and Opportunities for Infrastructure focused on systems that

not only failed during Superstorm Sandy and Hurricane Irene, but also result in flooding during less extreme events. By addressing these frequent infrastructure needs and identifying potential opportunities for improved systems, the Committee recognized that investments infrastructure have co-benefits that allow first responders to operate more effectively and support economic resilience by protecting local businesses.

Infrastructure Needs: Flooding and the Stormwater Drainage Systems

The Valley Stream system accumulates stormwater from upstream in its watershed as the water flows to Hook Creek and on to Jamaica Bay. In addition to this load, water from spring tides and tidal flows also enter the system, creating backups. The amount of water entering the system cannot exit at the same rate and results in flooding of within the Community. The small area of pervious surfaces in the planning area limits the potential for infiltration and increases the need for other types of runoff water storage facilities.

The increase in stormwater runoff, inadequate drainage system capacity, and the potential for increased coastal flooding due to climate change leave South Valley Stream susceptible to flooding events. According to public feedback, since Superstorm Sandy, spring tides (the exceptionally high and low tides that occur when the Sun, Moon, and Earth are approximately aligned) have been regularly flooding the areas around the head of Hook Creek in North Woodmere. The conditions of bulkheads in the South Valley Stream Community have



Existing Intact Bulkhead



Existing Compromised Bulkhead



Existing Deteriorated Bulkhead

deteriorated, leading to increased erosion. In most areas, outlet pipes do not have backflow prevention valves to keep water from entering into the system at high tide. In low lying areas near Valley Stream and Hook Creek, these open pipes allow water to backflow in the stormwater system and up through the catchment basins, creating street flooding during high tide.

Flooding also occurs farther north in the South Valley Stream area due to an inadequate stormwater sewer system. The existing system, even if it were clear of obstructions, has insufficient capacity to convey current load. The interior condition of the stormwater sewer system was unknown before Hurricane Irene and Superstorm Sandy, but since the storms, noticeable buildup of silt and debris within the stormwater conveyance system has been identified. This buildup impedes the discharge of stormwater, further exacerbating flooding.

As many as 23 stormwater outfalls are located along Valley Stream, Watts Creek, and Clear Stream, as well as four outfalls located along Fosters Brook Lower. The condition of these outfalls is not known. A hydrologic and hydraulic study is necessary to determine the existing stormwater system flows and capacity, deficiencies within the system, and recommended improvements to the system.

After stormwater exits the stormwater system, the tributaries of Valley Stream, Clear Stream, and Watts Creek naturally carry stormwater to Hook Creek and on to Head of Bay. The ability of these stream systems to convey stormwater depends in part on their carrying capacity, which is a function of the depth and width of

the channel and the gradient, as well as other obstructions in the channel. It is suspected that Superstorm Sandy and other storm events have deposited silt in these channels and reduced the carrying capacity. Additionally, the footbridge over Valley Stream at Cloverfield Road North has been removed but the abutments remain and extend into the stream bed, likely reducing drainage capacity.

Some of the bulkheads in the Community are deteriorating, and the riverbanks along Valley Stream, Watts Creek, Clear Stream, and Hook Creek have become destabilized over the years. Shoreline restoration along key corridors in South Valley Stream, including Clear Stream, Valley Stream, Watts Creek, and Fosters Brook Lower, would likely decrease flooding by making improvements to bulkheads, restoring ecosystem functions, removing sediment, and stabilizing riverbanks.

Utilities

In addition to stormwater sewer system inadequacies, Superstorm Sandy illustrated the weaknesses of the South Valley Stream Community's utility systems. Currently, the majority of the Community is powered solely by electrical power, with all of the electrical wires above ground and susceptible to damaging winds and windborne debris. The effect of Superstorm Sandy was not just flooding, but the weeks and months after the storm during which the community went without power and without the ability to produce heat and hot water within their homes without the aid of generators. Although natural gas can be a vital backup source for heat and power when electrical

utilities are down, according to the Committee, the number of homes and businesses with natural gas connections is limited.

Infrastructure Opportunities

Despite the many challenges presented by overtaxed and unmaintained infrastructure in the South Valley Stream Community, there are also several opportunities to build upon the systems that exist, making stormwater, flood protections, and utilities networks more resilient to future disasters. Since many of these systems are regional in nature, the NYRCR Plan may help draw attention to the need for coordination by Nassau County and the Town of Hempstead in encouraging projects in upstream communities to reduce stormwater runoff and increase the capacity of the drainage system.

Also at a regional level, residents of the Community and representatives of the County and Town could participate in the study of regional tide water control measures in Jamaica Bay, at Rockaway Inlet, and at the barrier island. There is limited potential to resolve the risk of tidal flooding within the boundaries of South Valley Stream, so a regional approach is critical to addressing future risk of catastrophic storms like Superstorm Sandy.

While stormwater runoff is a major issue in South Valley Stream, a strategic approach to the implementation of green infrastructure strategies alongside traditional stormwater management measures could create a comprehensive response to a widespread problem. A County-wide stormwater mitigation plan would help to guide these strategies,



'The Path' During Flood Condition

which could include incentives to implement green infrastructure and subsurface stormwater retention, installation of backflow preventers on stormwater outfalls, and the establishment of guidelines for the maintenance of the existing drainage structures and channels and maintenance of any new or planned drainage structures.

Finally, opportunities also exist to create a more resilient power grid that is less susceptible to outages. A more resilient power grid would utilize renewable energy and microgrids to provide backup power to critical and locally significant facilities.

Natural and Cultural Resources

The Assessment of Needs and Opportunities for Natural and Cultural Resources addresses the impact that Superstorm Sandy, Hurricane Irene, and other major storms have had on the ability of coastal protections, such as bulkheads and living shorelines, in mitigating future inundation.

Natural and Cultural Resource Needs

Tidal flows from major storms and the failure of erosion control structures have resulted in increased sedimentation buildup within Valley Stream, Hook Creek, and their tributaries. This limits the amount of extra storage capacity within these water bodies during storm events, particularly during high tide. The increased sedimentation and debris routinely washes onto residential properties in South Valley Stream because of the inadequate storage capacity, eroded banks, and deteriorated bulkheads.

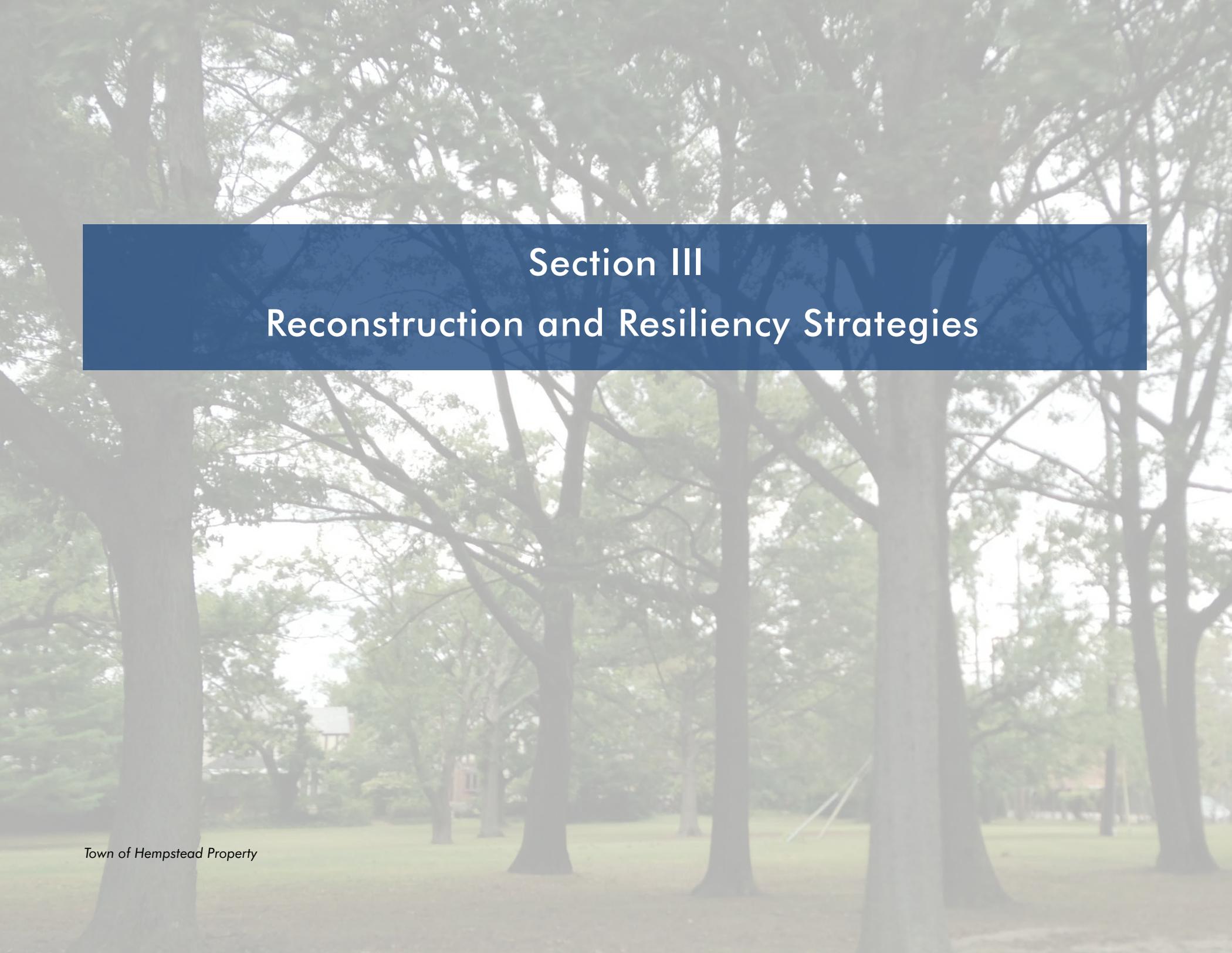
Natural resource assets contribute to environmental quality and public health. Street trees in the Community help filter air pollutants, reducing illnesses such as asthma, cooling air temperatures and conserving energy. Trees and natural areas, such as Brook Road Park and "The Path," can reduce and filter stormwater runoff before it reaches waterways, thus improving water quality. Although the South Valley Stream Community has open space and recreation space, an increase in green infrastructure would be very beneficial for stormwater detention/retention. South Valley Stream does not have adequate space to develop large wetland areas to act as buffers between the Community and tidal and stormwater flows, which creates a need to develop green infrastructure in existing open spaces. Green infrastructure solutions

will also require a long-term management strategy including community education and ongoing maintenance. Athletic fields, Brook Road Park, and other parks provide opportunities for green infrastructure and educational opportunities. Further, these natural assets provide benefits such as increasing property values, neighborhood beautification, and traffic calming.

In recent years, Superstorm Sandy and other major storms, including Hurricane Irene, have damaged and severely diminished the vegetation in the South Valley Stream area. Multiple locations in the area, most notably "The Path," are in need of replanting, which would increase the absorption capacity of the area and reduce stormwater runoff and flooding. While new tree plantings are needed, proper maintenance is also required to reduce the possibility of damage to power lines, as was experienced during Superstorm Sandy.

Natural and Cultural Opportunities

The South Valley Stream Community can build upon the many parks, open spaces, and living shorelines to improve stormwater retention and mitigate inundation. Living shorelines along Valley Stream, Clear Stream, Watts Creek, Fosters Brook Lower, and Hook Creek have experienced erosion, but the riverbanks could be stabilized to restore the stream corridors. Bulkheads that are in disrepair could be repaired or replaced to provide additional erosion protections. Improved tree maintenance and reforestation of "The Path" could provide opportunities for wetlands restoration and increased buffering of Valley Stream, while restoring the natural shoreline along "The Path" to improve absorption capacity.



Section III

Reconstruction and Resiliency Strategies

SECTION III: RECONSTRUCTION AND RESILIENCY STRATEGIES

The South Valley Stream NY Rising Community Reconstruction (NYRCR) Planning Committee (Committee) developed a series of Reconstruction Strategies that emerged from the public engagement process:

- **Strategy 1: Manage Tidal Flow;**
- **Strategy 2: Retain Stormwater;**
- **Strategy 3: Reinforce the Power Grid;**
- **Strategy 4: Strengthen Communication and Coordination; and**
- **Strategy 5: Maintain and Enhance Economic Viability.**

These strategies were used to guide the development of the South Valley Stream NY Rising Community Reconstruction Plan (NYRCR Plan) (Figure 17). Together, they effectively address each of six Recovery Support Functions.

Based on input from the Planning Committee, feedback from Public Engagement Events, and the outcome of the Needs and Opportunities

Strategy 1: Manage Tidal Flow

Though Superstorm Sandy was an unprecedented event, the sources and causes of flooding observed during the disaster are regularly reflected on a smaller scale during high tides, rain storms, and nor'easters. Due to the low elevation of the development throughout the Community and immediately adjacent to the water, the creek shorelines in South Valley Stream provide incomplete protection against certain levels of tidal inundation. Inundation from tidal waters occurs relatively frequently and is expected to increase as a result of climate change, which increases both the general sea level and the frequency of extreme events such as high wind induced surges.

Assessment and Risk Assessment, five strategies emerged to guide development and evaluation of Proposed and Featured Projects. These five strategies, which were introduced above, were used by the Committee throughout the NYRCR process to ensure that the Proposed and Featured Projects created a comprehensive set of solutions to the needs identified for South Valley Stream.

The Committee developed Proposed and Featured Projects to address the strategies. The Proposed and Featured Projects have been assessed for their ability to mitigate future risk, vetted by the Committee and the public; and categorized by their capacity to address the strategies described below.

A full description of Proposed Projects and Featured Projects can be found in Section IV: Implementation—Project Profiles.

Strategy 1 addresses the Infrastructure and Natural and Cultural Resources recovery support functions. Proposed and Featured Projects within Strategy 1 improve infrastructure by minimizing tidal flooding impacts through natural and man-made measures to manage tidal flow. Strategy 1 impacts natural and cultural resources because corridor restoration and riverbank stabilization, including bulkhead repair where appropriate, will help to prevent erosion along Hook Creek and Valley Stream.

STRATEGY 1: Manage Tidal Flow

Project Name	Short Description	Estimated Cost	Project Category	Regional (Y/N)
South Shoreline Improvement Program Study	Study methods for facilitating coordinated shoreline improvements to achieve a contiguous shoreline, including funding mechanisms, streamlining permitting, and incentivizing bulkhead repairs and living shoreline improvements.	\$50,000	Proposed	Y
Repair Bulkheads and Restore Shoreline at Brook Road Park	Provide necessary repairs to Brook Road Park by replacing failing bulkhead with a vegetated buffer and a rock edge, constructing a sculpted mound tied into the higher elevation to protect against tidal flooding, repairing outfalls, and constructing a fishing pier for waterfront access.	\$2,000,000	Proposed	N
Restore Natural Shoreline along 'The Path'	Restore the natural shoreline along 'The Path' by constructing a living shoreline to buffer tidal flow, planting trees and other vegetation, repairing outfalls and installing green infrastructure measures with educational signage to capture stormwater runoff.	\$1,700,000	Proposed	N
Corridor restoration and riverbank stabilization: Valley Stream, Clear Stream, Watts Creek, Fosters Brook Lower	This project seeks to establish continuous shoreline protection through bulkhead and living shoreline restoration, where appropriate, along water bodies in South Valley Stream.			
<i>Sub-project A: Watts Creek</i>	Living shoreline improvements would be made to both sides of Watts Creek.	\$1,520,000		
<i>Sub-project B North: Valley Stream North</i>	Living shoreline improvements would be made to the north side of Valley Stream between Brook Road Park and the Path.	\$1,100,000		
<i>Sub-project B Southwest: Valley Stream Southwest</i>	The Bulkheads would be repaired along the western portion of the south side of Valley Stream.	\$2,700,000	Featured	N
<i>Sub-project B Southeast: Valley Stream Southeast</i>	Living shoreline improvements would be made to the eastern portion of the south side of Valley Stream.	\$1,300,000		
<i>Sub-project C: Clear Stream</i>	Bulkheads would be repaired along both sides of Clear Stream.	\$2,800,000		
<i>Sub-project D: Fosters Brook Lower</i>	Living shoreline improvements would be made to both sides of Fosters Brook Lower.	\$1,000,000		

Strategy 2: Retain Stormwater

Strategy 2 is a response to the potential for dangerous flooding that could occur during large storms that bring a greater extent of rainfall than occurred during Superstorm Sandy. Strategy 2 also addresses more frequent flooding that occurs during much smaller rain events, ranging from tropical storms, nor'easters, and even light rains accompanied by everyday high tides. Many roads in South Valley Stream experience recurring flooding because the stormwater drainage system is not operating properly at lower elevations. The drainage system capacity is not sufficient to handle current and future conditions and siltation of the pipes and recurring tidal flows have reduced the ability of the system to function at its intended capacity. Mitigating frequent flooding due to

stormwater backups will serve everyday benefits while also limiting the risk posed by severe flooding due to inadequate stormwater infrastructure. These sources of flooding are systemic throughout the Community and have exacerbated risk during extreme events.

Strategy 2 addresses the recovery support functions of Community Planning and Capacity Building, Infrastructure, and Natural and Cultural Resources. Proposed and Featured Projects within Strategy 2 contribute to community planning and capacity building by encouraging policy changes to improve stormwater management controls over future development and by providing additional tools to educate the

STRATEGY 2: Retain Stormwater

Project Name	Short Description	Estimated Cost	Project Category	Regional (Y/N)
Develop Community Information regarding Green Infrastructure and Living Shorelines	Educate the community about living shoreline plantings and improvements, tree pruning near power lines, and ways to reduce their individual impact on the stormwater system through green infrastructure, water conservation, and rain water harvesting.	\$60,000	Proposed	N
Coordinate with Hydrologic and Hydraulic Study of Hook Creek – Head of Bay Watershed	Advocate for an engineering study that would provide a regional, watershed-level understanding of the hydrology affecting South Valley Stream, to better inform stormwater management projects.	N/A	Featured	Y
Green Infrastructure Implementation Program on Residential and Public Property	Install green infrastructure on public property and rights-of-way, and incentivize green infrastructure installation on residential property. Goal is to capture 5% of stormwater falling on impervious surfaces.	\$2,300,000	Featured	N
Stormwater Infrastructure Upgrades	Conduct a Hydrologic and hydraulic study on the stormwater system to determine deficiencies; install check valves, upgrade stormwater pipes, drains, and catch basins as recommended by the study.	\$2,000,000	Featured	N
County-wide Stormwater Mitigation Plan	Coordinate with Nassau County to develop a stormwater system maintenance and monitoring plan which will identify maintenance needs to prevent system backups.	\$500,000	Featured	Y
Encourage Implementation of Green Infrastructure and Subsurface Stormwater Retention at Green Acres Mall, including Sunrise Multiplex site	Encourage utilization of green infrastructure at Green Acres Mall, as well as redevelopment of Sunrise Multiplex that supports long-term economic stability while controlling stormwater through green infrastructure and subsurface retention.	N/A	Featured	N

community about ways to reduce individual impact on the stormwater system. Strategy 2 helps to improve infrastructure by addressing the intersection between green infrastructure, including living shorelines such as “The Path;” and more traditional infrastructure such as storm

drains and outfalls. Strategy 2 impacts natural resources in South Valley Stream by increasing stormwater retention capacity through man-made and nature-based systems.

Strategy 3: Reinforce the Power Grid

Like many communities in Nassau County, South Valley Stream experienced severe power outages during Superstorm Sandy. A more resilient power grid would allow critical community resources to operate in the event of a future disaster, it would also increase the Community’s resiliency by stabilizing communication systems, improving operations at warming and cooling centers, and helping schools get back in service more quickly after disasters. Recovery support functions addressed by Strategy 3 include Infrastructure and Health and Social Services. Proposed and Featured Projects in Strategy 3 address infrastructure by providing redundancy in electricity infrastructure and establishing alternative sources of energy by identifying critical facilities, such as Forest Road

School or Green Acres Mall, that would benefit from implementation of microgrids or resilient communication systems. Strategy 3 addresses health and social services by providing places of refuge during extreme weather by establishing warming/cooling centers at available facilities within South Valley Stream.

Risks to vulnerable populations are amplified during power outages that interrupt communications networks to critical support services and the need for electricity to power personal medical devices. Strategy 3 helps to mitigate those risks by providing backup power sources to prevent utility service interruptions.

STRATEGY 3: Reinforce the Power Grid

Project Name	Short Description	Estimated Cost	Project Category	Regional (Y/N)
Implement Microgrid Network Pilot Project	Develop a microgrid storm resistance plan and implement micro-grid pilot project connecting to locally significant facilities.	\$6,000,000	Featured	N
Establish Community Assistance Center at Forest Road School	Establish Forest Road School as a Community Center Assistance Center as well as a warming / cooling location for the community to obtain resources after storm events.	N/A	Featured	N

Strategy 4: Strengthen Communication and Coordination

Strategy 4 seeks to improve the capacity, communication ability, and coordination among emergency response groups and civic organizations that are active in South Valley Stream. Strategy 4 addresses the recovery support function of Community Planning and Capacity Building. Superstorm Sandy exposed the challenges that communities like South Valley Stream face in coordinating with regional emergency management organizations and in playing a proactive role in helping neighbors who are especially vulnerable to disaster risks. Even residents who are active in South Valley Stream, including members of the Mill Brook Civic Association, require greater support in spreading information

about disaster preparedness and in finding ways to stay in contact with neighbors who need assistance during extreme weather.

Strategy 4 addresses risks to vulnerable populations by improving coordination between the Mill Brook Civic Association and Nassau County Office of Emergency Management (OEM) to improve education and awareness about disaster preparedness and emergency response. By strengthening local communication networks, Strategy 4 will help to identify vulnerable populations who need assistance with emergency operations and response.

STRATEGY 4: Strengthen Communication and Coordination

Project Name	Short Description	Estimated Cost	Project Category	Regional (Y/N)
Establish a South Valley Stream Community Emergency Response Team (CERT)	Coordinate with Nassau County OEM and CERT to establish a local CERT Team that would assist with disaster response planning efforts, increase preparedness and disaster response capability, and provide local education programs.	\$2,500	Featured	N

Strategy 5: Maintain and Enhance Economic Viability

Strategy 5: serves to help stabilize residential and commercial neighborhoods that have struggled to recover from Superstorm Sandy while also making South Valley Stream better prepared to bounce back from future disasters. Strategy 5 addresses the recovery support functions of Economic Resiliency and Housing.

The economic strain, blight, and displacement caused by Superstorm Sandy have the potential to substantially impact the existing mature, suburban character of the Mill Brook and North Woodmere neighborhoods. In the short term, Sandy has caused the reduction of home values in South Valley Stream. To maintain property values and the existing neighborhood character, residents need strategies that help make their homes more

resilient and reflective of Federal Emergency Management Agency (FEMA) requirements, support the economic base, improve public amenities, and restore the surrounding ecosystem. Proposed and Featured Projects in Strategy 5 promote Economic Resiliency by encouraging redevelopment that supports long-term economic stability while detaining stormwater through green infrastructure. Residential communities benefit from Strategy 5 because projects that strengthen the housing stock against future extreme weather events will help to stabilize property values and protect residents from future storms.

STRATEGY 5: Maintain and Enhance Economic Viability

Project Name	Short Description	Estimated Cost	Project Category	Regional (Y/N)
Resilient Home Construction Incentive Program	Establish a tax incentive program for homeowners who make resiliency home improvements and retrofits to strengthen the existing housing stock.	\$850,000	Featured	N

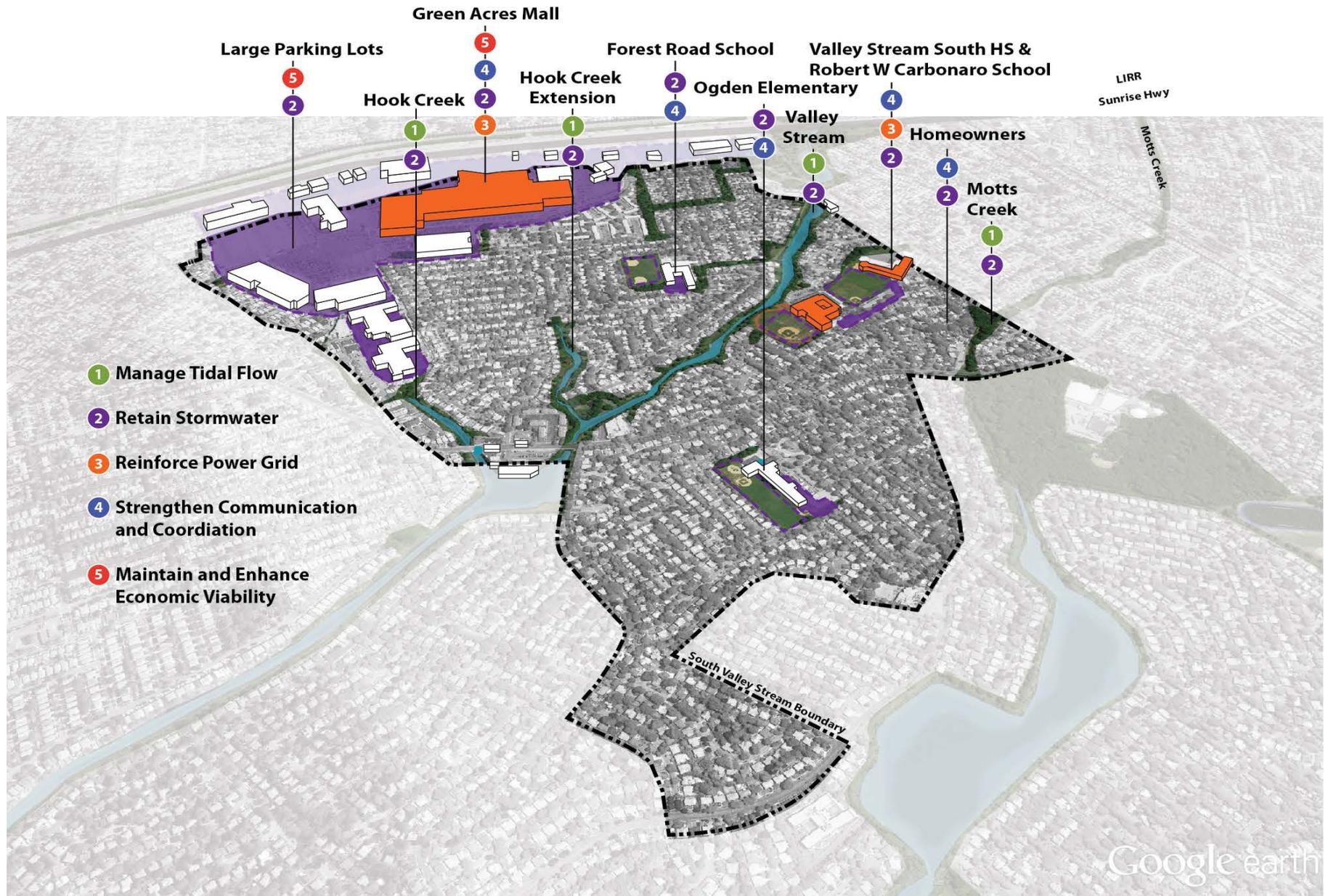


Figure 17: Key Strategy and Reconstruction Opportunity Sites

The background image shows a park scene. In the foreground, there is a chain-link fence. Behind the fence, a playground with wooden and blue equipment is visible. In the background, there are large green trees and a multi-story brick building. The sky is bright and clear.

Section IV

Implementation - Project Profiles

Brook Road Park

SECTION IV: IMPLEMENTATION PROJECT PROFILES

The NYRCR Program has allocated to the Community up to \$3 million. The funding is provided through the U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant – Disaster Recovery (CDBG-DR) program. While developing projects and actions for inclusion in the NYRCR Plan, Planning Committees took into account cost estimates, cost-benefit analyses, the effectiveness of each project in reducing risk to populations and critical assets, feasibility, and community support. Planning Committees also considered the potential likelihood that a project or action would be eligible for CDBG-DR funding.

The projects and actions set forth in the NYRCR Plan are divided into three categories, as described below. The order in which the projects and actions are listed in the NYRCR Plan does not necessarily indicate the Community's prioritization of these projects and actions.

Proposed Projects are projects proposed for funding through the Community's allocation of CDBG-DR funding.

Featured Projects are projects and actions that the Planning Committee has identified as important resiliency recommendations and has analyzed in depth, but has not proposed for funding through the NYRCR Program.

Additional Resiliency Recommendations (see Section V) are projects and actions that the Planning Committee would like to highlight and

that are not categorized as Proposed Projects or Featured Projects.

The total cost of Proposed Projects in the NYRCR Plan exceeds the 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.

Project Profiles

This section provides an overview of each proposed and featured NYRCR project including the attributes listed below.

Project Description: details a brief summary of the project, including tasks, components, or phases.

Cost Estimate: provides an estimated cost to implement the project. All costs are preliminary and based on available data as well as an understanding of the issues learned through site visits, Committee member knowledge and feedback, and input from the Community. Local government entities and nonprofit organizations also provided input regarding project scope and

estimated costs. As available, Construction costs are based upon similar projects that have been constructed within the greater Nassau County area. Where applicable, actual construction cost quotes from vendors were used. Each phase within a project (design, construction, construction management and other direct labor costs) include a contingency factor; and, costs are based on the level of detail available for each individual project at the time of the estimate.

Benefits or Co-Benefits: considers whether anticipated benefits are local and direct within South Valley Stream or regional, and whether those benefits are primarily public or private; provides a qualitative discussion of the project's potential economic, environmental, health and social services benefits, as applicable. For feasibility studies, action plans or advocacy projects, the discussion of benefits related to the potential benefits that would result from future implementation of the selected alternative or recommendations developed through the course of study or advocacy. In addition, some projects are scalable; the benefits of these projects are considered in their current state, and potential benefits that would result from development into regional or larger-scale projects are noted where appropriate.

Cost-Benefit Analysis: summarizes the findings on the project's estimated costs and potential benefits.

Anticipated Reduction of Risk: provides a narrative description of the project’s potential to reduce risk to assets, populations, or the Community in general for future storm events.

Timeframe of Implementation: provides an anticipated timeframe required to implement the project.. This is classified as immediate (can be completed in two years or less from start of project), intermediate (can be completed in two to five years from start of project), or long-range (will required more than five years to complete from start of project).

Regulatory Requirements: considers potential federal, state and local government regulatory requirements related to the project, if applicable.

Entity with Jurisdiction: provides the entity with jurisdiction over the project, such as Nassau County or the Town of Hempstead.

Project Screening and Evaluation

The NYRCR Committee weighed the applicability of the projects according to the nature of the risk and immediacy of hazard, entities involved, and available resources. Six initial factors were evaluated to determine Proposed Projects and Featured Projects. Each project was evaluated individually on its capacity to reduce immediate exposure to risk, serve multiple recovery functions, and support the larger recovery strategy.

Risk Reduction: projects that have high risk reduction benefits relative to the initial level of risk.

Co-Benefits: projects that have many co-benefits, including: 1) Sustainability; 2) Economic Benefits; 3) Environmental Benefits; 4) Health and Social Benefits; and 5) Access to essential health and social services during disaster events.

Cost: projects that have a high (greater than \$1 million), medium (between \$500,000 and \$1 million), or low (less than \$500,000) cost, and consideration of the project’s cost to risk reduction ratio.

Feasibility: a consideration of whether a project is technically feasible, likely to face regulatory obstacles including issues with permits or other approvals, any real property constraints, and project readiness.

Funding Availability: is a consideration of whether projects that have several possible funding sources available and options to leverage, as well as whether they are best suited for funding through the NY Rising Community Reconstruction program.

Public Support: level of Planning Committee, public, and government support.

The Committee reviewed the evaluation of the first five factors above (risk reduction, co-benefits, cost, feasibility, and funding availability), and assessed the level of support for each project through Committee meetings and Public Engagement events. The Committee then reviewed potential projects in a round table discussion according to five recovery strategies: Manage Tidal Flow, Retain Stormwater, Reinforce Power Grid, Strengthen Communication and Coordination, and Maintain and Enhance

Economic Viability. The projects were evaluated within each of these five strategies and the information was synthesized both by strategy, and overall. The Committee also met as a working group via conference call to provide further feedback. This iterative process determined the initial proposed and featured projects. After the Committee determined the Proposed Projects and Featured Projects, a public engagement meeting was held to gauge the overall level of public support for the projects.

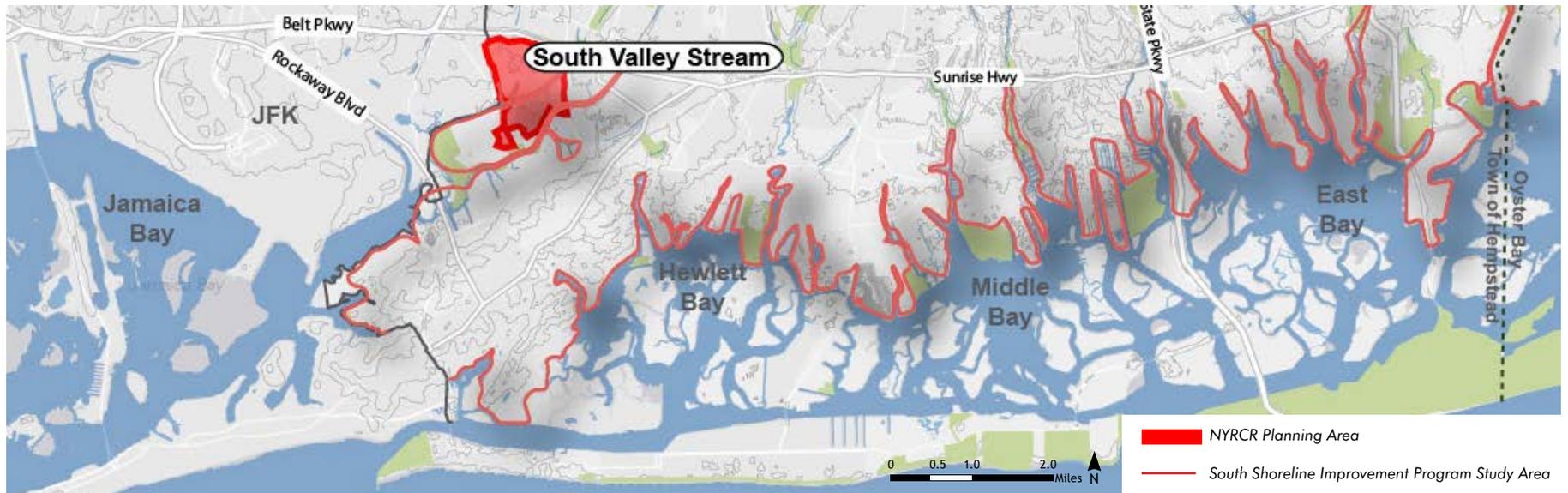


Figure 18: South Shoreline Improvement Program Study

South Shoreline Improvement Program Study [Proposed Project]

This study would examine methods for making coordinated improvements along the shoreline of the Town of Hempstead to achieve a contiguous shoreline (Figure 18). The goal of the study would be to investigate funding mechanisms, streamline permitting, and identify options for incentivizing bulkhead repairs and living shoreline improvements.

The Town of Hempstead shoreline is largely privately-owned and individual homeowners have limited resources to make necessary improvements. Feedback from Committee Meetings and Public Engagement Events reinforced the need to study the potential for a coordinated approach to making necessary improvements.

The Town of Hempstead shoreline is characterized by a mix of hard protection, such as bulkheads, and “soft” protection, such as wetlands, shoals, etc. Both types of protection are in need of maintenance, repair or improvement to be able to withstand the eroding forces of the tides and future sea level rise. Because the elevation of many of the areas behind the Town’s shoreline are below the existing shoreline, any opening in the shoreline protection has the potential to spread flooding landside. Furthermore, as vulnerable spots in the shoreline erode, they progressively erode faster, leading to even more widespread flooding. The current condition of the Communities’ shoreline provides incomplete protection against certain levels of tidal inundation, particularly bay water elevations of seven feet and above. Although

such water levels include the conditions experienced with Superstorm Sandy, the specific water levels associated with Superstorm Sandy are rare.

The proposed study would address:

A preliminary analysis of South Shore estuary shoreline conditions, including an inventory and assessment of shoreline conditions, development of a GIS database of current shoreline protection, and development of options for potential solutions to restore shorelines with hard, hybrid-structural, living shoreline, and wave attenuation measures;

Regulatory considerations and coordination between the government agencies that would need to be involved with this effort (including

DOS, DEC, Town of Hempstead, the US Army Corps of Engineers);

Streamlining the permitting process to enable further control by the potential implementing agency over the process, while still maintaining the established guidelines of New York State Department of State Coastal Zone Management Program;

Implementation and administrative costs to be borne by the potential implementing agency (e.g., inspections, developing geographic information systems data, etc.); and financing and funding opportunities (including grants) for improvements on privately owned properties.

Cost Estimate

A suggested allocation of \$50,000 per village or hamlet within each NYRCR Community would be utilized for the purposes of this study. Participation by additional NYRCR Communities would provide economies of scale for expanding the scope and outcomes of the study.

Benefits or Co-Benefits

The recommended implementation actions resulting from the study could provide local, private benefits to each participating NYRCR Community and regional, public benefits to the south shore of the Town of Hempstead. The populations that would benefit from a reduction of risk are those people that live along the shoreline. The combined population of block groups along the project area shoreline is 33,213 persons.

Economic Benefits

This project should create an estimated six full-time equivalent jobs.²⁹ While the study would not have direct economic benefits, its goal of contiguous shoreline improvements could have a positive impact on property values in the immediate area around the shoreline. As the shoreline becomes more attractive, the resale value of the homes could increase. This could ultimately have an impact on the taxable values of the homes, which would translate into increased income for the Township.

Additionally, the repaired bulkheads and restored shoreline could prevent future property damages. Since this area is a major contributor to tidal flooding damage, the savings from damages could be significant. Combined, the implementation actions resulting from the South Shoreline Improvement Program Study, the proposed flood gates at Hook Creek and Motts Creek, Reynolds Channel, and both in Island Park, as well as the Elevated Rockaway Turnpike, cumulatively protect approximately 12,000 individual residential or commercial properties that belong to either residents or businesses. According to Nassau County Tax data, 97% of these properties are residential properties and the rest are industrial or commercial properties. The combined estimated market value of the properties that would be impacted if not for these projects, would be \$6.1 billion in real estate. This amount assumes total destruction of the property due to flooding. FEMA claims were only a fraction of this amount, but still 29% of the value stated, or \$1.75 billion.

When the impacted real estate from these projects is aggregated, the total amount of

residential and commercial properties number 19,700 with an estimated real estate market value of \$9.7 billion. It should be noted that this estimate does not include tax exempt properties such as parklands or communal service properties such as churches and community centers, but does include non-exempt properties that extend outside of the current study area but still benefit from these projects.³⁰

Environmental Benefits

Implementation of the study's potential recommendations would help to secure all of the Natural Resource assets in the South Valley Stream Community due to increased resiliency. The living shoreline component of the project could protect wetlands, enhance or maintain habitat for plants and animals, and provide aesthetic value.

Health and Social Benefits

The resulting recommendations from the proposed study could impact all populations along the shoreline in multiple communities within the Five Towns, South Valley Stream and East Rockaway-Bay Park Communities. The total population within each block group along the Hempstead shoreline is 33,213, which represents the overall population with improved access to health and social service facilities as a result of the proposed project. Approximately 16.1% of this population is considered low-income and 16.2% are considered senior-citizens. This project aims to protect the multiple health and social services assets along the Hempstead shoreline among several different Communities that serve multiple populations.³¹

Cost-Benefit Analysis

In addition to protecting against storms of Superstorm Sandy’s magnitude, South Valley Stream is one of several NYRCR Communities along the South Shore that recognizes the need for regionally coordinated shoreline improvements to create a contiguous line of protection against smaller, more frequent storm events. The modest proposed project investment of \$50,000 for the South Valley Stream Community would spur regional cooperation to determine the most cost-effective and feasible way to achieve this necessary level of coastal protection.

Anticipated Reduction of Risk

The study seeks to develop a mechanism for implementing coastal defenses that creates risk reduction along the entire south shoreline. Coastal defenses, including features such as bulkheads and living shorelines, decrease the *exposure* experienced by landside assets by preventing or reducing the frequency of marine inundation, and by moderating damage caused by storm surge and wave action. Assets protected are less likely to experience flooding and are therefore less *vulnerable*.

The implementation actions resulting from this study should reduce the vulnerability (loss of service) of assets to the impacts of 100-year storms, reducing risk to affected assets in East Rockaway-Bay Park, South Valley Stream, and the Five Towns Communities, as well as other Communities along the south shoreline.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

No permits should be required to complete a study, however, the resulting recommendations of the study may require permits. Coordination is recommended with NYS Department of State (NYS DOS), NYS Department of Environmental Conservation (NYS DEC), Town of Hempstead, and the U.S. Army Corps of Engineers (USACE).

Entity with Jurisdiction

Town of Hempstead

Bulkhead Repair and Shoreline Restoration at Brook Road Park [Proposed Project]

This project would provide necessary repairs to Brook Road Park, a municipal park owned by the Town of Hempstead. During Superstorm Sandy, the bulkheads at Brook Road Park were overtopped, and the Park was flooded. The asphalt is caving in due to repeated flood events, including Superstorm Sandy, and deteriorating bulkheads. The Town has added fencing to minimize the safety hazard associated with the cracked asphalt and failing bulkheads.

With a mix of bulkhead improvements, shoreline restoration, and living shoreline installation, the project would: create a vegetative resilient buffer island at the confluence of Valley Stream and Watts Creek, replace failing bulkhead with vegetation and a rock toe/edge, and construct a sculpted berm tied into the higher elevation to protect against flooding. The surrounding planted edge would also provide flood protection, while vegetation would filter drainage from the park into the brook. A fishing and educational pier would also be constructed, as the project aims to improve waterfront access and bring the community closer to nature (Figure 19).

Tasks associated with the project include surveying existing conditions and conducting baseline studies, installation of erosion and sediment control elements, removal of existing bulkheads and construction of new bulkheads, installation of living shoreline elements, pier construction, and installation of a rip rap island, planting of trees and other vegetation, and educational signage. The costs indicated would also include environmental review and

acquiring required permits.

Cost Estimate

Approximately \$2,000,000

Benefits or Co-Benefits

This project would generate primarily local, public benefits for residents within South Valley Stream, and could benefit the greater Town of Hempstead by increasing the resiliency of a Town-owned Park and avoiding potential damage from future storms.

Economic Benefits

It is anticipated that this project could create 22 full-time equivalent jobs.³² The repaired bulkheads and restored shoreline could prevent property damages from occurring in the future. This project would improve upon an existing public space, a public park in which the Town has already invested, for an additional benefit of increasing resilience from future storm events. Since this area is a major contributor to tidal flooding damage, the savings from damages could be significant.

Shoreline improvements that protect against flooding could positively impact property and resale values of homes along the shoreline. Improvements to open space and neighborhood beautification may also increase property values. This would ultimately have an impact on the taxable values of the homes which would translate into increased income for the Town.

Environmental Benefits

Three environmental assets would be secured by the proposed project: Brook Road Park and two water bodies, Valley Stream and Watts Creek. Shoreline restoration would increase the resiliency of the park, helping to protect against future flooding. Other aspects of the project – living shoreline elements, vegetation, erosion, and sediment control – would result in improved water and air quality.

The project would improve the wildlife habitat of the park and the aquatic habitat of adjacent water bodies. These habitats may support threatened/endangered species and may be important for habitat connectivity. The project also includes construction of a pier, adding a nominal amount of new open space which would provide opportunities for community enjoyment of open space.



Birds-eye view of Brook Park Road

Health and Social Benefits

The proposed project impacts the block group surrounding Brook Road Park, with a total population of 2,832. Approximately 15.2% of this population is considered low-income and 16.2% are considered senior-citizens.³³ Construction would conform to all applicable federal, state and local public access rules and regulations. Designing a more accessible shoreline and constructing a fishing pier would provide increased public access, recreational uses, and connectivity to the waterfront for populations throughout the Community. The additional trees and vegetation proposed may improve air quality by filtering air pollutants, reducing illnesses such as asthma, as well as cooling air temperatures, conserving energy.

Cost-Benefit Analysis

Deteriorating bulkheads and unsafe conditions created by broken asphalt pavement warrant repairs at Brook Road Park. The total proposed project cost of \$2,000,000 would serve a greater purpose beyond bulkhead repair for managing tidal flow by protecting against floods up to seven feet, reducing the costs of property damage from future storm events and improving environmental quality while

benefitting public waterfront access, open space and recreation.

Anticipated Reduction of Risk

While the current park design is conducive to recreational activity, it does not take into account the higher tides now experienced by the community and could serve a greater purpose for managing tidal flow. This project would correct the pre-storm issues of failing bulkheads and caving asphalt, which was exacerbated during the storm. As part of the new park design, the change to this berm would be a natural design solution to create flood protection from tidal flows that the lower elevations of the park currently do not provide, and also maintain the aesthetic appeal for the community that the park provides. This, in combination with the repair of bulkheads, would create a buffer between the park and water levels up to approximately seven feet, therein reducing flooding of private properties and minimizing exposure for water levels up to approximately a 10-year event. Replacing deteriorated bulkheads with vegetation and a rock toe would create a more natural defense against erosion and sedimentation of the creek. The berm could also provide protection from debris entering and settling in the park during

high tides and flooding events.

This project should reduce the vulnerability (loss of service) of assets to the impacts of 100-year storms. The populations that could benefit from a reduction of risk are those people that live in the Brook Road Park project area. The combined population of block groups in the area is 2,832.³⁴ The new protective structures would protect homes from flooding.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

Regulatory approvals from the Town of Hempstead, NYS DEC and NYS DOS, and US Army Corps of Engineers may be necessary, and a consistency determination from the NYS DOS will be required for all federal funding and permits. Seasonal restrictions on construction would likely be necessary as per permit requirements.

Entity with Jurisdiction

Town of Hempstead

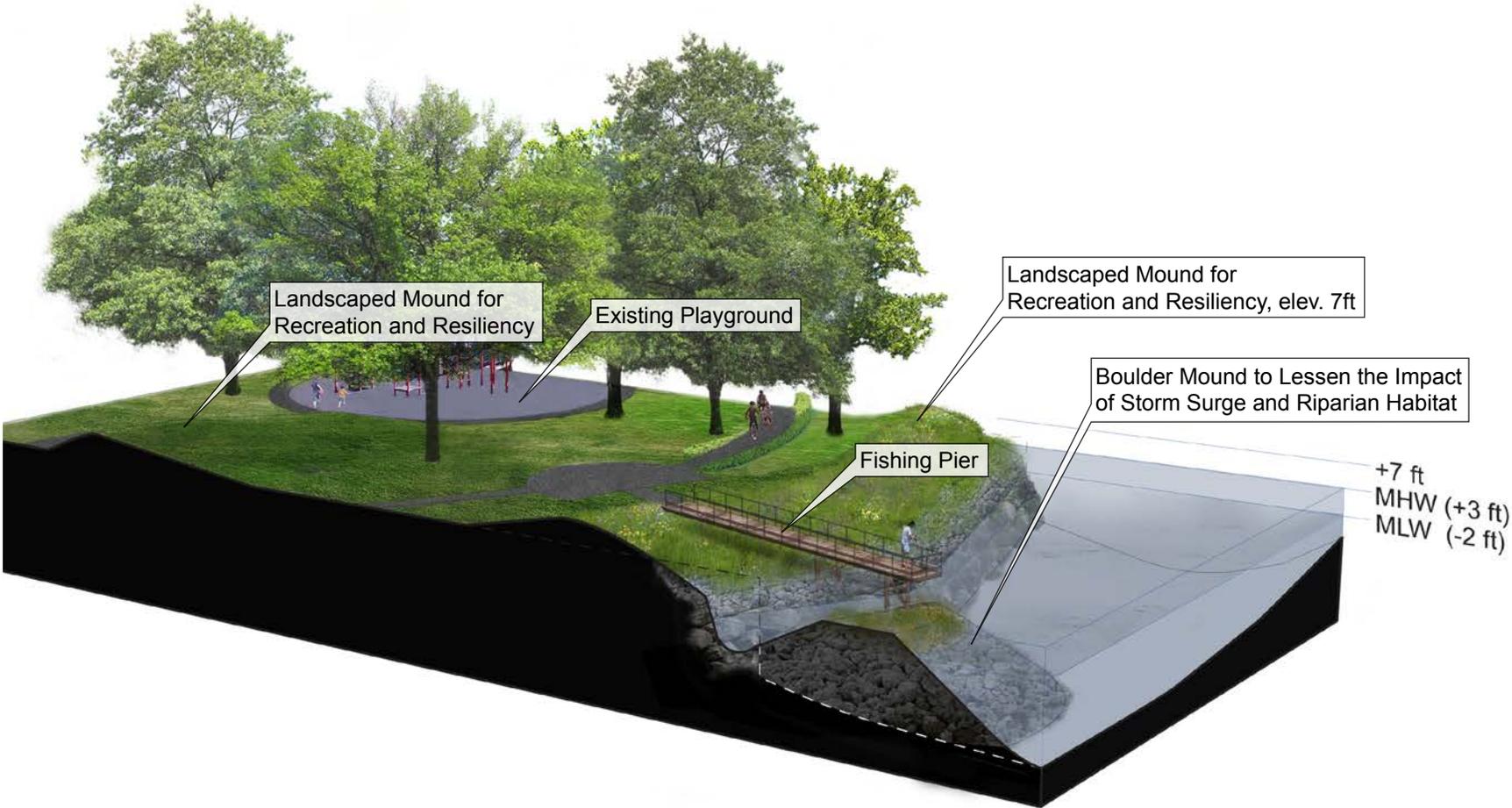


Figure 19: Proposed Brook Road Park streamedge restoration

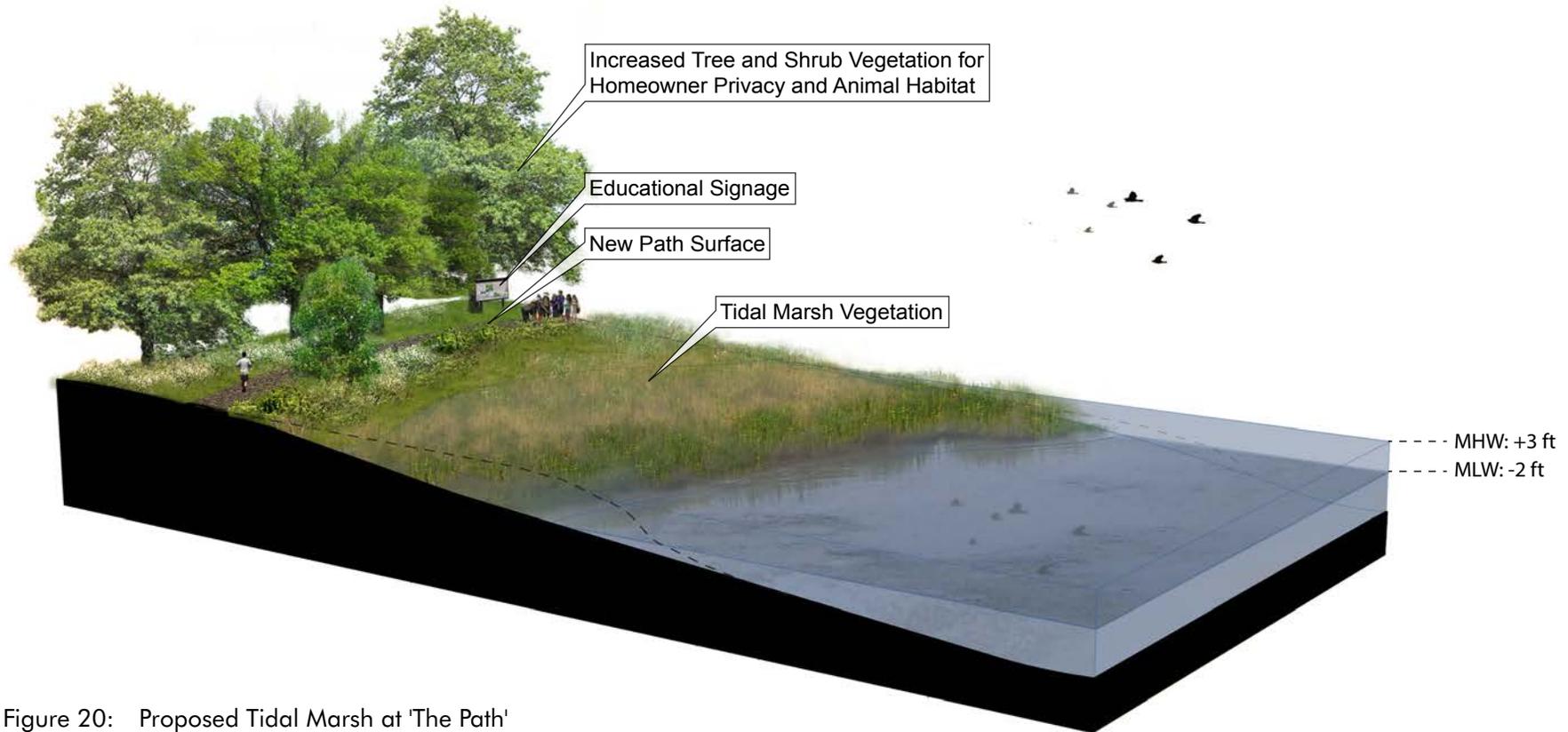


Figure 20: Proposed Tidal Marsh at 'The Path'

Natural Shoreline Restoration along "The Path" [Proposed Project]

This project would restore the natural shoreline on Town of Hempstead property along Valley Stream, from approximately Cloverfield Road North to Mill Road, a stretch of the stream known as "The Path." "The Path" was flooded during Superstorm Sandy due to a combination of tidal flow that entered Valley Stream from the south (Jamaica Bay) and stormwater flows from the north (Hook Creek - Head of Bay Watershed).

The project would improve coastal protection from water levels up to approximately seven feet and employ green infrastructure for stormwater retention. Potential elements include terracing the pathway with a natural sloped shoreline, providing habitat restoration in the littoral zone, and improving open space. The project may also include removing the abutments to the former pedestrian bridge at Cloverfield Road North, subject to further analysis. The project would involve surveying existing conditions

and conducting baseline studies; installation of erosion and sediment control elements; construction of new bulkhead and installation of living shoreline and bioswale elements; installation of pervious pavements in some areas; planting of trees and other vegetation; educational signage; and dredging. The costs indicated would also include environmental review and acquiring required permits.

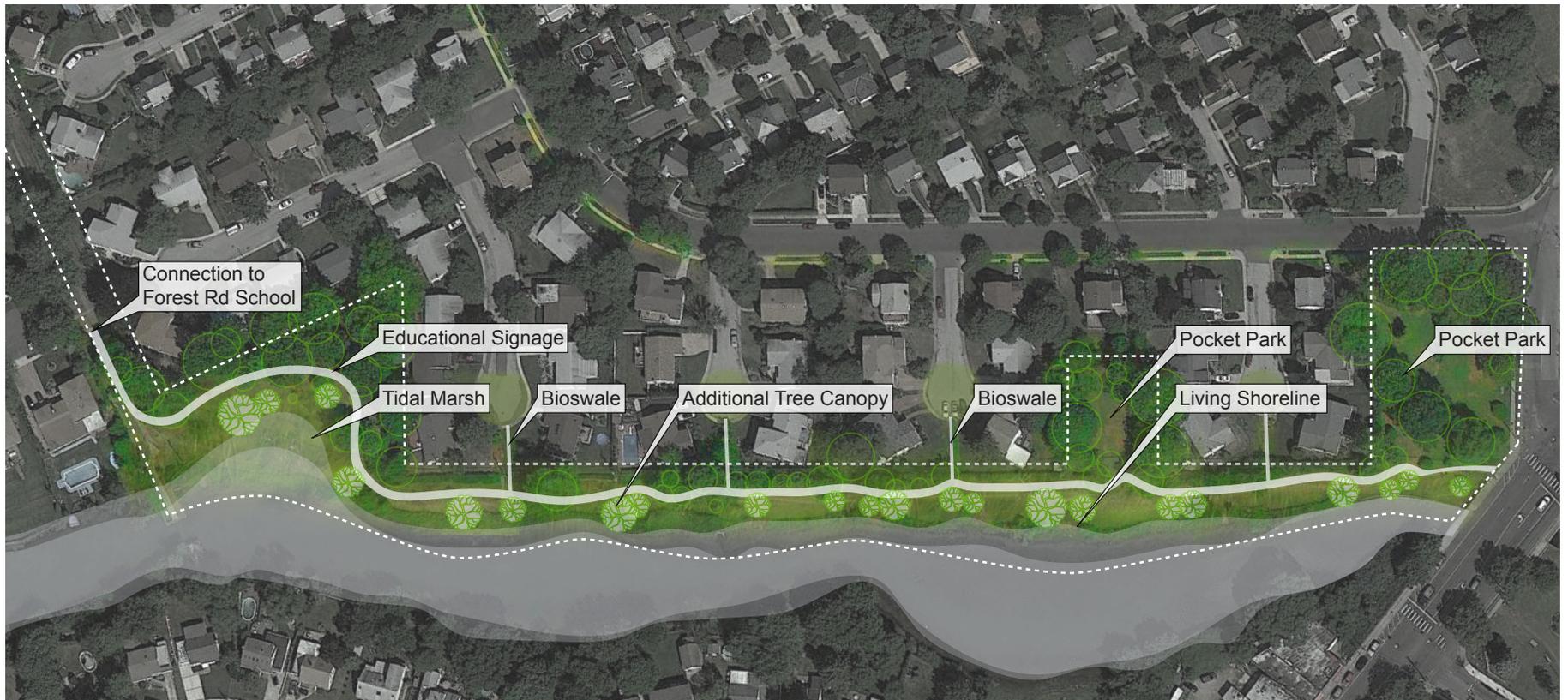


Figure 21: Proposed 'Path' restoration

The project would include littoral zone habitat restoration, which is important for habitat connectivity and could result in improvements to the aquatic habitat of Valley Stream by providing nesting and feeding places for birds and juvenile fish species. These riparian and aquatic habitats may also support threatened/endangered species, especially avian species (Figures 20-22).

Cost Estimate

Approximately \$1,700,000

Benefits or Co-Benefits

This project would result in primarily local benefits within South Valley Stream, with public benefits to the community and Forest Road School, as well as private benefits to the residences adjacent to "The Path" along Valley Stream.

Economic Benefits

It is anticipated that this project could create 18 full-time equivalent jobs.³⁵ Improvements of natural shoreline area along "The Path" could have a positive impact on property values in the immediate area around the shoreline areas. As the shoreline becomes more attractive the resale value of the homes may increase. This would ultimately have an impact on the taxable values of the homes which would translate into increased income for the township.

Additionally, the restored shoreline could prevent property damages from occurring in the future. Since this area is a major contributor to tidal flooding damage, the savings from damages could be significant.

Environmental Benefits

Two environmental assets would be secured by the proposed project: "The Path" (an existing park/ open space) and Valley Stream. Installation of living shoreline, bioswale, green infrastructure, and erosion and sediment control elements would naturally treat the runoff from impervious surfaces to improve the water quality of Valley Stream, and also would increase the resiliency and generally improve the ecological condition of "The Path." This green infrastructure would improve stormwater capture by maximizing the benefits of this existing open space for retention. As the project would include littoral zone habitat restoration, it may be important for habitat connectivity and could result in improvements to the aquatic habitat of Valley Stream. These riparian and aquatic habitats also may support threatened/ endangered species, especially avian species.

Health and Social Benefits

The proposed project impacts the users and nearby residents of "The Path" (from Cloverfield Road North to Mill Road), with a total population of 409. Approximately 25.2% of this population is considered low-income and 16.8% are considered senior-citizens.³⁶ Construction would conform to all applicable federal, state and local public access rules and regulations. Designing a more accessible shoreline would provide increased public access, recreational uses, and connectivity to the waterfront for

populations throughout the Community. The additional trees and vegetation proposed may improve air quality by filtering air pollutants, reducing illnesses such as asthma, as well as cooling air temperatures, conserving energy.

Cost-Benefit Analysis

With a total proposed project cost of \$1,700,000, natural shoreline restoration would maximize the benefits of this public pathway along Valley Stream by minimizing erosion, buffering against flooding from minor tidal storms, adding habitat value and improving waterfront access. Utilizing green infrastructure would provide additional benefits for stormwater retention, environmental quality and public education while reducing the costs of adjacent property damage during future storm events.

Anticipated Reduction of Risk

Living shoreline protects the shoreline from erosion by providing wetlands to buffer tidal flows. A living shoreline also creates or maintains habitat for plants and animals, and provides aesthetic value. This project could reduce flooding in the area and help protect private properties from exposure to tidal flows. This project should reduce the vulnerability (loss of service) of assets to the impacts of 100-year storms.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

Regulatory approvals from the Town of Hempstead, NYS DEC, and US Army Corps of Engineers may be necessary, and a consistency determination from the NYS DOS will be required for all federal funding and permits. Seasonal restrictions on construction may be necessary as per permit requirements.

Entity with Jurisdiction

Town of Hempstead

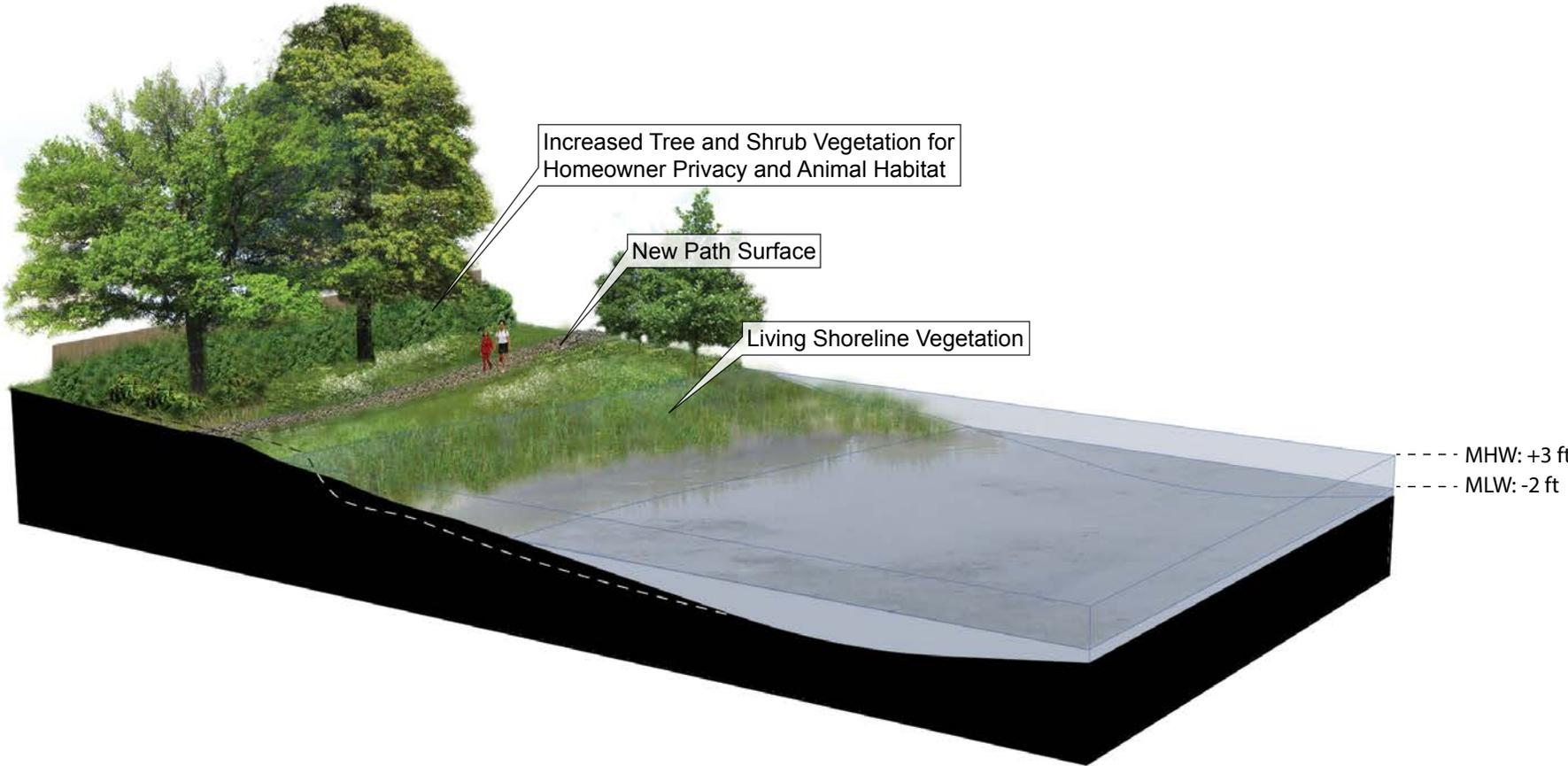


Figure 22: Proposed Living Shoreline along 'The Path'

Corridor Restoration and Riverbank Stabilization along Valley Stream, Clear Stream, Watts Creek, and Fosters Brook Lower [Featured Project]

This project seeks to establish continuous shoreline protection through bulkhead and living shoreline restoration, where appropriate, along water bodies in South Valley Stream, including Clear Stream, Valley Stream, Watts Creek, and Fosters Brook Lower. Superstorm Sandy overtopped bulkheads and flooded residential properties in South Valley Stream along all four water bodies, leading to increased erosion and sedimentation of the waterways. The project would make bulkhead or living shoreline improvements to privately and publicly owned property, and restore ecosystem functions of the water bodies in South Valley Stream, through bank stabilization (Figure 23).

The following options are considered:

Sub-project A: Watts Creek. Both sides of Watts Creek would have living shoreline improvements under this option.

Sub-project B North: The north side of Valley Stream between Brook Road Park and “The Path” would have a living shoreline under this option.

Sub-project B Southwest: The Bulkheads would be repaired along the western portion of the south side of Valley Stream.

Sub-project B Southeast: The eastern portion of the south side of Valley Stream would be improved with a living shoreline.

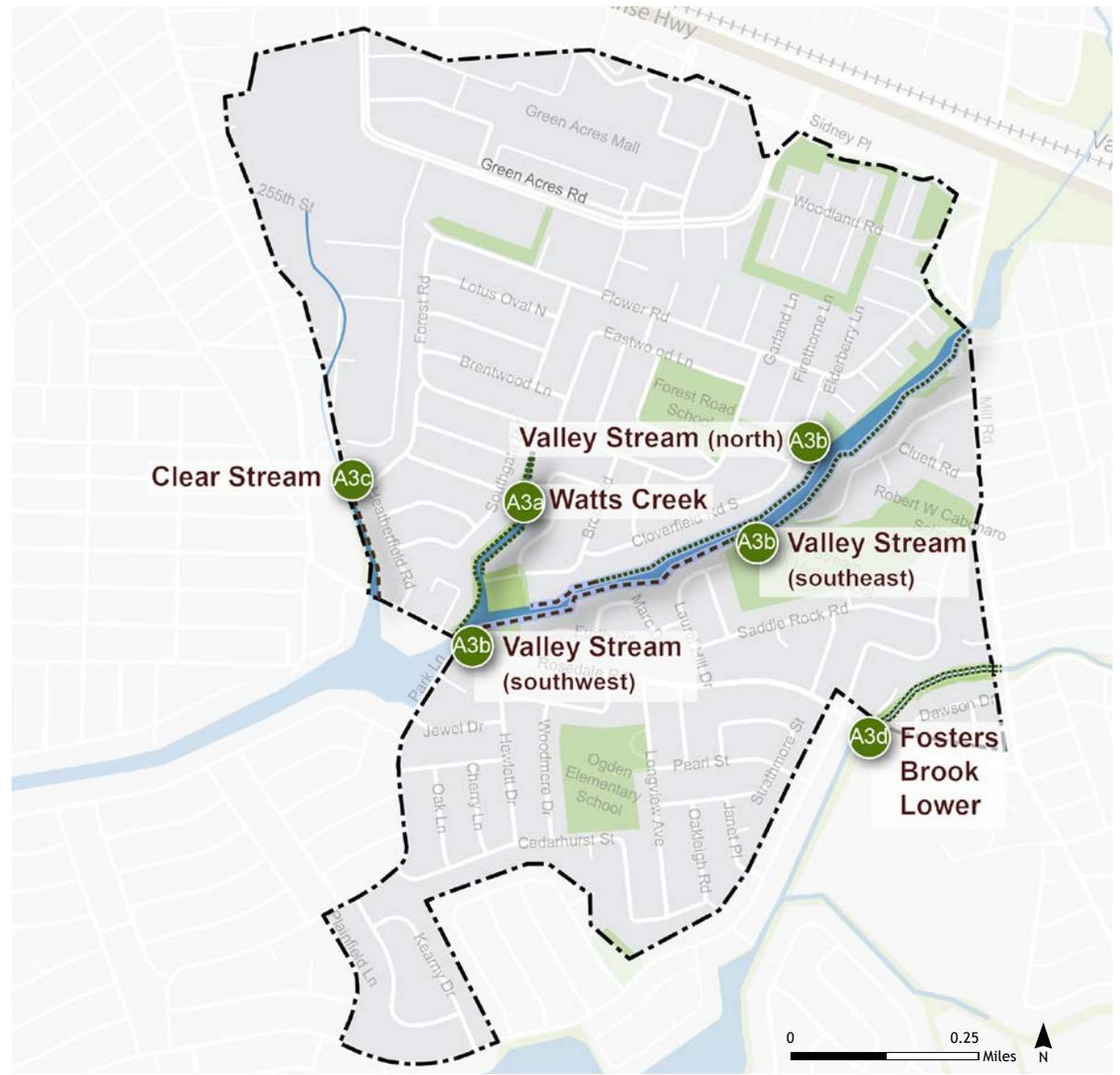


Figure 23: Hook Creek Tributaries

Sub-project C Clear Stream: This option would repair bulkheads (7 ft elevation) along both sides of Clear Stream. The project would also include the construction of a wetland at the head of Clear Stream.

Sub-project D Fosters Brook Lower: Both sides of Fosters Brook Lower would have living shoreline improvements under this option.

This project would not include Brook Road Park and “The Path,” which are considered separate projects. Tasks associated with the project include: surveying existing conditions and conducting baseline studies; installation of erosion and sediment control elements; removal of existing bulkhead and replacing with new bulkhead or living shoreline; and construction of a wetland area at the head of Clear Creek. The costs indicated would also include environmental review and acquiring regulatory permits.

The project would require outreach to and agreements from participating property owners, and voluntary participation would impact project effectiveness. Coordination is recommended with public property owners, including Nassau County, the Town of Hempstead, and the Valley Stream Union Free School District. Real property constraints include the constructed wetland at the head of Clear Stream, which would also require an easement, and negotiation with private property owners.

Cost Estimate

Sub-project A: Approximately \$1,520,000
 Sub-project B North: Approximately \$1,100,000

Sub-project B Southwest: Approximately \$2,700,000
 Sub-project B Southeast: Approximately \$1,300,000
 Sub-project C: Approximately \$2,800,000
 Sub-project D: Approximately \$1,000,000

Benefits or Co-Benefits

This project would result in local benefits within South Valley Stream, benefitting both private property owners and public property owners with frontage along the water bodies.

Economic Benefits

It is anticipated that this project could create 113 full-time equivalent jobs.³⁷ Improvements of creeks and minor waterways could prevent property damages from occurring in the future. Since the corridor is a major conduit for storm tidal flooding damage, the savings from damages could be significant.

Environmental Benefits

The project options entail living shoreline and/or bulkhead improvements along various segments of the South Valley Stream area water bodies, and riverbank stabilization to restore ecosystem functions of these water bodies. As such, the various options would improve the water quality and conditions of area water bodies, helping to secure these environmental assets. The project options also would improve littoral zone and aquatic habitats that may support threatened/endangered species.

Sub-project A: Two environmental assets would be secured by this sub-project, Watts Creek and Brook Road Park. The sub-project would also serve to secure additional environmental assets located in the immediate vicinity of Watts Creek

(e.g., natural areas, riparian habitat, etc.), as it would reduce the flooding risk of adjacent areas in general.

Sub-project B North: This sub-project would secure one environmental asset, South Valley Stream. As this project would increase the resiliency of this portion of the South Valley Stream shoreline, it would also secure other environmental assets found in the immediate area (e.g., natural areas, riparian habitat, etc.).

Sub-project B Southwest: One water body, South Valley Stream, would be secured by this option. The project would also generally reduce the flooding risk of adjacent areas, thus helping to secure additional environmental assets located in the immediate vicinity (e.g., natural areas, riparian habitat, etc.).

Sub-project B Southeast: One water body, South Valley Stream would be secured by this option. The project would include living shoreline along the stream, improving the stream’s water quality and would provide habitat for flora and fauna, including that for threatened and endangered species.

Sub-project C: This sub-project would secure one water body, Clear Stream. The proposed option would also increase the resiliency of the Clear Stream area in general, serving to secure additional environmental features in the immediate area (e.g., natural areas, riparian habitat, etc.). The proposed restoration includes construction of a wetland at the head of Clear Stream (southwestern portion of the Green Acres Mall parking lot adjacent to Clear Stream).

Sub-project D: Two environmental assets would be secured this option - Fosters Brook Lower and Doxy Brook Park. Sub-project D would also serve to secure additional environmental assets located in the immediate vicinity of Fosters Brook Lower (e.g., natural areas, riparian habitat, etc.), as it would reduce the flooding risk of the area in general.

Health and Social Benefits

The proposed project impacts river corridor frontage areas in South Valley Stream, with a total population of 2,832. Approximately 15.2% of this population is considered low-income and 16.2% are considered senior-citizens.³⁸ This project aims to protect all health and social services assets within the river corridor area such as the Valley Stream South High School, Robert Carbonaro, and Forest Road Schools. Construction would conform to all applicable federal, state and local public access rules and regulations. Designing a more accessible shoreline along public property, owned by Nassau County, the Town, and the School District would provide safer, increased public access, recreational uses and connectivity to the waterfront for populations throughout the Community.

Cost-Benefit Analysis

Forming a continuous line of protection against smaller, more frequent storm events and tidal flooding that persists following Superstorm Sandy is important to the NYRCR Committee. The total featured project cost of \$10,420,000, divided among six sub-projects, would work in conjunction with the proposed Brook Road Park

and Path projects to provide a contiguous line of shoreline protection against a 10-year storm event for both public and private property owners, thereby reducing the costs of property damage and government expenditures for emergency response during future storm events.

Anticipated Reduction of Risk

The proposed project is intended to improve protection against water levels up to elevation seven feet, which is estimated to be consistent with a 10-year storm. These water level conditions occur relatively frequently (approximately twice a month during spring tides) and are expected to increase in frequency as a result of climate change, (which increases both the general sea level and the frequency of extreme events such as high wind induced surges). Both bulkheads and living shoreline would reduce flooding in the area, reduce exposure, and improve community safety. A living shoreline would protect the waterfront from erosion and protect adjacent wetlands, create or maintain habitat for plants and animals, and provide aesthetic value. This project should reduce the vulnerability (loss of service) of assets to the impacts of 100-year storms. The corridor restoration and riverbank stabilization should provide a reduction of risk to those people that live near river frontage areas in South Valley Stream. The combined population of block groups in the area is 2,832.³⁹

Timeframe of Implementation

Long-Range (> five years)

Regulatory Requirements

Regulatory approvals from the Town of Hempstead, NYS DEC, and US Army Corps of Engineers may be necessary, and a consistency determination from the NYS DOS will be required for all federal funding and permits. Potential funding sources include NYRCR funding allocated to South Valley Stream; US Army Corps of Engineers Beach Restoration and Shoreline Protection funding (financing and federal-local cost share); and FEMA Hazard Mitigation Assistance for shoreline stabilization measures (federal-local cost-share).

Entity with Jurisdiction

Town of Hempstead

Hydrologic and Hydraulic Study of Hook Creek – Head of Bay Watershed [Featured Project]

In coordination with the development of a County-wide Stormwater Mitigation Plan, this project responds to the need to better understand what hydrologic and hydraulic conditions contributed to stormwater flooding during Superstorm Sandy, as well as significant precipitation events, such as Hurricane Irene.

This project would develop an engineering study that would provide a regional, watershed-level understanding of the hydrology affecting South Valley Stream, which would better inform stormwater management projects, including those in South Valley Stream. The Hydrologic and Hydraulic study would be used to determine where the runoff is coming from, runoff quantities, dispersion pathways, and whether the current systems are adequate to handle current and projected future conditions. The study would identify what measures would be needed to ensure adequate stormwater management (Figure 24).

Cost Estimate

Approximately \$750,000

Benefits or Co-Benefits

This project would result in both public and private benefits, locally within South Valley Stream and regionally within the Hook Creek / Head of Bay Watershed.

Economic Benefits

A regional hydrologic and hydraulic study would have an insignificant direct economic benefit impact. However, recommendations

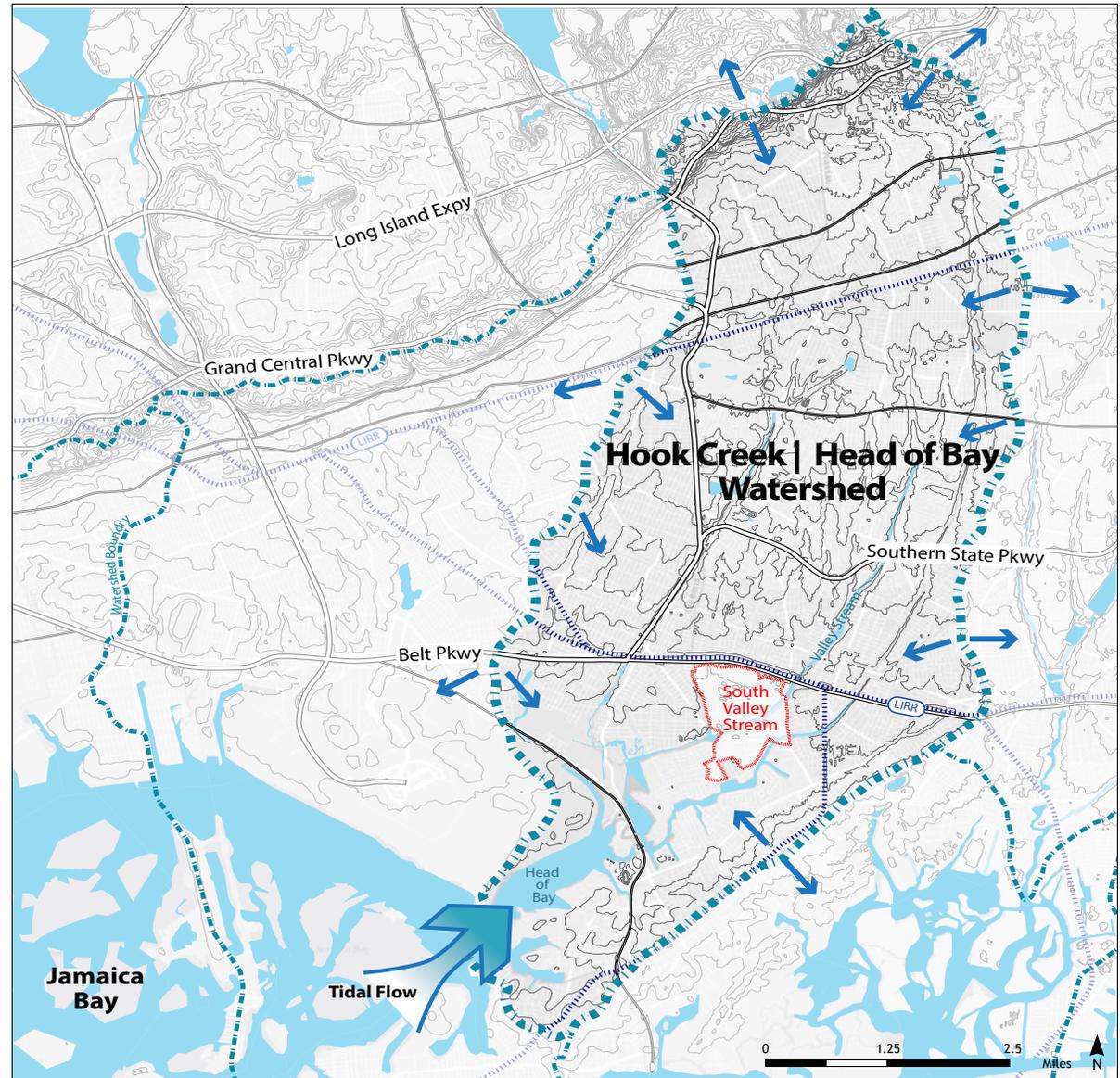


Figure 24: Hook Creek / Head of Bay Watershed

resulting from the study could provide significant cost savings to Nassau County and the towns and villages in the watershed, including the Town of Hempstead. Coupled with a County-wide Stormwater Mitigation Plan, this study could lead to more efficient spending on capital improvements by recommending synergetic projects at a macro level, instead of approaching stormwater management issues at a micro level.

Environmental Benefits

The project would not directly benefit environmental or cultural assets in the Community. However, the study would identify options for improved stormwater management, thereby reducing flooding and protecting environmental and cultural assets in the Community.

Health and Social Benefits

The proposed project would impact the community of South Valley Stream, with a total population of 6,025. Approximately 19.2% of this population is considered low-income and 16.4% are considered senior-citizens.⁴⁰ This project aims to protect multiple health and social services assets within the watershed and Community, as well as positively impact public health by improving water quality and reducing flooding impacts.

Cost-Benefit Analysis

Stormwater issues are larger than South Valley Stream, which receives stormwater flows from the entire Hook Creek / Head of Bay Watershed. The total featured project cost of \$750,000 would capitalize on economies of scale through

a watershed-level study that would identify regional interventions for stormwater mitigation, to cost-effectively benefit multiple communities within the watershed.

Anticipated Reduction of Risk

The project would not directly reduce risk to populations in the Community. However, the study would identify options for improved stormwater management, thereby reducing flooding and reducing vulnerability of assets in the Community.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

A study is not likely to require permits, however coordination is recommended with the Town of Hempstead, NYS DEC, NYS DOS and USACE because the recommendations resulting from the study may require permits.

Entity with Jurisdiction

Town of Hempstead, Nassau County. A multi-jurisdictional committee/consortium consisting of all municipalities in the watershed municipalities could be considered, as well. This form of governance and administration has proven successful on Long Island, as represented by both the Hempstead Harbor Protection Committee and Manhasset Bay Protection Committee. Potential actions of such a multi-jurisdictional committee/consortium might include being able to appoint a fiduciary to be responsible for grant management, with the committee/consortium itself being

responsible for project management. The recent New York – Connecticut Sustainable Communities Consortium, a program funded by a HUD Sustainable Communities Regional Planning Grant, used this structure and was successful in carrying out the planning program over a wide geography and across numerous municipal boundaries.

Community Education regarding Green Infrastructure and Living Shorelines [Proposed Project]

Stormwater management was a key issue for the South Valley Stream community in Superstorm Sandy, as the volume of stormwater could not exit the system, thereby exacerbating the impacts of localized flooding caused by tidal flooding. Upstream stormwater capture is necessary to minimize peak stormwater flows entering South Valley Stream's stormwater infrastructure system and three tributaries to Hook Creek. Green infrastructure can minimize stormwater volumes, lessening the impact of future storm events, while living shorelines can minimize erosion and reduce the impacts of tidal flooding.

This project would educate the community about ways to reduce their individual impact on the stormwater system by providing information to homeowners about stormwater capture through green infrastructure, living shoreline plantings and improvements, residential backflow preventers, water conservation, rain water harvesting, and tree pruning near power lines. This project would develop general green infrastructure information for South Valley Stream, including creating brochures and posters for community members. It would provide an on-site green infrastructure workshop for residents and a student workshop at Robert W. Carbonaro Middle School. Green infrastructure and sustainable stormwater management techniques would be integrated into school curricula and a rain barrel pilot project would be launched at the Middle School. This project would work in partnership with Retain Stormwater on Residential and Public Property where students would have a hands-on

learning experience created by implementing green infrastructure on school property. This project also aims to work in partnership with the Town of Hempstead Rain Barrel Program and Conservation and Waterways educational programs.

Cost Estimate

Approximately \$60,000

Benefits or Co-Benefits

This project would result in primarily local benefits, both public and private, for South Valley Stream.

Economic Benefits

It is anticipated that this project would create one full-time equivalent job.⁴¹ Although the initial job creation of the project would be minimal, the long term impact may be felt in the reduction of stormwater damages that could occur in time of heavy storms or just minor rainfalls. As the public begins to purchase and install green infrastructure such as rain gardens, rain barrels, and other strategies, their purchases of materials and services would fuel the economy.

Environmental Benefits

Green Infrastructure is a cost-effective and resilient approach to water infrastructure that provides many benefits: water quality and quantity, air quality, habitat and wildlife improvement, livability, and reduced impact in energy and climate change.

The project includes educating South Valley Stream residents about green infrastructure and sustainable stormwater management techniques, including a community workshop, student workshop, and rain barrel pilot project at the local middle school. As such, the project would not directly secure environmental assets. However, it is reasonable to assume that some residents and businesses would implement some of the green infrastructure elements that they learn about. As the project is expected to improve stormwater management community-wide, it would indirectly secure various environmental resources throughout the Community (e.g., parks, other natural areas and open spaces, riparian habitat, improved water quality of water bodies, etc.).

Health and Social Benefits

The proposed project impacts the community of South Valley Stream, with a total population of 6,025. Approximately 19.2% of this population is considered low-income and 16.4% are considered senior-citizens.⁴² Green infrastructure and living shorelines can provide health and social benefits by filtering stormwater runoff from impervious surfaces and improving water quality for the entire Community. The additional trees and vegetation proposed, may improve air quality by filtering air pollutants, reducing illnesses such as asthma, as well as cooling air temperatures, conserving energy.

Cost-Benefit Analysis

Feedback at public engagement meetings demonstrated the Community interest in property maintenance to mitigate stormwater flooding and erosion issues. The total proposed project cost of \$60,000 is minor compared to the potential cumulative benefits of actions undertaken by individual homeowners for on-site stormwater management, water conservation, and shoreline maintenance.

Anticipated Reduction of Risk

Although this project would not directly reduce exposure of assets or reduce their vulnerability, the project would promote actions and methods for the reduction of asset exposure and vulnerability. This action should provide a reduction of risk to entire the population of the South Valley Stream Community. The combined population of the Community is 6,052.⁴³ Residents would benefit from increased knowledge of green infrastructure and the associated measures they could take to improve stormwater management.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

The project is not likely to face regulatory obstacles including issues with permits or other approvals, has no real property constraints, and is ready to begin.

Entity with Jurisdiction

Town of Hempstead, Valley Stream Central, 24 and 30 School Districts, Mill Brook Civic Association

Green Infrastructure Implementation Program on Residential and Public Property [Featured Project]

Stormwater could not exit the system during Superstorm Sandy, causing backups and localized flooding. Stormwater retention upstream and within South Valley Stream would minimize peak stormwater volumes entering the system during rain events, reducing the strain on the system. This project would focus on implementing green infrastructure best management practices on residential property and public rights-of-way (roadways). The project would install Green Infrastructure to capture stormwater runoff where it falls, before it travels downstream.

The goal of this project is to capture 5% of the stormwater falling on impervious surfaces using green infrastructure best management practices. Further research is necessary to identify appropriate locations for green infrastructure and retention structures. Therefore, this project would begin with a green infrastructure siting analysis involving a review of existing information (hydraulic, topographic, built and natural environment, etc.). Subsequent elements of the project include identification and design of best management practices (BMPs); construction of wetlands, vegetated swales, planting of stormwater street trees; installation of rain gardens and other rainwater harvest and reuse systems; and installation of permeable pavements. In addition to project construction, costs indicated below include environmental analysis, regulatory approvals, and permitting requirements. Retaining stormwater at schools could serve as a pilot project for a community-wide green infrastructure strategy by installing permeable

pavements, vegetated swales and rain gardens, and implementing rainwater harvest and reuse programs at Valley Stream South High School and Robert W. Carbonaro School. These green infrastructure best management practices could potentially capture the first inch of rain that falls on the impervious surfaces of the school property (approximately 36,925 cu. ft.) including the parking lots, sidewalks, track, and buildings. This project also aims to work in partnership with the Town of Hempstead Rain Barrel Program.

Voluntary participation by private property owners would impact project effectiveness. Real property constraints may exist if residential homeowners are not willing to implement green infrastructure practices.

Cost Estimate

Approximately \$2,300,000

Benefits or Co-Benefits

This project would result in primarily local benefits, both public and private, within South Valley Stream.

Economic Benefits

It is anticipated that this project could create 25 full-time equivalent jobs,⁴⁴ and the long-term impact may be felt in the reduction of stormwater damages that could occur in time of heavy storms or just minor rainfalls. As the approved projects begin to purchase and install green infrastructure such as rain gardens, rain barrels, and other strategies, their purchases of

materials and services could fuel the economy.

Ancillary impacts of these projects would include less strain on the stormwater infrastructure system and less erosion on roadways. This would produce cost savings for the township as replacement and repair costs are reduced.

Environmental Benefits

Four environmental assets would benefit from this project: South Valley Stream, Watts Creek, Clear Stream, and Fosters Brook Lower. Implementation of green infrastructure BMPs program on private property and public roadways throughout the area would more effectively control runoff and help to protect streams from polluted runoff, prevent stream degradation of water bodies, and restore water quality. Thus the proposed program would have beneficial effects on water quality and on aquatic habitat of the area's water bodies. In addition, the proposed program would contribute to the increased resiliency of South Valley Stream area, thereby helping to secure all of the area's environmental assets (e.g., parks and other natural areas, riparian habitat, etc.). Such assets may include Brook Park, "The Path," and Doxey Brook Park.

Health and Social Benefits

The proposed project impacts the community of South Valley Stream, with a total population of 6,025. Approximately 19.2% of this population is considered low-income and 16.4% are considered senior-citizens.⁴⁵ This project focuses on residential properties and roadways, using public right of ways for higher

benefits of stormwater retention and infiltration. Green infrastructure can provide health and social benefits by filtering stormwater runoff from impervious surfaces and improving water quality for the entire Community. The additional trees and vegetation proposed may improve air quality by filtering air pollutants, reducing illnesses such as asthma, as well as cooling air temperatures, conserving energy.

Cost-Benefit Analysis

Using green infrastructure is a cost-effective method for upstream retention of stormwater. The total featured project cost of \$2,300,000 would build upon the education provided by the proposed Community Education project, and other featured gray infrastructure projects (i.e., Stormwater Infrastructure Upgrades) while providing several co-benefits such as improved water and air quality, public health, and aesthetic value which could potentially increase property values.

Anticipated Reduction of Risk

The project would reduce flooding by capturing and storing rain water for later release. As such, the project would reduce vulnerability of assets in the vicinity of project implementation. This action should provide a reduction of risk to the entire population of the South Valley Stream Community. The combined population of the Community is 6,025.⁴⁶ Residents would benefit from increased knowledge and action of green infrastructure techniques.

Timeframe of Implementation

Intermediate (two to five years)

Regulatory Requirements

Regulatory approvals from the Town of Hempstead, NYS DEC and USACE may be necessary, and a consistency determination from the NYS DOS will be required for all federal funding and permits. Some regulatory obstacles may exist in relation to site design and construction. Coordination among the Town of Hempstead and Nassau County is recommended.

Entity with Jurisdiction

Town of Hempstead, Nassau County, Valley Stream Central, 24 and 30 School Districts, Private Property Owners

Stormwater Infrastructure Upgrades [Featured Project]

Flooding during Superstorm Sandy occurred due to tidal flooding and inadequate stormwater drainage systems. The conditions of the storm water system were unknown before Superstorm Sandy, but noticeable buildup within the stormwater system may be impeding the discharge of stormwater. The current piping in the system and inlet basins may be inadequately sized to handle the stormwater within it on a regular event. Stormwater outfalls are located along Valley Stream, Clear Stream, Watts Creek, and Fosters Lower Brook (assumed locations). The Valley Stream system accumulates the stormwater from other systems of its watershed as the water flows toward Jamaica Bay. Spring tide waters and storm tides are also entering the system and creating further water backup in the system. The amount of water entering the system cannot exit the system at the same rate and is resulting in flooding.

The estimated project cost of \$2 million includes a hydrologic and hydraulic study on the existing system to determine deficiencies, and implementation of repair and upgrades to stormwater pipes, drains, and catch basins. It is assumed that the carrying capacity of approximately 50% of the existing stormwater system can be increased. This can be achieved through installation of swirl separators and check valves on outfalls, and upgrades to achieve greater pipe volume. The cost estimate includes typical regulatory, labor, and construction contingency costs.

Cost Estimate

Approximately \$2,000,000

Benefits or Co-Benefits

This project would result in primarily local benefits, public benefits within South Valley Stream

Economic Benefits

It is anticipated that this project could create 22 full-time equivalent jobs.⁴⁷ The addition of stormwater upgrades would positively impact the existing infrastructure by reducing erosion and strain on the sewage systems. Over time, this would save the township the additional expenses for maintenance and replacement of systems that are affected by stormwater.

Environmental Benefits

Construction of the project would reduce flooding from precipitation. The project would protect three water bodies in the Community: Valley Stream, Clear Creek, and Fosters Brook Lower, and would reduce erosion and other degradation of living shoreline features.

Health and Social Benefits

The proposed project impacts block groups covering the location of storm water outfalls along Valley Stream, Clear Stream, Watts Creek, and Fosters Lower Brook. The population of these block groups totals 2,832. Approximately 15.2% of this population is considered low-income and 16.2% are considered senior-citizens.⁴⁸ This project aims to protect all health and social services assets within the area of the stormwater outfalls such as the Valley Stream

South High School, Robert Carbonaro, and Forest Road Schools. Through the use of swirl separators, this project would positively impact water quality and public health.

Cost-Benefit Analysis

Improving the capacity of the South Valley Stream stormwater infrastructure system would mitigate localized flooding that can exacerbate flooding from tidal flows. The total featured project cost of \$2,000,000 would reduce costs of damaged property and government expenditures for emergency response, while improving the environmental quality of water bodies within South Valley Stream.

Anticipated Reduction of Risk

This study would identify deficiencies to the existing stormwater disposal system and provide feasible alternatives to address the system deficiencies. By upgrading system capacity, stormwater would discharge faster and reduce flooding events. Installation of check valves would prevent backflow, also reducing flooding. As such, these actions would reduce vulnerability of assets in the Community. Swirl separators would prevent the discharge of pollutants to the canal and improve quality of water, enhancing plant and animal habitat. This action should provide a reduction of risk to the entire population of the South Valley Stream Community. The combined population of the Community is 6,025.⁴⁹

Timeframe of Implementation

Intermediate (two to five years)

Regulatory Requirements

The project may require permits from the Town of Hempstead, Nassau County, NYS DEC and USACE, and a consistency determination from the NYS DOS will be required for all federal funding and permits.

Entity with Jurisdiction

Town of Hempstead, Nassau County. A multi-jurisdictional committee/consortium consisting of all Nassau County municipalities could be considered, as well. This form of governance and administration has proven successful on Long Island, as represented by both the Hempstead Harbor Protection Committee and Manhasset Bay Protection Committee. Potential actions of such a multi-jurisdictional committee/consortium might include being able to appoint a fiduciary to be responsible for grant management, with the committee/consortium itself being responsible for project management. The recent New York – Connecticut Sustainable Communities Consortium, a program funded by a HUD Sustainable Communities Regional Planning Grant, used this structure and was successful in carrying out the planning program over a wide geography and across numerous municipal boundaries.

County-wide Stormwater Mitigation Plan with Community Education and Awareness [Featured Project]

As discussed in the previous project, conditions of the stormwater system are largely unknown, but possibly sediment buildup in the system may be impeding the discharge of stormwater, and the system may have inadequate capacity. This project seeks to identify system-wide stormwater management issues and potential solutions.

The project would coordinate with and advocate for Nassau County to develop a stormwater system maintenance and monitoring plan which would identify maintenance needs to prevent system backups. Documentation of flooding conditions would aid in understanding specific storm conditions and the effectiveness of stormwater management measures.

Cost Estimate

Approximately \$500,000

Benefits or Co-Benefits

This project would result in both public and private benefits, locally within South Valley Stream and regionally throughout Nassau County.

Economic Benefits

The creation of a County-wide mitigation plan would have an insignificant direct economic benefit impact. However, if the plan was completed and enacted, the cost savings to towns and villages in the County could be significant. The savings of a comprehensive approach to stormwater mitigation would result in efficient spending on plans that work for the County as a whole and would rely on synergetic

projects to reduce costs, instead of approaching the stormwater problem in a microcosmic, piece meal approach.

Environmental Benefits

This project would not directly protect natural and cultural resources, however the recommendations resulting from the study should reduce flooding from precipitation, thereby protecting three water bodies in the Community: Valley Stream, Clear Creek, and Fosters Brook Lower. It would also reduce erosion and other degradation of living shoreline features for these assets

Health and Social Benefits

The proposed project can be expected to benefit Nassau County as a whole, with a total population of 1,346,158. Approximately 16.3% of this population is considered low-income and 16.3% are considered senior-citizens.⁵⁰ This project aims to protect multiple health and social services assets within Nassau County and the Community, as well as positively impact public health for populations throughout Nassau County by improving water quality and reducing flooding impacts.

Cost-Benefit Analysis

Stormwater issues are larger than South Valley Stream, as the stormwater infrastructure system connects to the Nassau County system and may connect to neighboring communities. The total featured project cost of \$500,000 would capitalize on economies of scale through a County-wide study that would identify systemic interventions for stormwater mitigation, to

cost-effectively benefit multiple communities. Adequate system functionality could reduce the costs of property damage and government expenditures for emergency response during future storm events as well as costs of system maintenance.

Anticipated Reduction of Risk

Systematic maintenance of the stormwater disposal system would reduce the system's vulnerability by reducing the frequency and intensity of flooding. The education of community members could promote awareness of the conditions that degrade the stormwater disposal system, thereby reducing the need for system maintenance. This plan should provide a reduction of risk to all persons in Nassau County, a population of 1,346,158.⁵¹

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

The project is not likely to face regulatory obstacles including issues with permits or other approvals, however the recommendations resulting from the study may require permits, therefore coordination is recommended with local municipalities and NYS DEC, NYS DOS and USACE.

Entity with Jurisdiction

Nassau County. A multi-jurisdictional committee/consortium consisting of all Nassau County municipalities could be considered, as well. This form of governance and administration has proven successful on Long Island, as represented by both the Hempstead Harbor Protection Committee and Manhasset Bay Protection Committee. Potential actions of such a multi-jurisdictional committee/consortium might include being able to appoint a fiduciary to be responsible for grant management, with the committee/consortium itself being responsible for project management. The recent New York – Connecticut Sustainable Communities Consortium, a program funded by a HUD Sustainable Communities Regional Planning Grant, used this structure and was successful in carrying out the planning program over a wide geography and across numerous municipal boundaries.

Green Infrastructure and Subsurface Stormwater Retention at Green Acres Mall Area [Featured Project]

Stormwater flows from the large impervious surfaces at Green Acres Mall Area may be contributing to stormwater issues in South Valley Stream. Stormwater management issues contributed to flooding during Superstorm Sandy, as stormwater could not exit the system through outfalls which were blocked by tidal flows.

This project encourages utilization of green infrastructure to retain stormwater from the large impervious surfaces at Green Acres Mall and adjacent properties, including Green Acres Plaza and the former Sunrise Multiplex site. This project seeks to support long-term economic stability while controlling stormwater through green infrastructure and subsurface retention.

It also has real property constraints as the property owner of Green Acres Mall would need to implement the stormwater retention on site. Project success is conditional on cooperation of the property owner and coordination with the Town of Hempstead and Nassau County is recommended.

Cost Estimate

N/A (Advocacy)

Benefits or Co-Benefits

This project would result in local benefits, both public and private, in South Valley Stream.

Economic Benefits

The economic benefits of a water retention site are unclear unless additional analysis is performed. However, if successful, the stormwater retention could reduce the possibilities of flooding properties within an influence area. The influence

area would be determined by the waterways directly impacted by the retention. Possible reductions in loss to property, life, and equipment could result from a proper implementation.

Environmental Benefits

Advocating green infrastructure would not directly protect natural and cultural resources. However, if green infrastructure systems were adopted at Green Acres Mall, less flooding and nutrient loading would be expected, benefiting Valley Stream, Clear Creek, and Watts Creek, by improving water quality of those waterbodies.

Health and Social Benefits

The proposed project impacts the properties near the Green Acres Mall with a total population of 1,727. Approximately 27.9% of this population is considered low-income and 16.7% are considered senior-citizens.⁵² This project may provide benefits to the adjacent Yale Academy, which is classified as a health and social services asset by the community, as well as positively impact public health for populations in Mill Brook by improving water quality and reducing flooding impacts.

Cost-Benefit Analysis

This featured project does not have a projected cost due to uncertainties regarding the existing on-site stormwater retention at these commercial properties; however, implementation of green infrastructure could be a low-cost method for treating the stormwater generated from these large impervious surfaces, reducing stormwater issues in the Community while potentially increasing property values for these significant commercial landowners.

Anticipated Reduction of Risk

Utilization of Green Infrastructure at Green Acres Mall and the Sunrise Multiplex would reduce flooding downstream, thereby reducing vulnerability of assets in the area. Additional benefits include increased stormwater quality, reduced stormwater quantity, enhanced wildlife habitat, and improvements to the urban landscape. This action should provide a reduction of risk to those living near the Green Acres Mall and Sunrise Multiplex site. The combined population of the block groups near the site is 1,727.⁵³

Timeframe of Implementation

Long Range (> five years)

Regulatory Requirements

The project may require permits from the Town of Hempstead, Nassau County and NYS DEC. It has real property constraints as the property owner would need to implement the stormwater retention practices on site. Project success is conditional on cooperation of the property owner and coordination with the Town of Hempstead and Nassau County.

Entity with Jurisdiction

Private Property Owners

Microgrid Network Pilot Project [Featured Project]

Areas within South Valley Stream were without power for up to seven weeks after Superstorm Sandy, including the northwest portion of Mill Brook. The neighborhood needs backup power supply sources that are available for homeowner benefit during a disaster, and potentially year-round.

This project would develop a microgrid storm resistance plan and implement microgrid pilot project, possibly at Green Acres Mall and Forest Road School. Given its backup power supply, Green Acres Mall is a candidate for a microgrid, as a hub for resilient power. This initial node could be connected to locally significant infrastructure on the north side of Valley Stream, such as Forest Road School. Other schools on the south side of Valley Stream can be part of a microgrid network, including Valley Stream High School and Robert Carbonaro School.

It also has real property constraints as the property owner of Green Acres Mall would need to implement the microgrid on site. Project success is conditional on cooperation of the property owner and coordination with the Town of Hempstead and Nassau County is recommended.

Cost Estimate

Approximately \$6,000,000

Benefits or Co-Benefits

This project would result in local benefits, both public and private, in South Valley Stream.

Economic Benefits

It is anticipated that this project would create 65 full-time equivalent jobs.⁵⁴ The installation

of micro-grids and other energy saving devices can reduce the overall strain on the regional electrical network. In addition to storm-related power outages, this project could have potential economic benefits such as reducing the impact of blackouts and brownouts due to demand out pacing capacity.

Additionally, an effective microgrid could be used in a demand response program that can generate money for the community. The programs either reduce power or generate power in times of peak demand and therefore make a more secure electrical grid network for the region.

Health and Social Benefits

The proposed project impacts the block groups covering the Green Acres Mall and the Forest Road School (potential sites) with a total population of 3,529. Approximately 25% of this population is considered low-income and 16.7% are considered senior-citizens.⁵⁵ This project involves the Forest Road School, which is identified as a health and social services asset by the community. The project would also benefit populations by providing backup power, which in addition to powering sumps, heat, and other necessary utilities, can power medical devices such as oxygen tanks, which was an issue during Superstorm Sandy.

Cost-Benefit Analysis

Superstorm Sandy illustrated the negative impacts that power outages can have on emergency response by interrupting the communications network and disabling building systems. Connecting critical and locally significant facilities by a microgrid network, at a total featured project

cost of \$6,000,000, would yield a high value in providing reliable, efficient emergency response operations and enabling locally significant facilities, such as schools, to recover faster after future storm events.

Anticipated Reduction of Risk

This project would advocate implementation of a microgrid at a strategic location. In areas where power from microgrids is available, assets experience reduced vulnerability as a result of less frequent service disruptions, and/or service disruptions of shorter duration. Backup power supplies would allow an asset's equipment to operate during primary power failure, and would allow first responders to communicate without interruption, thereby providing better service to the community. This action should provide a reduction of risk to those living near the microgrid project. The combined population of the area is 3,529.⁵⁶

Timeframe of Implementation

Intermediate (two to five years)

Regulatory Requirements

The project may have several regulatory obstacles including issues with permits or other approvals. Regulatory approvals, from the Town of Hempstead, NYS DEC and New York State Public Service Commission (NYSDPS) may be necessary

Entity with Jurisdiction

Town of Hempstead, Valley Stream District 30, Private Property Owners, LIPA/PSEG

Community Assistance Center at Forest Road School [Featured Project]

Despite a strong neighborhood communications network through the Mill Brook Civic Association, Superstorm Sandy illustrated the need for improved communications regarding disaster-response resources and a central location for distribution of supplies. Given power outages after Superstorm Sandy, the neighborhood, and especially socially vulnerable populations, would benefit from a safe location for residents to go during extreme heat or cold weather.

The Forest Road School could serve as a Community Assistance Center as well as a warming / cooling location. After a storm event, this would provide a place for members of the community to receive assistance. Its function may not be limited to storm events but also during heat waves or power outages, with the exception of events where evacuation is mandated. Hardening measures for the School may be necessary per the Nassau County Office of Emergency Management (OEM).

Real property constraints include ability to use the school, costs of operating the facility and paying for utility bills, operations, and security of the facility. Project success is conditional on cooperation of the property owner and coordination with the Town of Hempstead and Nassau County's Office of Emergency Management

Cost Estimate
N/A (Advocacy)

Benefits or Co-Benefits

This project would result in local, public benefits in South Valley Stream.

Health and Social Benefits

The proposed project can be expected to benefit residents of the block groups near the Forest Road School, a population of 4,559. Approximately 20.7% of this population is considered low-income and 16.4% are considered senior-citizens.⁵⁷ This project involves the Forest Road School, which is identified as a health and social services asset by the community. The project would especially benefit all populations that can access the school, especially socially vulnerable populations that are at an increased risk from heat-related illness.

Cost-Benefit Analysis

As a Community Assistance Center would be established in an existing facility, ideally equipped with a backup power supply and no necessary improvements, this featured project would have no associated costs, but would benefit socially vulnerable populations by reducing their vulnerability in future storm events.

Anticipated Reduction of Risk

The project would not decrease exposure or vulnerability of assets; however it would reduce the *vulnerability* of the local population during severe weather. This project would benefit those with access to the center. The area near the project has a population of 4,559.⁵⁸ Ideally, this project could benefit others within South Valley Stream as well.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

A warming and cooling center would need to comply with Nassau County and FEMA regulations for warming and cooling centers.

Entity with Jurisdiction

Nassau County, Valley Stream District 30

South Valley Stream Community Emergency Response Team (CERT) [Featured Project]

Nassau County has a CERT Team which was very active during Superstorm Sandy, yet the NYRCR Committee is looking for more local, community driven emergency response in South Valley Stream, especially to monitor socially vulnerable populations. This project would build stronger local lines of communication and coordination with Nassau County Office of Emergency Management (OEM) and Nassau County CERT by establishing a local CERT Team for South Valley Stream.

This project would assist with ongoing local, county, and state disaster response planning efforts to increase preparedness and disaster response capability as well as provide local education programs that can provide residents of South Valley Stream with greater awareness of evacuation procedures. CERT programs are led by emergency management professionals to train volunteers on basic disaster response skills (such as first aid and search and rescue procedures). After training, members of the CERT can begin immediate response procedures when a disaster strikes or assist emergency management professionals when a disaster overwhelms their capabilities. To start a CERT program, funding is necessary for equipment and materials. Nassau County's CERT Program is currently restructuring, therefore this project would work closely with Nassau County CERT.

Cost Estimate

Approximately \$2,500

Benefits or Co-Benefits

This project would result in local, public benefits in South Valley Stream.

Economic Benefits

Although this project would not create any significant employment, benefits may include savings in life, property, and equipment as well as reduced expenditures for disaster response due to more efficient emergency response operations facilitated by a local CERT Team.

Health and Social Benefits

The proposed project impacts the community of South Valley Stream, with a total population of 6,025. Approximately 19.2% of this population is considered low-income and 16.4% are considered senior-citizens.⁵⁹ This project aims to protect multiple health and social services assets within the community by providing coordinated emergency response services after storm events, which would be especially beneficial to vulnerable populations and those of low mobility.

Cost-Benefit Analysis

The South Valley Stream CERT Team would expand from the operational capacity and institutional knowledge of the Nassau County CERT and OEM. Therefore, a minimal total featured project cost of \$2,500 would yield high returns in emergency response coordination, communication and services to aid socially vulnerable populations, while enhancing the already strong social infrastructure of the Mill Brook Civic Association and South Valley Stream community.

Anticipated Reduction of Risk

The project would not decrease exposure or vulnerability of assets, however it would reduce the *vulnerability* of the local population by improving disaster response. Establishing a CERT should provide a reduction of risk to all populations in the South Valley Stream Community. The CERT would provide increased manpower and expertise during a disaster response. The combined population of the area is 6,025.⁶⁰ Trained CERT members may also assist in events beyond the South Valley Stream Community.

Timeframe of Implementation

Immediate (< two years)

Regulatory Requirements

The project is not likely to face regulatory obstacles including issues with permits or other approvals, or have real property constraints, and is ready to begin. Coordination with the Mill Brook Civic Association, Nassau County OEM, Nassau County CERT, and FEMA is recommended.

Entity with Jurisdiction

Nassau County

Resilient Home Construction Incentive Program [Featured Project]

Some homes damaged during Superstorm Sandy have built back as before, without resilient design practices, leaving them vulnerable to impacts of future storm events. This project would establish an incentive program to maintain neighborhood character while strengthening the housing stock in South Valley Stream against future extreme weather. This program would provide a tax break for homeowners who make resiliency home improvements and retrofits, on an escalating scale up to a designated maximum amount. The Resilient Home Construction Incentive Program would involve a review of existing programs and information to develop the program and to establish participation goals, would identify resilient design and construction standards for program participants; and would provide a stipend for program participation. The program would also serve to encourage resilient design and construction practices for new home construction. It is assumed that funding for the tax incentives would be limited per household with a maximum value allocated to the program as a whole.

Cost Estimate

Approximately \$850,000

Benefits or Co-Benefits

This project would generate primarily local, private benefits for homeowners in South Valley Stream.

Economic Benefits

It is anticipated that this project would create 9

full-time equivalent jobs.⁶¹ If enacted effectively, this program could induce improvements that would increase resiliency in residential structures thereby lowering insurance premiums and making homes more valuable. The value could translate into higher taxes as the market demand drives up the overall value of the homes improved.

Health and Social Benefits

The proposed project impacts the community of South Valley Stream, with a total population of 6,025. Approximately 19.2% of this population is considered low-income and 16.4% are considered senior-citizens.⁶² Project benefits are directed towards homeowners, in the largely residential South Valley Stream Community.

Cost-Benefit Analysis

While most, although not all, residential homes in South Valley Stream have rebuilt following Superstorm Sandy's damage, this featured project, at a total cost of \$850,000 would increase the resiliency of the housing stock against future storms, reducing the costs of potential property damage and avoiding the loss of tax revenues that would result from permanently damaged homes, as well as preserve the residential character of Mill Brook and North Woodmere.

Anticipated Reduction of Risk

Implementation of program provisions would reduce the *vulnerability* of residential assets by making structures less susceptible to flood damage. This program could provide access

to a reduction of risk to all populations in the South Valley Stream Community. The combined population of the area is 6,025.⁶³

Timeframe of Implementation

Intermediate (two to five years)

Regulatory Requirements

The project is not likely to have program-wide permitting requirements; however, it may have some regulatory obstacles in relation to local building permits and environmental review for individual properties. While implementation could begin immediately, the timeframe could be delayed by the time necessary to work through building codes and regulatory obstacles.

Entity with Jurisdiction

Town of Hempstead, Private Property Owners

South Valley Stream: Proposed and Featured Projects

A. Manage Tidal Flow

- A1 Repair Bulkheads and Restore Shoreline at Brook Road Park [Proposed]
- A2 Restore Natural Shoreline along 'The Path' [Proposed]
- A3 Corridor Restoration and Riverbank Stabilization [Featured]
 - A3a Watts Creek
 - A3b Valley Stream: North, Southeast, Southwest
 - A3c Clear Stream
 - A3d Fosters Brook Lower

B. Retain Stormwater

- B1 Develop Community Information Regarding Green Infrastructure and Living Shorelines [Proposed]
- B2 Green Infrastructure Implementation Program on Residential and Public Property [Featured]
- B3 Stormwater Infrastructure Upgrades [Featured]
- B4 County-wide Stormwater Mitigation Plan with Community Education and Awareness [Featured]
- B5 Encourage implementation of Green Infrastructure and Subsurface Stormwater Retention at Green Acres Mall, Including Sunrise Multiplex Site [Featured]

C. Reinforce Powergrid

- C1 Implement Microgrid Network Pilot Project [Featured]
- C2 Establish Community Assistance at Forest Road School [Featured]

D. Strengthen Communication & Coordination

- D1 Establish A Community Emergency Response Team (CERT) [Proposed]

E. Maintain and Enhance Economic Viability

- E1 Resilient Home Construction Incentive Program [Featured]

R. Regional

- R1 South Shoreline Improvement Program Study [Proposed]
- R2 Coordinate with Hydrologic and Hydraulic study of the Hook Creek / Head of Bay Watershed [Featured]

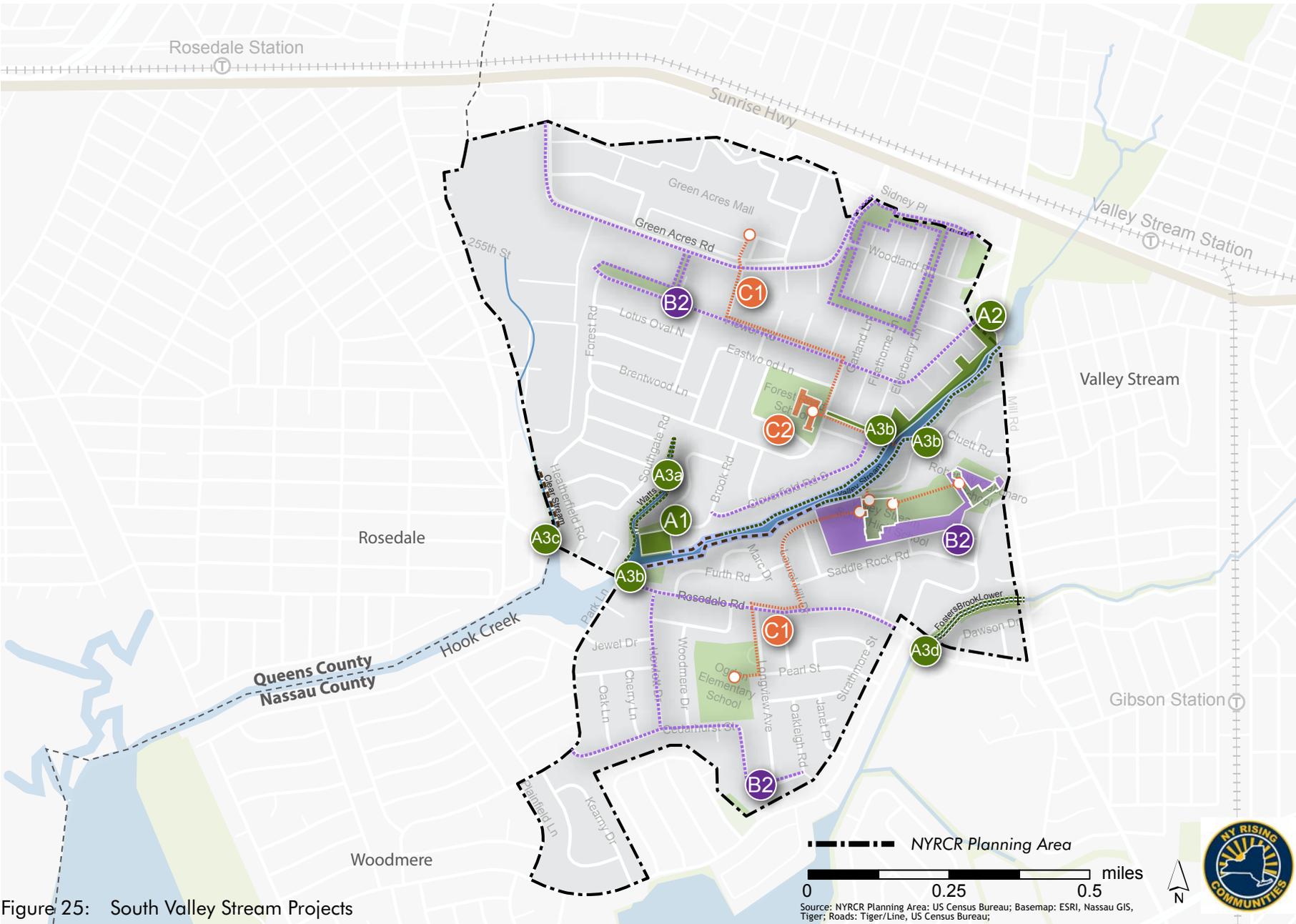


Figure 25: South Valley Stream Projects

Section V: Additional Materials

Table 1: A: Additional Resiliency Recommendations

Strategy	Project Name	Project Description	Estimated Cost	Regional Project (Y/N)
1: Manage Tidal Flow	Rockaway Turnpike Floodgates and Rockaway Turnpike/Nassau Expressway Upgrades Study	Analyze construction of floodgates / flood protection alternatives at Hook Creek and Motts Creek and elevation of Rockaway Tpke and Nassau Expy. Conduct traffic management study to decrease congestion in evacuation routes. Study opportunities for economic development in retail/commercial zones that would be protected by flood mitigation.	\$920,000	Y
1: Manage Tidal Flow	Coordination with solutions being developed for Jamaica Bay, the Rockaway Inlet, and the Barrier Island	Advocate for a regional solution for flood protection from Jamaica Bay that coordinates with efforts by US Army Corps of Engineers and New York City.	N/A (Advocacy)	Y
2. Retain Stormwater	Zoning changes for Stormwater Management	Advocate for policy changes with the Town of Hempstead for greater stormwater management controls over future development.	N/A (Policy)	Y
3. Reinforce Power Grid	Renewable Energy Feasibility Study and Action Plan	Identify and analyze potential sites for renewable energy production and microgrid nodes that could be used to maintain power during emergency situations.	\$170,000	N
3. Reinforce Power Grid	Expanding the natural gas network, especially to critical facilities	Extend the natural gas network along key roadways in the community, and especially to critical facilities (e.g., warming / cooling center, schools) that may use such natural gas supply for generators or microgrids.	\$5,000,000	N
3. Reinforce Power Grid	Burying utility lines, especially to lines supplying power to critical infrastructure	Move utility lines underground in forested areas, with higher priority for those connecting to critical infrastructure.	\$5,000,000	N
4. Strengthen Communication and Coordination	Identifying vulnerable populations for emergency response	Capitalizing on the existing community network through the Mill Brook Civic Association and NYRCR Planning Committee, community members would assist the County with emergency response by identifying socially vulnerable populations.	\$5,000,000	N
4. Strengthen Communication and Coordination	Community monitoring and oversight of project implementation	Continue planning committee engagement after finalizing the Final NYRCR Plan, to provide committee members with project status updates and fast track project completion.	\$30,000	N
5. Maintain and Enhance Economic Viability	Maintaining economic viability of the community's key economic assets for stormwater management	Support the long-term economic viability of the community's key economic assets while encouraging implementation of green infrastructure to manage the stormwater volumes associated with these assets.	N/A (Advocacy / Policy)	N
1. Manage Tidal Flow	Hempstead / Hewlett Bay Resilient Corridor Study	Build upon the Rockaway Turnpike Floodgates and Rockaway Turnpike/Nassau Expressway Upgrades study to analyze the creation of a continuous "Resiliency Corridor" that uses existing roadway elevations in combination with floodgates at waterway crossings to protect the entire Hempstead/Hewlett Bay area against coastal flooding and hardens evacuation routes.	\$2,500,000	Y

Table 2: B: Master Table of Projects

Strategy	Project Name	Short Description	Estimated Cost	Project Category	Regional (Y/N)
1: Manage Tidal Flow	South Shoreline Improvement Program Study	Study methods for facilitating coordinated shoreline improvements to achieve a contiguous shoreline, including funding mechanisms, streamlining permitting, and incentivizing bulkhead repairs and living shoreline improvements.	\$50,000	Proposed	Y
1: Manage Tidal Flow	Bulkhead Repair and Shoreline Restoration at Brook Road Park	Provide necessary repairs to Brook Road Park by replacing failing bulkhead with a vegetated buffer and a rock edge, constructing a sculpted mound tied into the higher elevation to protect against tidal flooding, repairing outfalls, and constructing a fishing pier for waterfront access.	\$2,000,000	Proposed	N
1: Manage Tidal Flow	Natural Shoreline Restoration along “The Path”	Restore the natural shoreline along “The Path” by constructing a living shoreline to buffer tidal flow, planting trees and other vegetation, repairing outfalls and installing green infrastructure measures with educational signage to capture stormwater runoff.	\$1,700,000	Proposed	N
1. Manage Tidal Flow; 2. Retain Stormwater	Community Education regarding Green Infrastructure and Living Shorelines	Educate the community about living shoreline plantings and improvements, tree pruning near power lines, and ways to reduce their individual impact on the stormwater system through green infrastructure, water conservation, and rain water harvesting.	\$60,000	Proposed	N

B: Master Table of Projects (continued)

1: Manage Tidal Flow	Corridor restoration and riverbank stabilization: Valley Stream, Clear Stream, Watts Creek, Fosters Brook Lower. This project has been separated into sub-projects for cost purposes.				
1: Manage Tidal Flow	<i>Sub-project A: Watts Creek</i>	Living shoreline improvements would be made to both sides of Watts Creek.	\$1,520,000	Featured	N
1: Manage Tidal Flow	<i>Sub-project B North: Valley Stream</i>	Living shoreline improvements would be made to the north side of Valley Stream between Brook Road Park and “The Path.”	\$1,100,000	Featured	N
1: Manage Tidal Flow	<i>Sub-project B Southwest: Valley Stream Southwest</i>	The Bulkheads would be repaired along the western portion of the south side of Valley Stream.	\$2,700,000	Featured	N
1: Manage Tidal Flow	<i>Sub-project B Southeast: Valley Stream Southeast</i>	Living shoreline improvements would be made to the eastern portion of the south side of Valley Stream.	\$1,300,000	Featured	N
1: Manage Tidal Flow	<i>Sub-project C: Clear Stream</i>	Bulkheads would be repaired along both sides of Clear Stream.	\$2,800,000	Featured	N
1: Manage Tidal Flow	<i>Sub-project D: Fosters Brook Lower</i>	Living shoreline improvements would be made to both sides of Fosters Brook Lower.	\$1,000,000	Featured	N
2. Retain Stormwater	Hydrologic and Hydraulic Study of Hook Creek – Head of Bay Watershed	Advocate for an engineering study that would provide a regional, watershed-level understanding of the hydrology affecting South Valley Stream, to better inform stormwater management projects.	\$750,000	Featured	Y
2. Retain Stormwater	Green Infrastructure Implementation Program on Residential and Public Property	Install green infrastructure on public property and rights-of-way, and incentivize green infrastructure installation on residential property. Goal is to capture 5% of stormwater falling on impervious surfaces.	\$2,300,000	Featured	N

B: Master Table of Projects (continued)

2. Retain Stormwater	Stormwater Infrastructure Upgrades	Conduct a Hydrologic and hydraulic study on the stormwater system to determine deficiencies; install check valves, upgrade stormwater pipes, drains, and catch basins as recommended by the study.	\$2,000,000	Featured	N
2. Retain Stormwater	County-wide Stormwater Mitigation Plan with Community Education and Awareness	Coordinate with Nassau County to develop a stormwater system maintenance and monitoring plan which would identify maintenance needs to prevent system backups.	\$500,000	Featured	Y
2. Retain Stormwater	Green Infrastructure and Subsurface Stormwater Retention at Green Acres Mall	Encourage utilization of green infrastructure at Green Acres Mall, as well as redevelopment of Sunrise Multiplex that supports long-term economic stability while controlling stormwater through green infrastructure and subsurface retention.	N/A (Advocacy)	Featured	N
3. Reinforce Power Grid	Microgrid Network Pilot Project	Develop a microgrid storm resistance plan and implement micro-grid pilot project connecting to locally significant facilities.	\$6,000,000	Featured	N
3. Reinforce Power Grid	Community Assistance Center at Forest Road School	Establish Forest Road School as a Community Center Assistance Center as well as a warming / cooling location for the community to obtain resources after storm events.	N/A (Advocacy)	Featured	N
4. Strengthen Communication and Coordination	South Valley Stream Community Emergency Response Team (CERT)	Coordinate with Nassau County OEM and CERT to establish a local CERT Team that would assist with disaster response planning efforts, increase preparedness and disaster response capability, and provide local education programs.	\$2,500	Featured	N

B: Master Table of Projects (continued)

5. Maintain and Enhance Economic Viability	Resilient Home Construction Incentive Program	Establish a tax incentive program for homeowners who make resiliency home improvements and retrofits to strengthen the existing housing stock.	\$850,000	Featured	N
1: Manage Tidal Flow	Rockaway Turnpike Floodgates and Rockaway Turnpike/Nassau Expressway Upgrades Study	Analyze construction of floodgates / flood protection alternatives at Hook Creek and Motts Creek and elevation of Rockaway Tpke and Nassau Expy. Conduct traffic management study to decrease congestion in evacuation routes. Study opportunities for economic development in retail/commercial zones that would be protected by flood mitigation.	\$920,000	Additional Resiliency Recommendation	Y
1: Manage Tidal Flow	Coordination with solutions being developed for Jamaica Bay, the Rockaway Inlet, and the Barrier Island	Advocate for a regional solution for flood protection from Jamaica Bay that coordinates with efforts by US Army Corps of Engineers and New York City.	N/A (Advocacy)	Additional Resiliency Recommendation	Y
2. Retain Stormwater	Zoning changes for Stormwater Management	Advocate for policy changes with the Town of Hempstead for greater stormwater management controls over future development.	N/A (Advocacy)	Additional Resiliency Recommendation	Y
3. Reinforce Power Grid	Renewable Energy Feasibility Study and Action Plan	Identify and analyze potential sites for renewable energy production and microgrid nodes that could be used to maintain power during emergency situations.	\$170,000	Additional Resiliency Recommendation	N
3. Reinforce Power Grid	Expanding the natural gas network, especially to critical facilities	Extend the natural gas network along key roadways in the community, and especially to critical facilities (e.g., warming / cooling center, schools) that may use such natural gas supply for generators or microgrids.	\$5,000,000	Additional Resiliency Recommendation	N
3. Reinforce Power Grid	Burying utility lines, especially to lines supplying power to critical infrastructure	Move utility lines underground in forested areas, with higher priority for those connecting to critical infrastructure.	\$5,000,000	Additional Resiliency Recommendation	N

B: Master Table of Projects (continued)

4. Strengthen Communication and Coordination	Identifying Vulnerable Populations for Emergency Response	Capitalizing on the existing community network through the Mill Brook Civic Association and NYRCR Planning Committee, community members would assist the County with emergency response by identifying socially vulnerable populations.	N/A (Advocacy)	Additional Resiliency Recommendation	N
4. Strengthen Communication and Coordination	Community monitoring and oversight of project implementation	Continue planning committee engagement after finalizing the Final NYRCR Plan, to provide committee members with project status updates and fast track project completion.	\$10,000	Additional Resiliency Recommendation	N
5. Maintain and Enhance Economic Viability	Maintaining economic viability of the community's key economic assets for stormwater management	Support the long-term economic viability of the community's key economic assets while encouraging implementation of green infrastructure to manage the stormwater volumes associated with these assets.	N/A (Advocacy)	Additional Resiliency Recommendation	N
1. Manage Tidal Flow	Hempstead / Hewlett Bay Resilient Corridor Study	Build upon the Rockaway Turnpike Floodgates and Rockaway Turnpike/Nassau Expressway Upgrades study to analyze the creation of a continuous "Resiliency Corridor" that uses existing roadway elevations in combination with floodgates at waterway crossings to protect the entire Hempstead/Hewlett Bay area against coastal flooding and hardens evacuation routes.	\$2,500,000	Additional Resiliency Recommendation	Y

C: Public Engagement Process

The Public Engagement plan for the South Valley Stream NYRCR Community was structured to encourage broad community participation, including people from both neighborhoods (Mill Brook and North Woodmere) and all sectors comprising the study area. The goal was to actively engage the community in the process of creating a pragmatic program that envisions a resilient and sustainable future for the community.

The plan was effective in informing a wide spectrum of the community about the Committee's efforts and the actions that should be taken in the future to enhance the resiliency of the area. It provided multiple opportunities for public input and direction, and helped to identify a group of potential project "champions" who can oversee and monitor projects as they proceed in the future.

NYRCR Planning Committee

The NYRCR Planning Committee was composed of 10 members, including long term residents, civic and institutional leaders, and business and municipal representatives. The NYRCR Planning Committee was instrumental in providing input and information to shape the Plan and in assisting with the broader Public Engagement Strategy through their constituent and social networks. A full list of NYRCR Planning Committee members can be found on the inside of the front cover of this plan.

The Public Engagement Strategy included regular, monthly NYRCR Planning Committee meetings focused on the development of the Plan. At these meetings, which were open to the public, the NYRCR Planning Committee provided input on:

- The issues currently facing South Valley Stream as a result of Superstorm Sandy and other extreme events;
- South Valley Stream's existing assets and the opportunities they might provide for a more resilient future;
- Preliminary ideas for projects in the area that can be initiated through the current planning process;
- Discussions regarding the development of recommended actions and projects;
- Input regarding the format and content for public engagement events; and
- Major outreach efforts focused on "getting the word out" about the project, the planning process, and the public engagement meetings.

Public Meetings

There were three public meetings, held in October 2013, November 2013, and February 2014. A fourth public meeting will be held in April 2014, after completion of the final plan.

Though each meeting focused on a different part of the planning process, the entire process, purpose, and timeline was explained during the presentation at each of the three meetings. Representatives from the NY Rising Housing Recovery Program, FEMA, Project Hope, Catholic Charities, and the Family Service League were available at the meetings to speak with residents about any individual or property-related concerns.

Meeting #1: The first Public Meeting was held on October 15, 2013. Approximately 40 members of the community attended. The meeting focused on gathering the public’s knowledge, experience, and recommendations for the development of the NYRCR Conceptual Plan. The public was invited to provide input on the NYRCR Planning Committee’s work to date, including the Community Vision and Identification of Community Assets, Needs, and Opportunities.

Meeting #2: The second Public Meeting was held on November 18, 2013. The purpose of the meeting was to discuss the draft NYRCR Conceptual Plan with community residents. Approximately 11 members of the community attended the meeting. The format of the meeting was a short presentation followed by an invitation for the attendees to walk around the room to various stations to view ideas and strategies from the Plan. Attendees gave their feedback by filling out a comment sheet or speaking with the member of the consultant team who was standing near each station, and they were invited to make notes on the information boards and respond to specific questions posted at each station. Attendees were invited to vote for their favorite projects by placing sticker dots on the boards. There were several copies of the draft Conceptual Plan at the meeting, for the community to review, and attendees were also informed that the draft Conceptual Plan was posted on the website for their review.

Meeting #3: The third Public Meeting was held on February 10, 2014. Approximately 21 members of the community attended. The purpose of this meeting – the final meeting before the draft plan is sent to the State for review – was to discuss the list of specific projects that the NYRCR Planning Committee and the consultant team proposed to address issues related to resilience and recovery in South Valley Stream. The format of the meeting was a presentation followed by a question and answer session, during which residents gave their input and asked questions about the NYRCR Planning Committee’s preferred menu of projects.

Outreach about the Project and Meetings

The Consultant Team and the NYRCR Planning Committee actively pursued a variety of strategies to inform people about the project and the Public Meetings. These techniques included:

- Electronic notices sent to a broad range of individuals and organizations (including schools, businesses, and churches) in the South Valley Stream NYRCR area;
- Large signs posted outdoors to advertise the meeting;
- Flyers distributed locally to stores and other businesses by the NYRCR Planning Committee;
- Door hangers distributed by high school and FEMA Corps volunteers to homes in Mill Brook and North Woodmere;
- Postcards sent to all homes in South Valley Stream by Assemblywoman Solages’ office;
- Media advertisements;
- Posting on community calendars; and
- Press releases to local newspapers.

Sharing Information

Public information (including the draft and final versions of the NYRCR Conceptual Plan, meeting notices, and presentations from meetings) was provided via a project website established for the South Valley Stream Community (<http://stormrecovery.ny.gov/nyrcr/community/south-valley-stream>). Information was also posted on the NYRCR Facebook page.

D: Economic Profile

Green Acres Mall Tax Contribution

As per the Nassau County Assessor’s site, the Green Acres Mall property consists of two parcels. In 2013, these two parcels paid the following property taxes:

\$2,503,760.62 to Nassau County;
\$1,435,484.89 to Town of Hempstead;
\$789,757.96 to Sanitary District 1; and
\$13,299,341.22 to Valley Stream Union Free School District 30 (note that some of these tax monies also feed into the Valley Stream Central High School District budget).

Valley Stream Union Free School District 30 has a 2013-14 proposed tax levy of \$26,591,233¹ while Valley Stream Central High School District has 2013-2014 estimated local tax levy revenues of \$80,873,777.

Median Household Income

South Valley Stream maintains a median household income of over \$100,000, exceeding that of Nassau County and, to a greater extent, the Primary Market Area (PMA), defined as the 20-minute drive time contour from the Forest Road Elementary School). Through 2018, South Valley Stream is forecasted to experience a nominal median household income increase of just over \$11,000, slightly lower than the forecasted nominal increase of approximately \$14,000 for the PMA, and slightly higher than the forecasted nominal increase of approximately \$10,300 for Nassau County.

Income Distribution

There is a considerable percentage of upper-income households within South Valley Stream, with over six out of ten households earning more than \$75,000 a year. Through 2018, all income brackets earning greater than \$75,000 are forecasted to grow, with the strongest growth occurring in the \$150,000 to \$199,999 category, at an annualized growth rate of just over four percent. Conversely, all income groups earning below \$75,000 are forecasted to decline, with households earning below \$35,000 declining by 4.7 percent annually.

¹ Valley Stream District 30 Budget Newsletter

Unemployment

In 2013, the annual rate of unemployment in South Valley Stream is an estimated 8.0 percent, lower than the PMA (10.4%), but higher than Nassau County (7.8%).

Industry Trends

Retail is the dominant industry in South Valley Stream, though transportation and warehousing as well as educational services are also important. Healthcare and social assistance has seen a relatively high increase in jobs in South Valley Stream. In contrast, the primary industry in Nassau County is health care and social assistance, with retail trade coming in second.

Figure 3: Top 10 Industries by Employment

South Valley Stream CDP				Percentage Change	
	2007	2009	2011	2007-2009	2009-2011
Total Primary Jobs	4,005 100.0%	3,868 100.0%	4,747 100.0%	-3.4%	22.7%
Retail Trade	2,690 67.2%	2,632 68.0%	3,354 70.7%	-2.2%	27.4%
Transportation and Warehousing	360 9.0%	350 9.0%	364 7.7%	-2.8%	4.0%
Educational Services	362 9.0%	354 9.2%	363 7.6%	-2.2%	2.5%
Accommodation and Food Services	167 4.2%	89 2.3%	166 3.5%	-46.7%	86.5%
Health Care and Social Assistance	45 1.1%	61 1.6%	160 3.4%	35.6%	162.3%
Professional, Scientific, and Technical Services	119 3.0%	116 3.0%	73 1.5%	-2.5%	-37.1%
Wholesale Trade	58 1.4%	83 2.1%	65 1.4%	43.1%	-21.7%
Other Services (excluding Public Administration)	75 1.9%	47 1.2%	48 1.0%	-37.3%	2.1%
Finance and Insurance	27 0.7%	38 1.0%	40 0.8%	40.7%	5.3%
Information	15 0.4%	16 0.4%	33 0.7%	6.7%	106.3%
Nassau County				Percentage Change	
	2007	2009	2011	2007-2009	2009-2011
Total Primary Jobs	543,043 100.0%	538,821 100.0%	539,568 100.0%	-0.8%	0.1%
Health Care and Social Assistance	92,458 17.0%	101,345 18.8%	106,443 19.7%	9.6%	5.0%
Retail Trade	70,925 13.1%	67,636 12.6%	72,767 13.5%	-4.6%	7.6%
Educational Services	65,233 12.0%	66,470 12.3%	63,397 11.7%	1.9%	-4.6%
Professional, Scientific, and Technical Services	34,650 6.4%	34,177 6.3%	34,143 6.3%	-1.4%	-0.1%
Accommodation and Food Services	31,504 5.8%	30,595 5.7%	33,305 6.2%	-2.9%	8.9%
Finance and Insurance	34,843 6.4%	30,909 5.7%	29,036 5.4%	-11.3%	-6.1%
Wholesale Trade	29,197 5.4%	28,177 5.2%	27,960 5.2%	-3.5%	-0.8%
Admin. & Support, Waste Manag. & Remediation	27,186 5.0%	28,270 5.2%	27,331 5.1%	4.0%	-3.3%
Other Services (excluding Public Administration)	23,770 4.4%	24,773 4.6%	25,554 4.7%	4.2%	3.2%
Public Administration	23,804 4.4%	23,459 4.4%	25,458 4.7%	-1.4%	8.5%

Source: US Census Bureau, OnTheMap; 4ward Planning Inc., 2013

Commuting Patterns

Inflow/Outflow

The two figures below display commutation patterns of South Valley Stream workers and residents as well as where South Valley Stream residents work. A high number of people employed in South Valley Stream reside in other locations. This inflow of workers has increased in both absolute and relative terms since 2007. In 2011, the majority (just over 50%) of South Valley Stream residents were employed in New York City, and 40.6 percent of workers were employed in Nassau County. Of those living in South Valley Stream, 3.7% are employed within the Community.

Figure 4: Where South Valley Stream Residents are Employed - Primary Jobs (by Cities and Places)

	2011		2009		2007	
	Count	Share	Count	Share	Count	Share
TOTAL PRIMARY JOBS	2,157	100.00%	2,158	100.00%	2,205	100.00%
New York city, NY	1,111	51.50%	1,090	50.50%	1,088	49.30%
South Valley Stream CDP, NY	80	3.70%	64	3.00%	90	4.10%
Valley Stream village, NY	70	3.20%	60	2.80%	79	3.60%
Mineola village, NY	54	2.50%	45	2.10%	44	2.00%
East Garden City CDP, NY	53	2.50%	38	1.80%	50	2.30%
Manhasset CDP, NY	45	2.10%	43	2.00%	31	1.40%
Lynbrook village, NY	40	1.90%	41	1.90%	40	1.80%
Hewlett CDP, NY	29	1.30%	24	1.10%	24	1.10%
Hempstead village, NY	26	1.20%	18	0.80%	30	1.40%
Oceanside CDP, NY	25	1.20%	38	1.80%	26	1.20%
All Other Locations	624	28.90%	697	32.30%	703	31.90%

Source: US Census Bureau, OnTheMap; 4ward Planning Inc., 2013.

Figure 5: Where South Valley Stream Residents Workers are Employed - Primary Jobs (by Counties)

	2011		2009		2007	
	Count	Share	Count	Share	Count	Share
Total Primary Jobs	2,157	100.0%	2,158	100.0%	2,205	100.0%
	2011		2009		2007	
	Count	Share	Count	Share	Count	Share
Nassau County, NY	875	40.6%	804	37.3%	872	39.5%
New York County, NY	443	20.5%	473	21.9%	503	22.8%
Queens County, NY	332	15.4%	285	13.2%	331	15.0%
Kings County, NY	278	12.9%	289	13.4%	210	9.5%
Suffolk County, NY	88	4.1%	120	5.6%	120	5.4%
Bronx County, NY	46	2.1%	28	1.3%	33	1.5%
Westchester County, NY	34	1.6%	42	1.9%	30	1.4%
Hudson County, NJ	17	0.8%	7	0.3%	10	0.5%
Richmond County, NY	12	0.6%	15	0.7%	11	0.5%
Essex County, NJ	8	0.4%	3	0.1%	10	0.5%
All Other Locations	24	1.1%	92	4.3%	75	3.4%

Source: US Census Bureau, OnTheMap; 4ward Planning Inc., 2013.

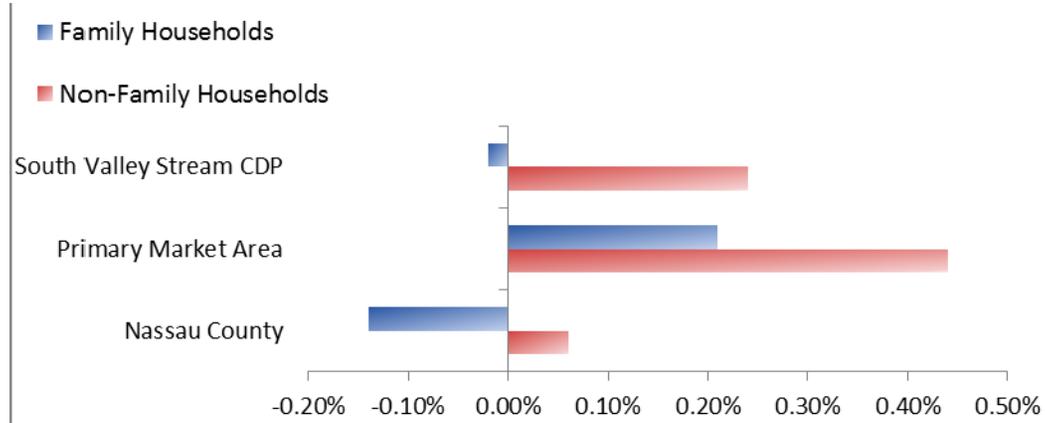
E: Housing Profile

Household Formation

The two figures below illustrate changes in household formation for all three study areas, including family and non-family households. Consistent with flat population growth, annualized changes in households are relatively weak. However, as a general pattern, family households within the study areas are forming at a considerably lower or negative rate, relative to non-family households and consistent with national and regional trends.

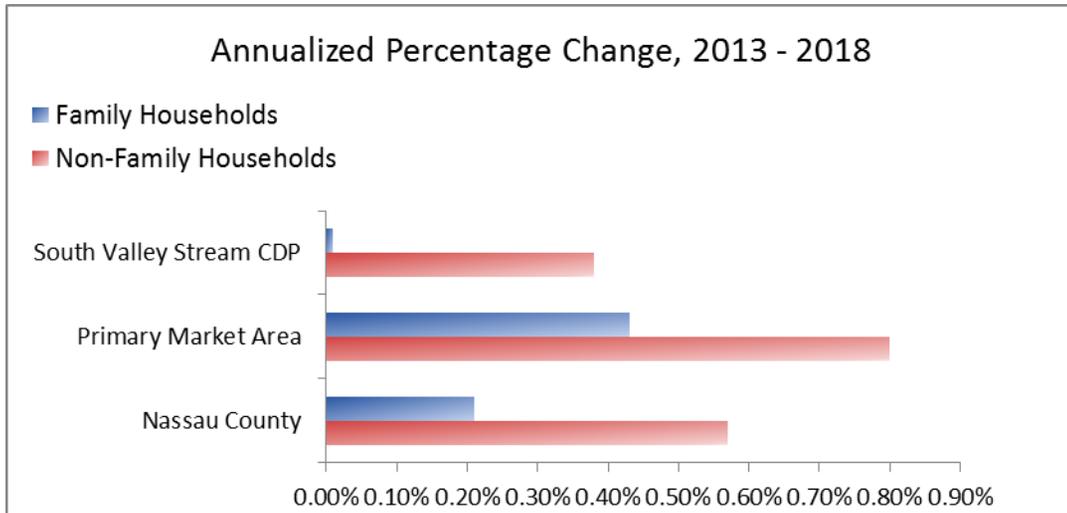
Both family and non-family household growth rates are forecasted to be positive for all three study areas between 2013 and 2018, although family households will be forming at a much lower rate than non-family households.

Figure 6: Annualized Percentage Change of Households, 2010 – 2013



Source: US Census Bureau, ESRI Community Analyst; 4ward Planning Inc., 2013

Figure 7: Annualized Percentage Change of Households, 2013 – 2018

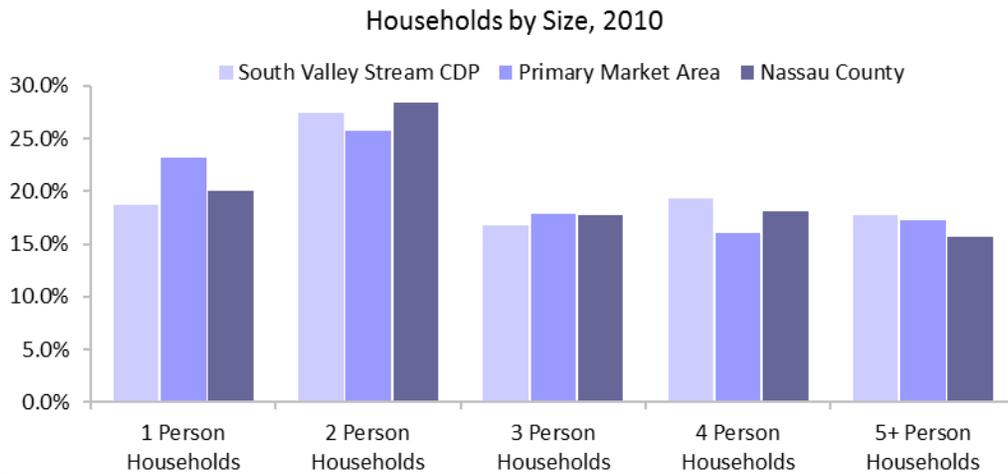


Source: US Census Bureau, ESRI Community Analyst; 4ward Planning Inc., 2013

Household Size

The breakdown of households by size is provided in **Figure** Figure 8. Two-person households are the most common in all of the study areas, although South Valley Stream also shows a fairly even split among other household sizes.

Figure 8: Households by Size, 2010



Source: US Census Bureau, ESRI Community Analyst; 4ward Planning Inc., 2013

Household Structure

Relative to the other study areas, South Valley Stream demonstrates the highest percentage of households with children, and the lowest percentage of single parent households in 2010. The majority of households in South Valley Stream (just over 61%) do not have children, a demographic trend that influences the type of housing that is demanded.

Figure 9: Household Types as a Percentage of Total Households, 2010

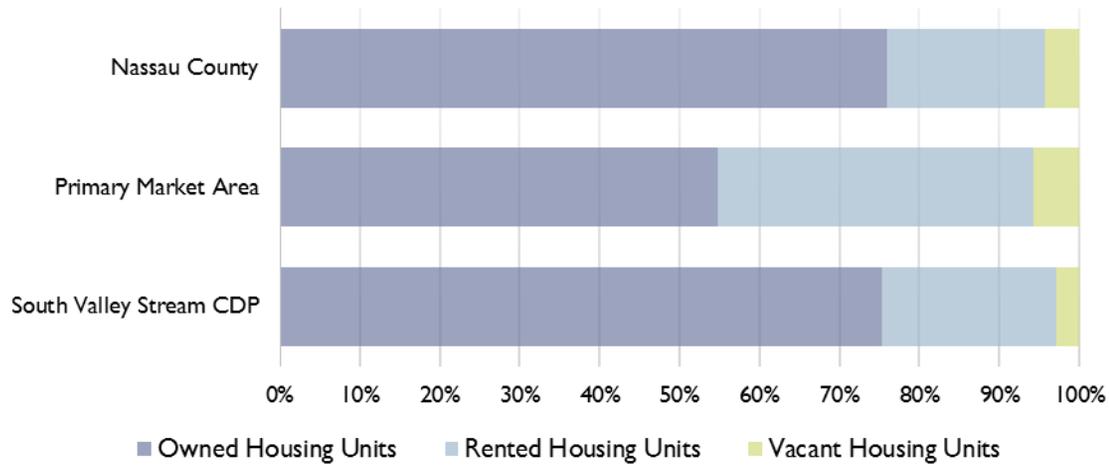
Household Type	South Valley Stream	PMA	Nassau County
Households with Children	38.8%	37.5%	36.8%
Single Parent Households	6.5%	13.2%	7.6%
Single Parent HHs as a % of HHs with Children	16.8%	35.2%	20.7%
Multigenerational Households	7.1%	8.5%	6.1%
Unmarried Partner Households	4.0%	4.9%	4.0%
Male-Female	3.3%	4.2%	3.3%
Same-sex	0.7%	0.7%	0.7%

Source: US Census Bureau, ESRI Community Analyst; 4ward Planning Inc., 2013

Housing Tenure

The figure below illustrates comparative trends in housing tenure for the three study geographies, indicating that South Valley Stream exhibits a fairly high rate of home ownership, at about 75% of housing units, and 77.6% of occupied housing units. While the vacancy rate in the Primary Market Area is approximately 6%, the 2013 vacancy rate in South Valley Stream is forecasted to be only 3%, which indicates a tighter housing market in South Valley Stream than in surrounding areas.

Figure 10: Housing Tenure Comparison, 2013

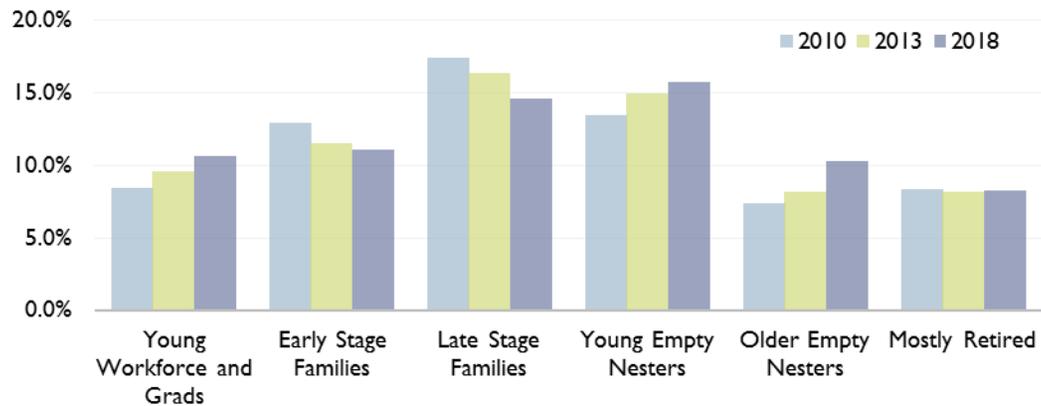


Source: US Census Bureau, ESRI Community Analyst; 4ward Planning Inc., 2013

Age and Housing Demand

Housing demand in South Valley Stream will likely come from within the demographic groups shown below. As their numbers increase, the young empty nesters and older empty nesters will exert considerable influence on the type of housing developed, specifically smaller rental housing units, as these groups downsize from larger single-family homes. Young professionals, to a lesser extent, should also influence the housing choice as they seek small, affordable rental units with convenient commutes to jobs or school.

Figure 11: Age Cohorts, South Valley Stream



Housing Condition and Affordability

In South Valley Stream, approximately 65.5% of renters pay 35% or more of their household incomes on gross rent (which is considered to be unaffordable). This rate is much higher than in Nassau County. This statistic may indicate a need for more housing, and more affordable housing in particular. Additionally, the housing stock in South Valley Stream is aging. The majority (78.8%) was built in 1959 or earlier, with 47.5% built between 1950 and 1959.

F: Inventory of Assets

Erosion Rate: Assets located where the long-term average erosion rate is one foot or more per year, or unknown. Storm impacts may increase on shorelines with high erosion rates, as development on an eroding beach can heighten risk from wave impacts and storm surge. South Valley Stream is not identified as Structural Hazard Areas on the Coastal Erosion Hazard Area (CEHA) maps or located on the Long Island Sound; therefore, according to New York State guidance, the erosion rate for all assets (100% of asset inventory) is assumed to be less than one foot per year.

Beach Width: Assets located where the water line is frequently in contact with erosion control structures (e.g., bulkheads) or upland vegetation. Wide beaches and shallow water can lessen waves and surge, however no beaches are present in South Valley Stream to serve this function. Therefore the water line is in frequent contact with erosion control structures or upland vegetation for all assets (100% of asset inventory) throughout South Valley Stream.

Shore Defenses: Assets that are not protected by shore defenses, or where shore defenses are deteriorating or not constructed to anticipated storm or sea level rise conditions. Shore defenses such as breakwaters and erosion control structures such as bulkheads, seawalls and revetments may reduce the effects of incoming surge and wave energy on an asset, barring that the asset is above base flood elevation. Shore defenses in South Valley Stream are absent, and the erosion control structures present are limited to bulkheads, which are deteriorating or not present in most areas. Existing erosion control structures are not constructed to defend against anticipated storm events, nor should they be intended to. Therefore, according to New York State guidance, shore defenses are assumed to be absent for the all assets (100% of asset inventory) in South Valley Stream.

Vegetation: Locations where protective vegetation (i.e., dense shrubbery or forested land cover at least 300 feet in depth), wetlands, or intervening structures between asset and flood source are absent. Vegetation can reduce flood and erosion impacts, especially dense vegetation which can influence wind speeds and water flow velocity. Intervening structures can intercept or reduce the velocity of tidal flow. Conversely, assets built on filled wetlands may experience increased flooding and erosion. Assets in South Valley Stream located along the shoreline of Clear Stream, Watts Creek, Valley Stream and Fosters Brook Lower (59% of asset inventory) do not have substantial vegetation, wetlands or intervening structures protecting them from the flood source; while those not immediately on the shoreline (41% of asset inventory) are protected by intervening structures such as other homes.

Dunes or Bluffs: Assets that are not protected by dunes or bluffs because either dunes are absent, below base flood elevation, eroding, discontinuous, or have little vegetation, and bluff slopes are unstable, partially vegetated. Dunes can absorb wave energy, with continuous vegetated dunes elevated above the base flood elevation having the greatest benefit. No dunes or bluffs are present in South Valley Stream, therefore all assets (100% of asset inventory) are not protected in this manner.

Soils: Assets that are located on a coastal barrier island or filled wetland. The assets within South Valley Stream (13% of asset inventory) are located in the southwest area of the community.

Figure 11: Risk of Economic Assets in Coastal Hazard and Risk Assessment Tool

Economic Asset(s)	NYS Risk Area	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
Auto Repair Shop	High	3	2.50	3	23
Chase Bank	Extreme	3	4.00	4	48
Green Acres Mall	High	3	2.50	2	15
Hoffner's Service Station	Extreme	3	4.00	4	48
Mill Road Shopping	Extreme	3	3.00	3	27

Figure 12: Risk of Health and Social Services Assets in Coastal Hazard and Risk Assessment Tool

Health and Social Services Asset(s)	NYS Risk Area	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
Audrey L. Gulian, Physical Therapy	High	3	3.00	3	27
Forbin, Francoise Daycare	High	3	3.00	3	27
Forest Road School	High	3	2.50	3	23
Forest Road School Athletic Fields	High	3	2.50	3	23
NCPD Booth I	High	3	2.50	2	15
Harbor Kidz Day Care	High	3	2.50	3	23
Ogden Elementary School	High	3	2.50	3	23
Ogden Elementary School Athletic Fields	High	3	2.50	3	23
Robert Carbonaro School	High	3	2.50	3	23
Shalhevet High School (at Temple Hillel)	High	3	3.00	3	27
Valley Stream South High School and Junior High School	High	3	3.00	3	27
Valley Stream South High School Athletic Fields	High	3	3.00	3	27
Valley Stream Junior High School Athletic Fields	High	3	2.50	3	23

Legend: Risk Levels

Residual
 Moderate
 High
 Severe

Figure 13: Risk of Housing Assets in Coastal Hazard and Risk Assessment Tool

Housing Asset(s)	NYS Risk Area	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
Condominiums on Vanderbilt Way	High	3	3.00	3	27
Eastern South Valley Stream Housing Assets	High	3	2.50	3	23
Northern South Valley Stream Housing Assets	High	3	2.50	3	23
Southern South Valley Stream Housing Assets	High	3	2.50	3	23

Figure 14: Risk of Infrastructure Systems Assets in Coastal Hazard and Risk Assessment Tool

Infrastructure Systems Asset(s)	NYS Risk Area	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
101 Green Acres Road Remediation Site	High	3	2.50	2	20
Gulf Gas Station	Extreme	3	4.00	4	48
Jedwood Place Pedestrian Bridge	High	3	2.50	3	23
Mill Rd_High	High	3	3.00	3	27
Roadway Assets_Extreme	Extreme	3	4.00	4	48
Roadway assets_High	High	3	3.00	4	36
Rosedale Rd_Extreme	Extreme	3	4.00	4	48
Rosedale Rd_High	High	3	3.00	4	36
Rosedale Road Bridge	High	3	2.50	3	23
Sewer Pipe_Extreme	Extreme	3	4.00	4	48
Sewer Pipe_High	High	3	3.00	4	36
STC Five LLC Antenna	High	3	3.00	4	36
Stormwater Outfall_Extreme	Extreme	3	3.50	3	32
Stormwater Outfall_High	High	3	2.50	3	23

Legend: Risk Levels

Residual
 Moderate
 High
 Severe

Figure 15: Risk of Natural and Cultural Resources Assets in Coastal Hazard and Risk Assessment Tool

Natural and Cultural Resources Asset(s)	NYS Risk Area	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
Brook Road Park	High	3	3.00	3	27
Congregation Ohr Torah	High	3	3.00	2	18
Clear Stream	Extreme	3	4.00	4	48
Watts Creek	High	3	3.00	3	27
Fosters Brook Lower	High	3	2.50	3	23
Temple Hillel	High	3	3.00	3	27
“The Path”	High	3	3.00	3	27
Valley Stream	High	3	3.00	3	27

Figure 16: Risk of Assets that serve Socially Vulnerable Populations in Coastal Hazard and Risk Assessment Tool

Asset(s) that serve Socially Vulnerable Populations	NYS Risk Area	Hazard Score	Exposure Score	Vulnerability Score	Risk Score
Forbin, Francoise Daycare	High	3	3.00	3	27
Forest Road School	High	3	2.50	3	23
Green Acres Senior Center	High	3	2.50	2	15
Harbor Kidz Day Care	High	3	2.50	3	23
Ogden Elementary School	High	3	2.50	3	23
Robert Carbonaro School	High	3	2.50	3	23
Shalhevet High School (at Temple Hillel)	High	3	3.00	3	27
Valley Stream South High School	High	3	3.00	3	27
Yale Academy	High	3	2.50	2	15

Legend: Risk Levels

Residual
 Moderate
 High
 Severe

G: Cost Benefit Analysis

Adding up the Costs

The Committee worked with a team of cost estimators, engineers, architects, landscape architects, and planners to develop estimated costs for each potential project. All costs are preliminary, based on available data, the Consultant Teams understanding of the issues as identified during site visits, Committee knowledge and feedback, and input from the greater South Valley Stream Community. Construction costs were based upon similar projects that have been constructed within the Greater Nassau County area. Where applicable, actual construction cost quotes from vendors or local agencies were used. Each phase within a project (design, construction, construction management, and other direct labor costs) includes a contingency factor. Contingencies were based on the level of detail available for each individual project at the time of the estimate.

Maximizing the Benefits

All Proposed Projects and Featured Projects underwent a qualitative analysis of anticipated costs and benefits, in accordance with New York State guidance. The purpose of the cost-benefit analysis was to assist the Committee in improving these projects and developing strategies and projects for inclusion in the NYRCR Plan. The implementation schedule developed by the Committee utilizes cost benefit analysis and aims to identify a comprehensive set of projects that are best able to achieve the greatest benefits to South Valley Stream at the least cost.

The following types of benefits were reviewed for the cost-benefit analysis, in accordance with NY State Program Guidance (NYRCR Program Guidance to Firms Project Evaluation, 12/30/2013):

- Risk Reduction Benefits;
- Economic Benefits;
- Environmental Benefits; and
- Health and Social Benefits.

For feasibility studies, action plans, or advocacy projects, the discussion of benefits relates to the potential benefits that would result from future implementation of the selected alternative or recommendations developed through the course of study or advocacy. In addition, some projects are scalable; the benefits of these projects are considered in their current state, and potential benefits that would result from development into regional or larger-scale projects are noted where appropriate.

Economic Benefits

Each of the projects listed in the NYRCR Plan has some type of economic impact on residents, the local governing entities, or businesses. This analysis does not include the additional 1,500 projects totaling \$378 million that is obligated by Federal Emergency Management Agency (FEMA) funding sources. Economic benefits considered for the purpose of the NYRCR Plan include estimated permanent and temporary jobs secured or added, contribution to a Regional Economic Development Plan, estimated potential increase in economic activity (as applicable), and net effect on local government expenditures for disaster recovery (such as reduced emergency and recovery costs).

In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors that \$92,000 creates one job-year. This procedure does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does, however, take into account the key difference between tax changes or state fiscal

relief, and direct government investment spending. The rule’s key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies.

Environmental Benefits

Environmental Benefits of potential NYRCR projects include the environmental assets secured by the potential project, the environmental remediation or cleanup provided by the project, and open space created by the project. Each project was evaluated for its impacts on high-priority habitat, threatened and endangered species, migration, or habitat connectivity. Benefits to environmental quality were also noted, such as improving air or water quality.

Health and Social Benefits

Health and Social Benefits resulting from the proposed project were qualitatively evaluated using the Economic and Social Research Institute (ESRI) Community Analyst. Population data was gathered at the census tract or block group level depending on the size of the project. If the project was expected to have very localized effects in an area that was much smaller than a block group, a polygon was drawn manually in ESRI to serve as the study area and the data corresponding to that polygon was used. The size of the study area was determined based on the project description. The specific data set used was from the Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data. Projects were evaluated for their health and social services benefits to the community by considering the following benefit types:

“Overall population with improved access to health and social services facilities” was reported as the entire population of the area (census tract, block group, or polygon/area) that would benefit from the proposed project. The population was reported regardless of whether the project actually involved a health and social services asset because presumably all projects would improve access to facilities in one form or another.

“Type and population size of population group secured” was evaluated by :

Poverty/low income population (household income less than 35,000)

Elderly population (over age 65)

Minority population

“Population served by essential health and social services facilities that are secured to provide or continue service during acute events as a result of the action,” was considered to be applicable only if the project itself proposed an action that directly affected/pertained to a health and social services facility. (Health and social services facilities were previously identified/determined during the asset inventory.) If the project directly impacted a health and social services facility, that facility (asset) was noted, and the population of the entire area (as reported under the previous criteria) can be considered to be the “population served.”

Anticipated Reduction of Risk

A qualitative analysis of reduction in risk to assets that results from implementation of each potential NYRCR project was prepared for each project. Three factors contribute to risk: hazard, exposure, and vulnerability, as detailed in Section II: A. ii. Assessment of Risk to Assets and . The Coastal Hazard and Risk Assessment Tool was utilized, where applicable, to quantify risk reduction benefits. The Tool was assumed to apply to implementation projects within the strategy of ‘Coastal Protection,’ as it is intended to measure the risk for coastal communities and test whether various projects would reduce the risk to those assets. In this case, a snapshot of reduction in risk score to assets is provided. Where the Coastal Hazard and Risk Assessment Tool does not apply, risk reduction benefits were described in terms of the qualitative mitigation of hazard, exposure, and vulnerability.

As detailed in Section II: A. ii. Assessment of Risk to Assets and, the risk score for each group of assets is determined by multiplying its hazard, exposure, and vulnerability. The Coastal Hazard and Risk Assessment Tool automatically generates this risk score, which represents the relative risk of the assets in the community. According to New York State guidance, risk scores include some subjective analysis and should not be compared from one community to another.

H: End Notes

Attributions: All photos are attributed to the Consultant Team

- ¹ Mill Brook Civic Association. (Accessed on 9/2013 at http://www.millbrookcivic.com/history_of_millbrook).
- ² U.S. Census Bureau. 2010 Census. (Accessed on 3/2014 at <http://factfinder2.census.gov>).
- ³ U.S. Census Bureau. *American Community Survey, 2008-2012*. (Accessed on 3/2014 at <http://factfinder2.census.gov>).
- ⁴ U.S. Census Bureau. 2010 Census. (Accessed on 3/2014 at <http://factfinder2.census.gov>).
- ⁵ U.S. Census Bureau. 2013. OnTheMap Application. Longitudinal-Employer Household Dynamics Program. (Accessed on 12/2013 at <http://onthemap.ces.census.gov/>)
- ⁶ U.S. Census Bureau. 2013. OnTheMap Application. Longitudinal-Employer Household Dynamics Program. (Accessed on 12/2013 at <http://onthemap.ces.census.gov/>)
- ⁷ National Hurricane Center. *Tropical Cyclone Report: Hurricane Sandy (AL182012) 22 – 29 October 2012*. (Accessed on 9/2013 at http://www.nhc.noaa.gov/data/tcr/AL182012_Superstorm_Sandy.pdf)
- ⁸ National Hurricane Center. *Tropical Cyclone Report: Hurricane Sandy (AL182012) 22 – 29 October 2012*. (Accessed on 9/2013 at http://www.nhc.noaa.gov/data/tcr/AL182012_Superstorm_Sandy.pdf)
- ⁹ US Department of Commerce. *Service Assessment Hurricane Irene, August 21–30, 2011*. (Accessed 10/2013 at <http://www.nws.noaa.gov/os/assessments/pdfs/Irene2012.pdf>)
- ¹⁰ National Hurricane Center. *Tropical Cyclone Report: Hurricane Sandy (AL182012) 22 – 29 October 2012*. (Accessed on 9/2013 at http://www.nhc.noaa.gov/data/tcr/AL182012_Superstorm_Sandy.pdf)
- ¹¹ US Department of Commerce. *Service Assessment Hurricane Irene, August 21–30, 2011*. (Accessed 10/2013 at <http://www.nws.noaa.gov/os/assessments/pdfs/Irene2012.pdf>)
- ¹² NOAA Water Level and Meteorological Data Report. *Hurricane Irene*. (Accessed on 10/2013 http://tidesandcurrents.noaa.gov/publications/Hurricane_Irene_Water_Level_and_Meteorological_Data_Report.pdf)
- ¹³ US Department of Commerce. *Service Assessment Hurricane Irene, August 21–30, 2011*. (Accessed 10/2013 at <http://www.nws.noaa.gov/os/assessments/pdfs/Irene2012.pdf>)
- ¹⁴ US Army Corps of Engineers. *Jamaica Bay Ecosystem Restoration Project Feasibility Study*. Summary of Water Level Data Report. March 2003.
- ¹⁵ Long Island Newsday. *LIPA Outages*. (Accessed on 9/2013 at <http://data.newsday.com/long-island/lipaOutages/>)
- ¹⁶ Stanne, Steve. *Perfect Storms – how Hurricane Irene and Tropical Storm Lee slammed NY*. New York State Conservationist, August 2012. (Accessed on 9/2013 http://www.dec.ny.gov/docs/administration_pdf/0812perfectstorms.pdf)
- ¹⁷ Benkoe, Jeff. *Long Island pounded by Irene but residents feel lucky*. Reuters. (Accessed 9/2013 at <http://www.reuters.com/article/2011/08/28/us-storm-irene-longisland-idUSTRE77R2FG20110828>).
- ¹⁸ U.S. Census Bureau. *American Community Survey, 2007-2011*. (Accessed on 10/2013 at <http://factfinder2.census.gov>).
- ¹⁹ U.S. Census Bureau. *American Community Survey, 2007-2011*. (Accessed on 10/2013 at <http://factfinder2.census.gov>).
- ²⁰ The study uses a low income threshold of \$35,000 per household. To actuate the analysis the American Community Survey was used to estimate the households making a low percentage of the median income, typically used as standard thresholds for income definitions for federal assistance. Since the ACS uses tranches (for instance between 0 and \$10,000 Household Income) the analysis required to accept the first two thranches of \$0-\$35,000 to define the household income. This then provides a percentage estimation of the total household population making less than 36% of the Median Household Income. This figure is based on a percentage of the overall Nassau County Median Household Income of \$97,000. Various Federal organizations define income thresholds in terms of Household Median Income at the 20%, 50%, and 80% thresholds. As this analysis wanted to identify households making below 50% this metric was assumed the most appropriate. U.S. Census Bureau. *American Community Survey, 2007-2011*. (Accessed on 10/2013 at <http://factfinder2.census.gov>).
- ²¹ U.S. Census Bureau. *American Community Survey, 2007-2011*. (Accessed on 10/2013 at <http://factfinder2.census.gov>).
- ²² Federal Emergency Management Agency (FEMA). *Local Multi-Hazard Mitigation Guidance, 2008*. (Accessed on 9/2013 at <http://www.fema.gov/multi-hazard-mitigation-planning>)

- ²³ Nassau County. *Hazard Mitigation General Information*. (Accessed on 10/2013, <http://www.nassaucountyny.gov/agencies/oem/hazmit/hazmitGI.html>)
- ²⁴ Directory of Major Malls. (Accessed on 12/2013 at <http://shoppingcenters.com/>).
- ²⁵ The Urban Land Institute and PricewaterhouseCoopers noted that online retailers were continuing to siphon profits from bricks-and-mortar stores. The report recommended significant retail real estate redevelopment, particularly for “fortress malls” that are older (30 years or more). Urban Land Institute. *Emerging Trends in Real Estate 2013*. (Accessed on 12/2013 at <http://uli.org/emerging-trends/emerging-trends-in-real-estate-2013/>).
- ²⁶ Valley Stream Central High School District Observer. (Accessed on 12/2013 at <http://www.vschs.org/>).
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- ²⁸ Commercial Real Estate Listings and Research. Loopnet. (Accessed on 12/2013 at <http://www.loopnet.com/>).
- ²⁹ In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors that \$92,000 creates one job-year. This procedure does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does, however, take into account the key difference between tax changes or state fiscal relief, and direct government investment spending. The rule’s key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies. Executive Office of the President Council of Economic Advisors, *American Recovery and Reinvestment Act of 2009*, May 2009. (Accessed on 1/2014 at <http://www.whitehouse.gov/sites/default/files/microsites/Estimate-of-Job-Creation.pdf>).
- ³⁰ Nassau County GIS. Parcel Data, 2013.
- ³¹ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
- ³² In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors that \$92,000 creates one job-year. This procedure does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does, however, take into account the key difference between tax changes or state fiscal relief, and direct government investment spending. The rule’s key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies. Executive Office of the President Council of Economic Advisors, *American Recovery and Reinvestment Act of 2009*, May 2009. (Accessed on 1/2014 at <http://www.whitehouse.gov/sites/default/files/microsites/Estimate-of-Job-Creation.pdf>).
- ³³ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
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- ³⁶ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
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³⁸ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

³⁹ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

⁴⁰ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

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⁴²Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

⁴³Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

⁴⁴In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors that \$92,000 creates one job-year. This procedure does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does, however, take into account the key difference between tax changes or state fiscal relief, and direct government investment spending. The rule’s key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies. Executive Office of the President Council of Economic Advisors, *American Recovery and Reinvestment Act of 2009*, May 2009. (Accessed on 1/2014 at <http://www.whitehouse.gov/sites/default/files/microsites/Estimate-of-Job-Creation.pdf>).

⁴⁵Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

⁴⁶Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

⁴⁷In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors that \$92,000 creates one job-year. This procedure does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does, however, take into account the key difference between tax changes or state fiscal relief, and direct government investment spending. The rule’s key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies. Executive Office of the President Council of Economic Advisors, *American Recovery and Reinvestment Act of 2009*, May 2009. (Accessed on 1/2014 at <http://www.whitehouse.gov/sites/default/files/microsites/Estimate-of-Job-Creation.pdf>).

⁴⁸Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

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⁵¹Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

⁵²Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.

- ⁵² Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
- ⁵³ In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors that \$92,000 creates one job-year. This procedure does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does, however, take into account the key difference between tax changes or state fiscal relief, and direct government investment spending. The rule's key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies. Executive Office of the President Council of Economic Advisors, *American Recovery and Reinvestment Act of 2009*, May 2009. (Accessed on 1/2014 at <http://www.whitehouse.gov/sites/default/files/microsites/Estimate-of-Job-Creation.pdf>).
- ⁵⁴ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
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- ⁶¹ Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
- ⁶² Economic and Social Research Institute (ESRI) Community Analyst, Demographic and Income Profile (DANDI) ESRI Forecasts for 2013, based on U.S. Census Bureau 2010 Census data.
- ⁶³ Valley Stream District 30. Budget Newsletter, 2013. (Accessed on 12/2013 at <http://www.valleystream30.com/>).
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- ⁶⁸ Google Earth. Aerial Photography, 2013.
- ⁶⁹ US Department of the Interior Geological Survey (USGS). *Polyconic Projection. Hempstead, NY N4030-W7330/15*, edition of 1903, Reprinted 1945, Partial revision of Shoreline 1923.
- ⁷⁰ US Department of Commerce, US Coast and Geodetic Survey (USC & GS). Hempstead Bay, 1929.
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- ⁷¹ Federal Emergency Management Agency (FEMA). Public Assistance Project Funding. (Accessed 1/2014 at <http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit>).
- ⁷² Executive Office of the President Council of Economic Advisors, *American Recovery and Reinvestment Act of 2009*, May 2009. (Accessed on 1/2014 at <http://www.whitehouse.gov/sites/default/files/microsites/Estimate-of-Job-Creation.pdf>).

I: Glossary

Base Flood Elevation (BFE)

Water surface elevation corresponding to a flood having a one percent probability of being equaled or exceeded in a given year (100-year floodplain).

Coastal Hazard and Risk Assessment Tool (“Risk Assessment Tool”)

The Risk score for each group of assets is determined by multiplying its hazard, exposure and vulnerability values (Risk = Hazard x Exposure x Vulnerability). The Coastal Hazard and Risk Assessment Tool automatically generates this risk score, which represents the relative risk of the community. Risk scores include some subjective analysis and should not be compared from one community to another. Risk scores can range from 1.5, the lowest score reflecting negligible or ‘residual’ risk, to 75, the highest score reflecting severe risk. These ranges are broken down as follows:

Residual (Risk Score <6): Residual risk scores result from both low exposure and vulnerability, however if assets are critical or have a very high community value, actions may be warranted to reduce their risk.

Moderate (Risk Score 6 - 23): A moderate risk score represents that the assets may suffer moderate to serious storm impacts, but that adaptation may be of a lower priority because either exposure or vulnerability are low

High (Risk Score 24 - 53): Risk scores in the high range are indicative of conditions that could lead to significant negative impacts from a storm, and actions should be taken to reduce the assets’ vulnerability and restore the assets’ coastal protections.

Severe (Risk Score >53): A severe risk score represents that the assets are in a dangerous situation and that both exposure and vulnerability should be reduced.

Risk scores help identify assets with increased potential for storm damage and serve as one of many factors that helped the Committee to determine the potential projects to include and prioritize in the NYRCR Plan; see section IV for further discussion on Project Prioritization. In addition to the risk score, other contributing factors in determining which assets should be addressed and how immediately they should be addressed include:

- The assets’ contribution to life safety,
- If the asset(s) are critical or locally significant,
- The assets’ community value,
- Environmental services provided by the assets,
- Economic contribution of the assets,
- Availability or alternative assets or facilities, and
- The capacity of the assets to adapt.

The Coastal Hazard and Risk Assessment Tool measures against a 100-year storm, or a Hazard Score of 3. The Hazard score is based on the likelihood an event would occur and the magnitude (destructive capacity) of the event. For the purpose of preparing a NY Rising Community Reconstruction Plan, NY State recommends that Bay Park/East Rockaway consider a 100-year storm (1% annual chance). Because the magnitude of storm events increases as the likelihood decreases (100-year storms have higher magnitude than 10-year storms), the Hazard score increases as the likelihood goes down. Therefore, the Coastal Hazard and Risk Assessment Tool is calibrated to a 100-year storm. Although the NYRCR Plan seeks to protect against a 100-year storm, equally important is protecting

against smaller, more frequent storm events such as the 10-year storm, which has a 10% chance of occurrence each year. Several projects may not have risk reduction benefits, measured by the Tool or qualitatively, for the 10-year storm. These benefits are described qualitatively.

Community Assets

Identified assets are places or facilities where economic, environmental and social functions occur or are critical infrastructure required to support those functions. These assets were identified by the NYRCR Committee and residents and are grouped into the following categories: Economic, Housing, Health and Social Services, Infrastructure, Natural and Cultural Resources, and Socially Vulnerable Populations.

Community Development Block Grant-Disaster Recovery (CDBG-DR)

HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. CDBG-DR is a type of funding appropriated by congress to help rebuild and provide seed money for recovery activities. Further information on CDBG-DR funds and other disaster recovery grants is available at <http://portal.hud.gov/>.

Flood Insurance Rate Map (FIRM)

The official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

NYRCR Committee

The NYRCR Planning Committee is composed of local civically minded residents and was established to help develop a plan that accurately reflects the Community and its needs. The NYRCR Committee worked closely with the appropriate municipal, non-profit and consultant representatives to identify a vision, goals and objectives for the NYRCR Plan. The Committee actively advised on all aspects of the project and will help shape the overall direction of the NYRCR Plan and the actions that flow from it. The members of the Committee were not paid, and were required to follow a detailed code of ethics provided by New York State.

NYRCR Community

The NYRCR Community planning area follows the Census-designated place boundary for Bay Park and the Village of East Rockaway. This boundary has been reviewed and accepted by the NYRCR Committee.

NYRCR Project Categories

Proposed Projects: Projects proposed for funding through the NYRCR Community's allocation of CDBG-DR funding.

Featured Projects: Innovative projects where an initial study or discrete first phase of the project is proposed for CDBG-DR funding or other identified funding; and regulatory reforms and other programs that do not involve capital expenditures.

Additional Resiliency Recommendations: Resiliency projects and actions the NYRCR Committee would like to highlight for further consideration.

Recovery Support Functions

The Recovery Support Functions (RSFs) comprise the National Disaster Recovery Framework's (NDRF's) coordinating structure for key functional areas of assistance. Their purpose is to support local governments by facilitating problem solving, improving access to resources and by fostering coordination among State and Federal agencies, nongovernmental partners and stakeholders.

The six RSFs are: "Community Planning and Capacity Building," "Economic Development," "Health and Social Services," "Housing," "Infrastructure," and "Natural and Cultural Resources."

Risk Reduction Benefits

A qualitative analysis of reduction in risk to assets that results from implementation of each potential NYRCR project was prepared for each project. Three factors contribute to risk: hazard, exposure and vulnerability. The Coastal Hazard and Risk Assessment Tool was utilized, where applicable, to quantify risk reduction benefits. The Tool was assumed to apply to implementation projects within the theme 'Coastal Protection,' as it is intended to measure the risk for coastal communities and test whether various projects would reduce the risk to those assets. In this case, a snapshot of reduction in the risk score to assets is provided. Where the Coastal Hazard and Risk Assessment Tool do not apply, Risk Reduction benefits were described in terms of the qualitative mitigation of hazard, exposure and vulnerability.

Risk reduction benefits consider the population positively impacted by the project, either directly or indirectly. This population can be local or regional, ranging from a discrete street to the NYRCR Community or the entire community of Bay Park/East Rockaway. While this plan evaluates the potential risk reduction benefits, actual benefits may vary depending on project design and circumstances arising during implementation; the Final NYRCR Plan does not provide a guarantee of risk reduction, but rather a projected, and intended, benefit to minimizing risk for a given population.

Risk Reduction Benefits resulting from the proposed project were qualitatively evaluated using ESRI Community Analyst. Population data was gathered at the census tract or block group level depending on the size of the project. If the project was expected to have very localized effects in an area that was much smaller than a block group, a polygon was drawn manually in ESRI to serve as the study area and the data corresponding to that polygon was used instead. The size of the study area was determined based on the project description. The specific data set used was from the Demographic and Income Profile (DANDI) ESRI Forecasts for 2013 based on US Census Bureau 2010 Census data.

Some projects, such as select capacity building or economic development projects, may not directly reduce risk, however they provide other significant benefits to the Bay Park/East Rockaway Community in the categories below.

Economic Benefits: Economic benefits considered for the purpose of the NYRCR Plan include estimated permanent and temporary jobs secured or added, contribution to a Regional Economic Development Plan, estimated potential increase in economic activity (as applicable), and net effect on local government expenditures for disaster recovery (such as reduced emergency and recovery costs).

In estimating the job-years created by direct government spending, the NYRCR Plan utilizes the simple rule provided by the Office of the President Council of Economic Advisors² that \$92,000 creates one job-year. This procedure is somewhat crude and does not take into account the obvious differences in wages and other costs across different types of projects and across different parts of the country. It does; however, take into account the key difference between tax changes or state fiscal relief, and direct government investment spending. The rule's key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates across the various geographies.

Environmental Benefits: Environmental Benefits of potential NYRCR projects include the environmental assets secured by the potential project, as well as the environmental remediation or cleanup provided by the project and open space created by the project. Each project was evaluated for its impacts on high-priority habitat defined as a habitat type with unique or significant value to one or more species, threatened and endangered species, migration or habitat connectivity. Benefits to environmental quality were also noted, such as improving air, surface and ground water quality.

Health and Social Benefits: Health and Social Benefits resulting from the proposed project were qualitatively evaluated using ESRI Community Analyst. Population data was gathered at the census tract or block group level depending on the size of the project. If the project was expected to have very localized

effects in an area that was much smaller than a block group, a polygon was drawn manually in ESRI to serve as the study area and the data corresponding to that polygon was used instead. The size of the study area was determined based on the project description. The specific data set used was from the Demographic and Income Profile (DANDI) ESRI Forecasts for 2013 based on US Census Bureau 2010 Census data.

Projects were evaluated for their health and social services benefits to the community by considering the following benefit types:

1. "Overall population with improved access to health and social services facilities" was reported as the entire population of the area (census tract, block group or polygon) that would benefit from the proposed project. The population was reported regardless of whether the project actually involves a health and social services asset because presumably all projects would improve access to facilities in one form or another.
2. "Type and population size of socially vulnerable population secured" was evaluated across four categories of socially vulnerable populations:
 - poverty/low income (annual household income less than \$35,000)
 - elderly population (over age 65 years)
 - minority population
3. "Population served by essential health and social services facilities that are secured to provide or continue service during acute events as a result of the action", was considered to be applicable only if the project itself proposed an action that directly affected/pertained to a health and social services facility. (Health and social services facilities were previously identified/determined during the asset inventory). If the project directly impacted a health and social services facility, that facility (asset) was noted, and the population of the entire area (as reported under the previous criteria) can be considered to be the "population served".

Risk Assessment Map Risk Areas (NYS DOS)

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. Extreme Risk Areas include:

- FEMA V zone.
- Shallow Coastal Flooding per National Oceanic and Atmospheric Administration (NOAA) National Weather Service's (NWS) advisory threshold.
- Natural protective feature areas susceptible to erosion.
- Sea level rise - Added three feet to the mean higher high water (MHHW) level shoreline and extended this elevation inland to point of intersection with ground surface.

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. High Risk Areas include:

- Area bounded by the 1% annual flood risk zone (FEMA V and A zones). Often referred to as base flood or 100-year flood, this is the area that has a 1% chance of inundation from a flood event in any given year.
- Sea level rise - Added three feet to NOAA NWS coastal flooding advisory threshold and extended this elevation inland to point of intersection with ground surface.

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. Moderate Risk Areas include:

- Area bounded by the 0.2% annual risk (500 year) flood zone, where available.
- Sea level rise - Added 3 feet to the Base Flood Elevation for the current 1%
- Annual risk flood event and extended this elevation inland to point of intersection with ground surface.
- Area bounded by the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) category 3 hurricane inundation zone (NOAA NWS).

Socially Vulnerable Populations

The NYRCR Program Guidance notes that “Socially vulnerable populations” may be defined by the following criteria: poverty/low income, immigrant status, education level, institutionalization, renter-occupied household status, single senior-citizen household status” (NYRCR Program Guidance to Firms Project Evaluation, 12/30/2013).

