

Howard Beach



NY Rising Community Reconstruction Plan

March 2014



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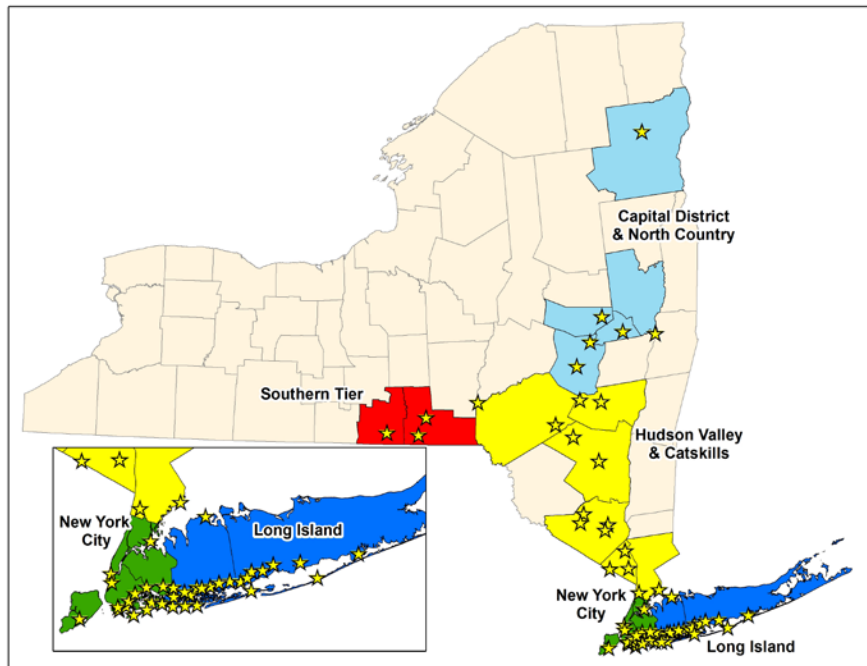
Winter view of Old Howard Beach across Shellbank Basin

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 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), comprising representatives from dozens of State agencies and authorities, for feedback on projects proposed by NYRCR Communities. The SARTs review projects with an eye toward regulatory and permitting needs, policy objectives, and preexisting agency funding sources. The NYRCR Program is continuing to work with the SARTs to streamline the permitting process and ensure shovels are in the ground as quickly as possible.

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

The NYRCR Plan

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

The Howard Beach NYRCR Community is eligible for up to \$18.4 million in CDBG-DR implementation funds.²

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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Executive summary

community that can serve as
 satellite locations include organizations that
 community relief satellite centers would enable
 and continue to operate business in the
 satellite centers and their supporting
 es to respond to emergencies and be
 isolation or similar process, which
 flood-proofing and installation of alternate
 don't capacity to provide year-round
 n emergency. Satellite will:
 agency preparedness and response
 ng community lies

Timeline to
 implement and
 ramp-up
 1 - 3 years

petitive solicitation or similar process.
 liding or facility, which includes flood



Howard Beach NY Rising Community Reconstruction

West Hamilton Beach Volunteer Fire Department (VFD). The
 a coordinated support function to FDNY for first-response services. The VFD has identified a series of
 protection measures needed to make its facility resilient to future storm events, including waterproofing
 the doors and purchasing an emergency back-up generator to ensure continued operations during
 power outages.

Benefits

- **Risk Reduction:** Hardening the West Hamilton Beach VFD would reduce risk to Howard Beach residents by enabling the continued operation of first-response and relief services during and after emergency events.
- **Health and Social Benefits:** By bolstering a critical community first-responder, this project can help reduce the health and safety risks associated with a disaster.

Components

- Key costs for facility improvements would likely include:
- Redundant power: Fixed backup gas-powered generator and potentially solar powered batteries at select sites.
 - Flood proofing: Flood door barriers, exterior and interior waterproof coating, check valves etc.

Total Cost
**\$300 - 500
 thousand**

Proposed
 NYRCR
 Allocation
**\$300 - 500
 thousand**

Timeline
2 years



This project would help email, at
 assistance program. The project
 improving a building's physical
 resiliency strategies and funding

Benefits

- **Risk Reduction:** Reduces Howard Beach residents du
- **Economic Benefits:** Increases to the longer-term financial more businesses and new t of temporary jobs for conat
- **Health and Social Benefit** will help ensure the availa basic emergency supp

Considerations

The Planning Committee has b
 an existing local Community
 opportunity to coordinate this
 Corporation (NYCEDC) Busine
 that will provide funds to both
 to severe weather related over



Howard B NY Rising Con

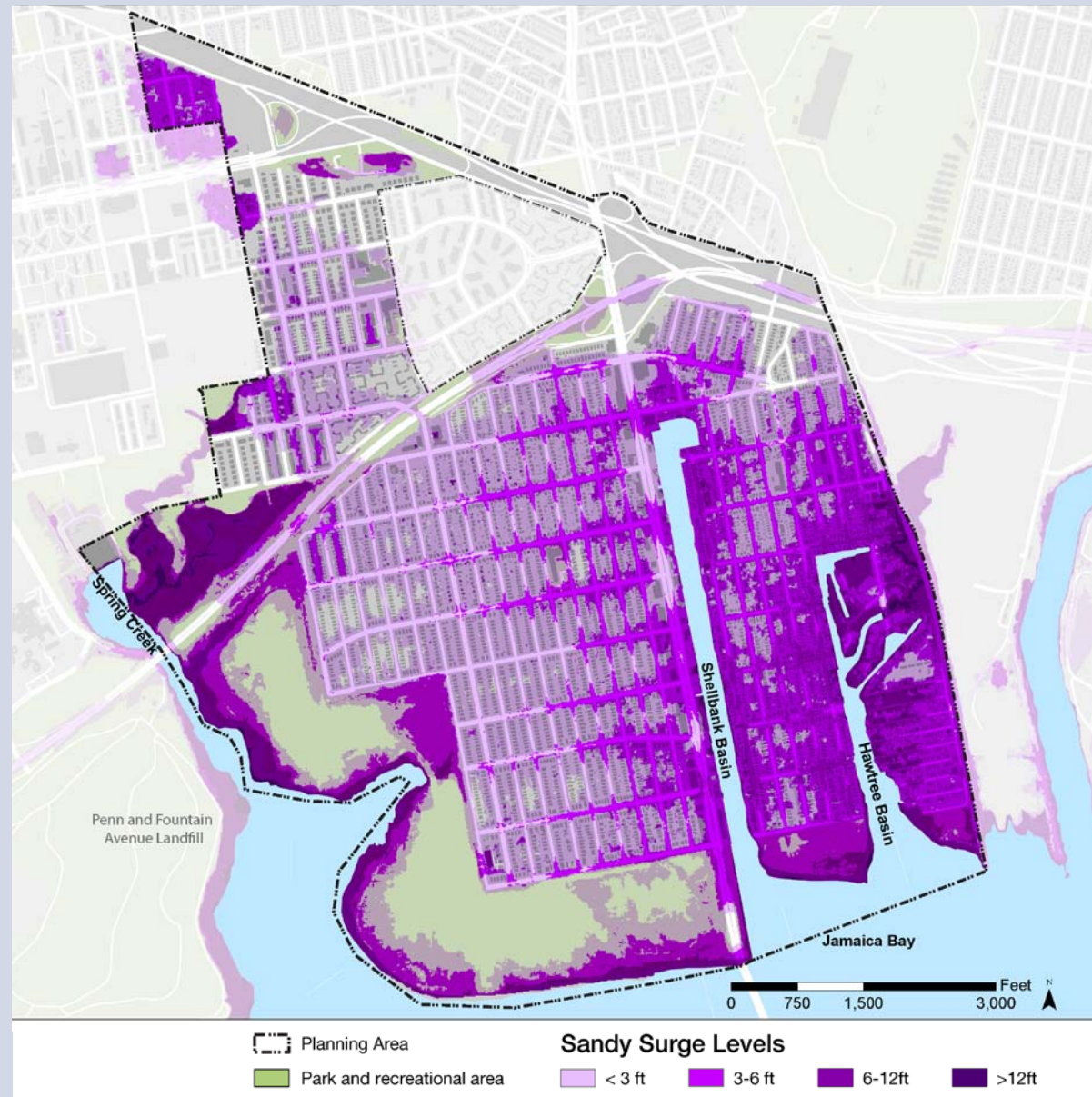
Howard Beach is a peninsula located on the northern edge of Jamaica Bay in the New York City Borough of Queens. Nestled in between JFK International Airport, Spring Creek, and North Conduit Boulevard, the NY Rising Community Reconstruction (NYRCR) Howard Beach Planning Area includes four neighborhoods: Lindenwood, New Howard Beach/Rockwood Park, Old Howard Beach, and Hamilton Beach.

Howard Beach has roughly 20,000 residents, with incomes that range slightly higher than the New York City average. There are as many young people as seniors, with the community trending toward a larger senior population in the future. Howard Beach is a suburban-style bedroom community with a strong economic base that is concentrated in three business districts, all of which are at risk to sea-level rise and future flooding. Howard Beach has a community structure built around its

religious institutions and civic organizations. These organizations and community centers came to the aid of the NYRCR Howard Beach Community (the Community) in its time of need during the recovery from Superstorm Sandy (Sandy).

The Governor's Office of Storm Recovery has allocated up to \$18.4 million in Federal Community Development Block Grant – Disaster Recovery (CDBG-DR) monies to fund eligible recovery and resiliency projects in Howard Beach. Recognizing that this funding cannot solve for all challenges, the NYRCR Howard Beach Committee (the Committee) has focused on a protection strategy for the edge of Howard Beach, a coordinated relief hub and satellite network built around local community organizations, and targeted improvements in the near-term to assist businesses, residents and particularly vulnerable neighborhoods.





Inundation from Superstorm Sandy

Source: FEMA Modeling Task Force (MOTF) – Hurricane Sandy Impact Analysis.

Recovering from the storm

Sandy was a rare confluence of weather patterns, creating a storm that inflicted devastating damage to communities throughout the region. Flooding was the key impact on Howard Beach and flood waters reached far out into every neighborhood, inundating places that had never previously experienced flooding. The effect of this storm has forced residents of Howard Beach to recognize that they must be more resilient to climate change and reconsider their relationship with water.

In the days following the storm, the Community realized its lack of emergency response and recovery planning, including no identification of a community gathering place. Without power and a centralized location, the local religious community, volunteer firehouse, and community organizations stepped in and provided refuge and relief. The Community's recovery reinforces the fact that resilience must focus on both physical improvements and strengthening of community networks.

Critical issues

Sandy shut off the power, backed up the sewers, flooded homes, and was particularly impactful to the vulnerable senior population in Howard Beach. The Committee wants to ensure that when the next storm or emergency hits, the Community will be prepared. Protection against flooding is paramount, but the Community must determine the optimal strategy and location for protection with the greatest

likelihood for implementation. Protection must preserve the relationship with water that makes Howard Beach such an attractive place to live.

Howard Beach values its open space and natural areas. Protection measures will need to keep and increase connectivity to the waterfront and increase the value of the local natural amenities. The roads, the sewer lines, the power lines, and the subway system are all critical to the economic continuity of this community. Sandy exposed the vulnerability of the critical infrastructure of the Community. Storms like Sandy can have lasting impacts on the Community. The three business districts were all hit hard by the storm. Getting businesses back on line and preserving the continuity of the business districts is critical to staving off economic decline. Perhaps the most critical asset in Howard Beach is the Community itself. The Community revolves around its community centers. These centers need to be hardened to ensure that they can stay open, and they need to be organized as part of a larger relief network so that they can serve as the centers where the Community turns in times of crisis.

Community driven process

Community vision statement

The vision statement for Howard Beach speaks to the desire for retaining and enhancing the quality of life that already exists in this community. This community prizes its access to water and nature, shopping, good food and recreation space. The mix of youth, families, and seniors provides for a dynamic community environment. The local religious institutions provide the foundation for an active network of community organizations and community-based activities. This is a proud community that is looking to take the necessary steps to preserve its physical and social infrastructure and to protect and provide for its businesses and residents.

“To be a vibrant and sustainable community that enables residents and visitors to enjoy the bounty of its commercial strip and the natural beauty of Jamaica Bay.”

Public engagement

The Committee recognizes that a comprehensive resiliency plan in this community will be implemented only if there is broad involvement and support. To reach a wide spectrum of constituents, the Committee targeted specific groups and organizations, including businesses, civic leaders and seniors. Events were held, flyers were dropped in student backpacks, posters were plastered in stores, church bulletins carried the message, four local newspapers covered the events, and electronic invites and personal letters were sent out to the Community to encourage involvement. Three public engagement sessions were held to identify needs; refine strategies; and review and add insights and input to Proposed and Featured Projects. More than 400 people participated, providing input through comment cards, public dialogue, and voting to help the Committee select and refine the projects and the final plan.



A blueprint for future resiliency

The Committee has shaped a plan that will protect critical infrastructure against damage, strengthen the edge against future flooding and sea-level rise, and fundamentally build capacity within the Community to protect its businesses, residents, and vulnerable populations. This approach is consistent with the Committee's mission to strengthen the foundations of its community and economic centers, and enhance its unique connection to water, nature, and active recreational opportunities.

Recovery support functions

There are six Recovery Support Functions, established by President Barack Obama in 2011 through the National Disaster Recovery Framework, which structure this NYRCR Plan. These Recovery Support Functions were utilized when developing needs, opportunities, strategies, and projects to ensure that a comprehensive approach is reinforced throughout the effort to shape a well-rounded resiliency strategy for the Community.

Needs and opportunities

The Committee identified needs based on impacts from Sandy. Needs are areas where the Community aims to reduce short- and long-term risks, and increase the resiliency of physical assets as well as build strength in community-based services. The following needs were identified:

- Strengthen the edge
- Enhance emergency preparedness and recovery operations
- Improve community and health services
- Develop resilient power supply
- Mitigate against sewer back-up
- Enhance economic resiliency
- Create resilient housing
- Expand and protect open space
- Protect Jamaica Bay

While the needs are significant, a number of opportunities will help lead the Community toward a resilient future. Multiple partners at the City, State, and Federal levels are already working on protection measures for multiple sections of the edge. This Committee can focus on the remaining missing piece in the protection puzzle. Agencies within the City of New York, the State of New York, and the public utilities are all taking action in response to Sandy to harden existing infrastructure against future storm impacts, allowing the Committee to focus on specific interventions that can build upon the actions being taken by others. Perhaps the most significant opportunity comes from the Community itself. A relief network requires a physical place that can serve as the center for relief efforts. The network relies upon strong, active, and coordinated groups of civic organizations and community groups. The foundation for this network is very strong in Howard Beach. Howard Beach also has a local champion that exhibits the capacity and capability to lead the recovery plan. The Committee has built upon these strengths and opportunities in developing its NYRCR Plan.

Figure 1: Community reconstruction plan – six recovery support functions



Community Planning and
Capacity Building



Health and Social
Services



Infrastructure System



Natural and Cultural
Resources



Economic Development



Housing



Strategies

The plan develops strategies to address the critical needs previously identified. The strategies look to strengthen the edge against future flooding and sea-level rise, harden critical infrastructure, and build capacity within the community to quickly provide relief to its businesses, residents, and vulnerable populations following an emergency.

The key strategies are:

- Protect the edge
- Provide a relief infrastructure focused on vulnerable populations
- Establish a power protection plan that integrates substation sites into the community
- Mitigate sewer back-up by protecting key assets in the network
- Mitigate localized flooding
- Develop programs to fund protection measures and technical assistance for vital economic corridors
- Protect housing by providing education and technical assistance
- Integrate improvements in park and recreational areas into resilience plans
- Increase access to isolated sections of the community
- Protect Jamaica Bay

Proposed and featured projects

The NYRCR planning process has resulted in nine Proposed and Featured Projects to improve the resiliency of Howard Beach. 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. The following Proposed and Featured Projects are together the product of a collaborative, community process led by the Committee with public input.

Howard Beach Comprehensive Coastal Protection Study

Proposed Project

The project would commission a study to determine the cost and feasibility of tide gates at Shellbank and Hawtree Basins and a berm at Charles Memorial Park to fill in the missing piece in a larger comprehensive coastal protection plan for Howard Beach.

Coastal Protection – Phase 1: Charles Memorial Park Berm

Featured Project

This project would contribute funding to the on-land berm construction for Charles Memorial Park as the first phase of the coastal protection strategy for Howard Beach. This project seeks to leverage

funding and implementation partners to ensure that the comprehensive feasibility study results in a realized protection project.

Upper Spring Creek Ecosystem Restoration

Featured Project

The project would contribute to the New York City Department of Parks and Recreation project for Upper Spring Creek Park. The intention is that the Committee's allocation would fund coastal protection features, including berms situated at locations where flooding occurred in the Lindenwood neighborhood during Sandy.

Upper Hawtree Flood Protection and Drainage Improvements

Proposed Project

This project proposes targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and in Coleman Square to limit the flooding impact of full-moon tides that plague this Community. The project would combine berm, coastal protection, and drainage improvement measures to mitigate flooding problems.

Relief Center Hub

Proposed Project

The project would provide funding to an existing community facility for on-site capital improvements that harden the building. Additionally, to establish a single organization that serves as the organizer

of the relief effort, the project would provide initial staffing costs to support the staffing of the coordinator position.

Satellite Relief Centers

Proposed Project

This project would fund the creation of a network of “satellite” relief centers to provide and coordinate local relief supplies and services following a disaster, such as provision of food, water, power, health, basic medical services, and information.

West Hamilton Beach Volunteer Fire Department (WHBVFD) Resiliency Improvements

Proposed Project

The proposed project would harden the WHBVFD facility, which would support the social and physical resiliency in the community before, during, and after disasters. Hardening the facility would allow the WHBVFD to better withstand extreme conditions during an emergency and continue to serve the community.

Business Resiliency Program

Proposed Project

This program would help businesses and commercial building owners identify measures to improve the resiliency of business operations and buildings. The program would provide technical assistance to implement resiliency strategies as well as physical improvements and preparedness plans, and offer capital funding to support physical improvements.

Residential Resiliency Program

Proposed Project

This project would fund a general educational program that would offer property owners critical residential resiliency information and individualized counseling and technical assistance tailored to assist high-need home and property owners.

When coupled together, the NYRCR Plan for Howard Beach offers a blueprint for implementation that would protect the edge, provide a relief network to help the community cope with future storms, and assist local businesses, residents and neighborhoods in the near-term.

I. Community overview





Geographic scope of NYRCR Plan

The New York Rising Community Reconstruction (NYRCR) Howard Beach Community (the Community) is located along the northern edge of Jamaica Bay in New York City's Borough of Queens. Howard Beach was originally settled as a beachfront community and continues to share a strong connection to water today. The neighborhood dates back to the 1890s, when William J. Howard saw an opportunity to bring people to the water and built cottages and a hotel out past the edge of what is now Charles Memorial Park. As transportation connections improved, Howard Beach began to evolve into a suburban bedroom community. Over the course of the 20th century, Howard Beach grew to more than 20,000 residents, spreading back from the Bay between Pennsylvania Avenue and Fountain Avenue Landfills and John F. Kennedy (JFK) Airport, past the Belt Parkway to North Conduit Boulevard.



Howard Beach 1924



Howard Beach 1951



Howard Beach 2008

Source: NYC DOITT, NYCityMap

Howard Beach connects with water in many forms and contexts. Expansive beaches front Jamaica Bay. The thin tributaries of Spring Creek meander into Lindenwood. The hard-edged Shellbank Basin channel stretches a full mile into the center of the community. Its partner, Hawtree, Basin, with soft edges and accessible shorelines, winds through Hamilton Beach.

The community is largely built-out, with a somewhat older stock of single-family detached and attached homes and garden apartments and a few larger apartment complexes. There are highly valued and well-utilized local parks, but also a large amount of open space that is unprogrammed and parks that are in need of improvement and repair. Religious institutions provide most of the community spaces, with few other major public community facilities

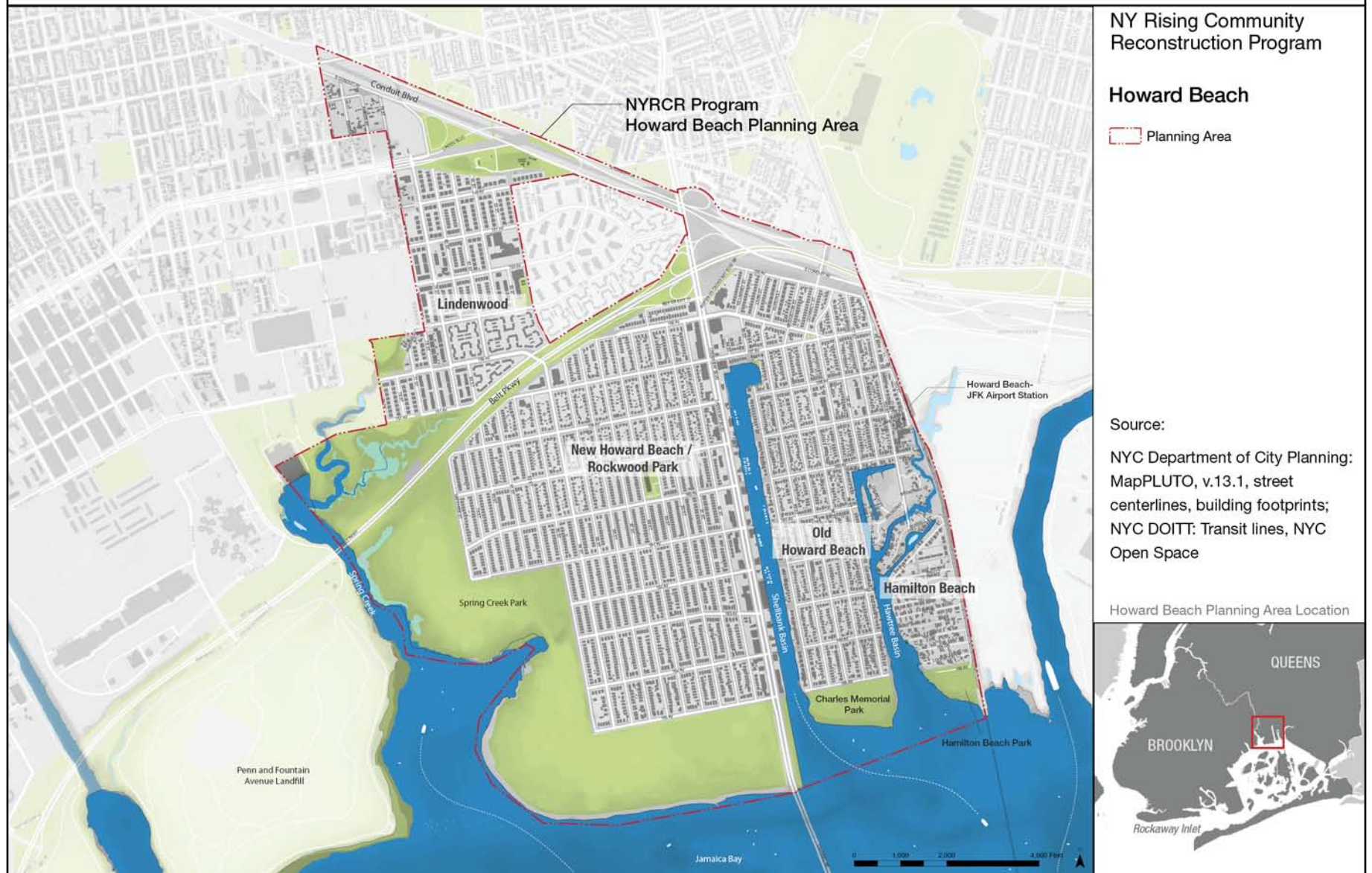
in the neighborhood. Howard Beach is a stable community, with a wide mix of age groups, a strong income base, and a stable economic core.

Howard Beach is a great place to raise a family, with amenities for youth, adults, and seniors. The daily interaction of people makes for a vibrant lifestyle and shapes the nature of the Community. The business districts contain local restaurants and offices, and shops that can be found only in Howard Beach. Many who live here grew up here, which creates a strong inter-generational connection to place and to the Community.

Howard Beach maintains a healthy sense of community. It has multiple civic associations and a network of local organizations that communicate with each other. The people of Howard Beach are



Figure I-1: Howard Beach planning area



proud of their community. It is a place where families can enjoy access to Manhattan while maintaining a harmonious relationship with water. Through this plan, the NYRCR Howard Beach Committee (the Committee) hopes to preserve and enhance these qualities for future generations.

The Howard Beach Planning Area (the Planning Area) includes four neighborhoods: Lindenwood, New Howard Beach/Rockwood Park, Old Howard Beach, and Hamilton Beach. In 2010, the area was home to 21,020 residents, representing 7,893 households.¹

Incomes vary across the four neighborhoods: the median household income in 2012 for Lindenwood was \$55,154, for Old Howard Beach and Hamilton Beach it was \$71,397, and for New Howard Beach/Rockwood Park it was \$91,780. While the median incomes in Old Howard Beach, Hamilton Beach, and New Howard Beach/Rockwood Park are higher than Queens (\$56,780) and New York City (\$51,865) as a whole, Lindenwood is lower than Queens but still higher than the New York City median household income.²

The Community contains large percentages of all age groups, including a significant senior population and a high concentration of baby boomer residents. Howard Beach has a particularly large senior population: senior citizens constitute 21% of the Howard Beach population and 11% of residents are

over the age of 75. The Planning Area also has many families with children and a large youth population (18% of residents are under 18 years old).³

The median age in Howard Beach is 44.7 years, as compared to 35.5 in New York City as a whole and 37.2 for Queens.⁴ This information suggests a rising elderly population in the coming years and may require special consideration related to accessibility challenges, rebuilding, and resiliency planning especially given that much of the Community is aging in place.

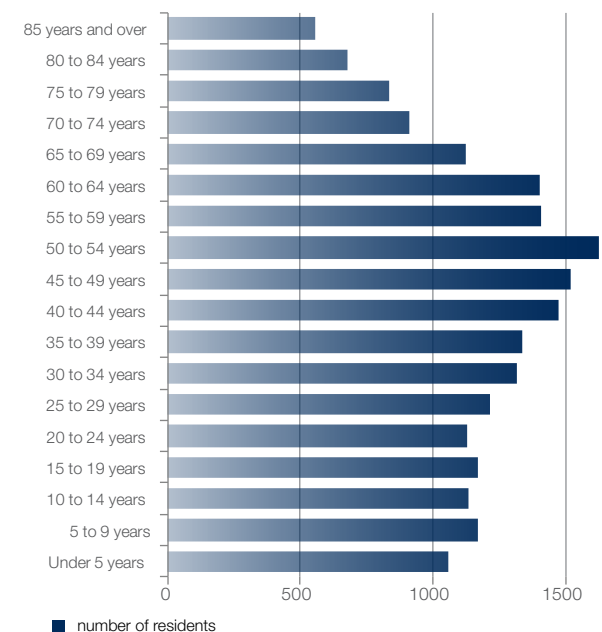
The Community is currently zoned as a “lower-density residential district.” As such, 49% of the buildings within the Planning Area are single-family detached homes and 43% of the buildings are 2–4 family homes. A large majority (71%) of these homes are owner-occupied.⁵

Howard Beach includes three business districts—Cross Bay Boulevard, Coleman Square, and the Lindenwood Shopping Center—which are central to the economy and livelihood of the Community. Cross Bay Boulevard serves as the commercial heart of Howard Beach and boasts a mix of commercial typologies. Automobile-oriented retail set back from the street with parking mixes with older two-story retail with office space above and larger scale big box retail, grocery stores and catering halls. Coleman Square is a commercial node adjacent to the Howard Beach A-train stop and the Airtrain JFK station. The buildings are attached two story

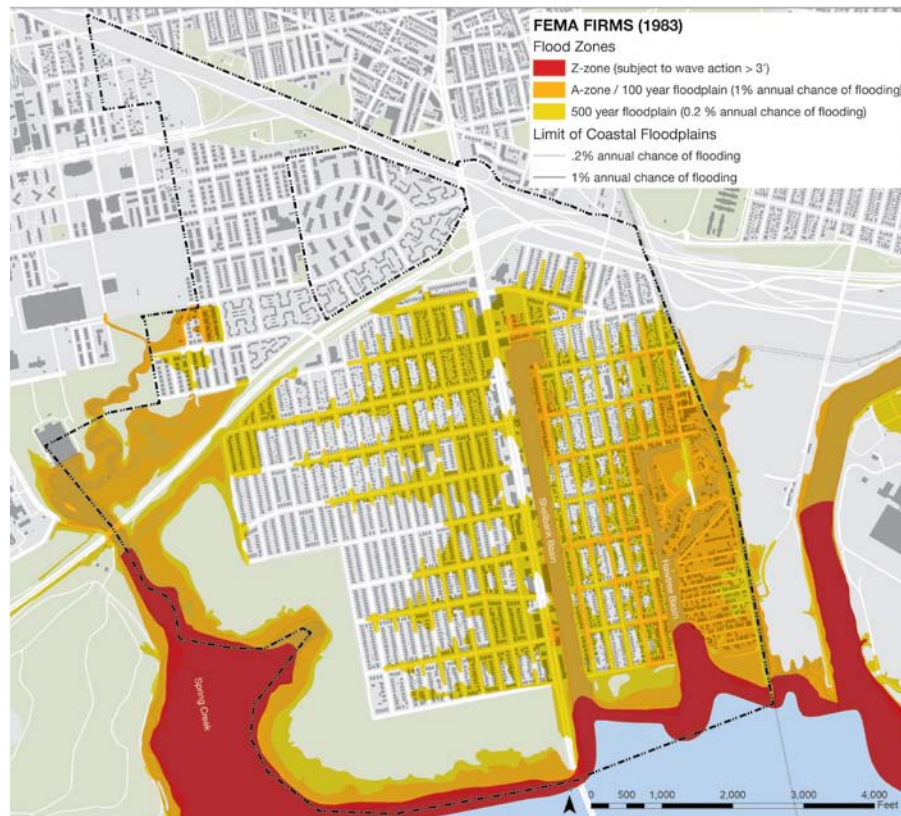
construction built prior to 1930, containing locally owned businesses with office space and apartments above. The Lindenwood Shopping Center was built in the 1960s with a retail strip housing offices above, a large space dedicated to medical offices and a grocery store.

While limited in number, the Community amenities and services available within Howard Beach are critical, especially in times of emergency. The New York City Fire Department (FDNY) Engine Company 331 and Ladder Company 173, the West Hamilton Beach Volunteer Fire Department, and the New

Figure I-2: Howard Beach age break down



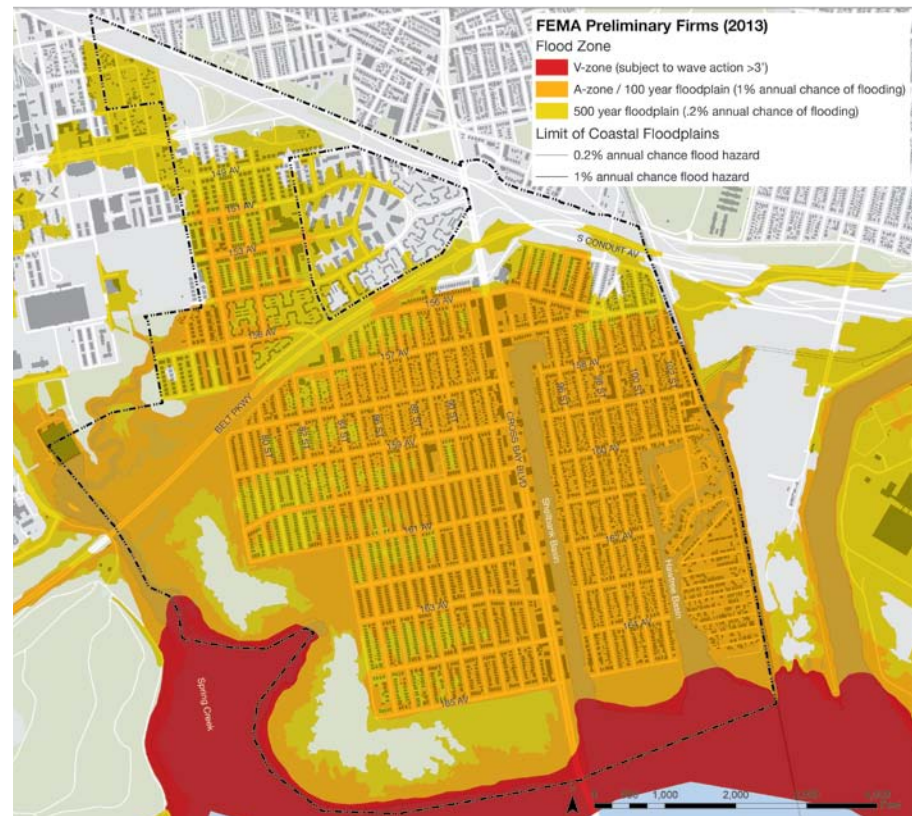
Source: U.S. Census Bureau, Census 2010 Summary File One



1983 Flood Insurance Rate Map (FIRM)

These were the FIRMs in effect when Superstorm Sandy hit. Inundation from Sandy exceeded the then-designated 100-year floodplain.

Data source: FEMA



2013 Preliminary Flood Insurance Rate Map

FEMA was already in the process of updating the FIRMs when Sandy hit. Updated advisory and then preliminary FIRMs were released in 2013, significantly expanding the 100-year floodplain in Howard Beach. Final updated FIRMs are expected to be released in 2015.

Data source: FEMA

York City Police Department (NYPD) Harbor Unit provide emergency services, both in the community and throughout southern Queens.

Howard Beach contains seven religious institutions, many of which support community activities for youth, adults, and seniors. The community is generally lacking in senior and health-care services. Howard Beach residents are forced to travel outside

of the community for urgent care. The only local emergency care facility, the Howard Park General Hospital, moved out several years ago and has since been converted into the Peter J. Striano senior residence.

For a community that is 2.2 total square miles, the concentration of parkland is significant. Six parks totaling 320 acres provide passive and

active recreation opportunities accessible to all neighborhoods. While the acreage is significant, much of the parkland is inaccessible and some parks are in need of maintenance and upgrades. The need for a comprehensive approach to improving the park areas is a significant concern of the Community.



Vetro catering hall and restaurant



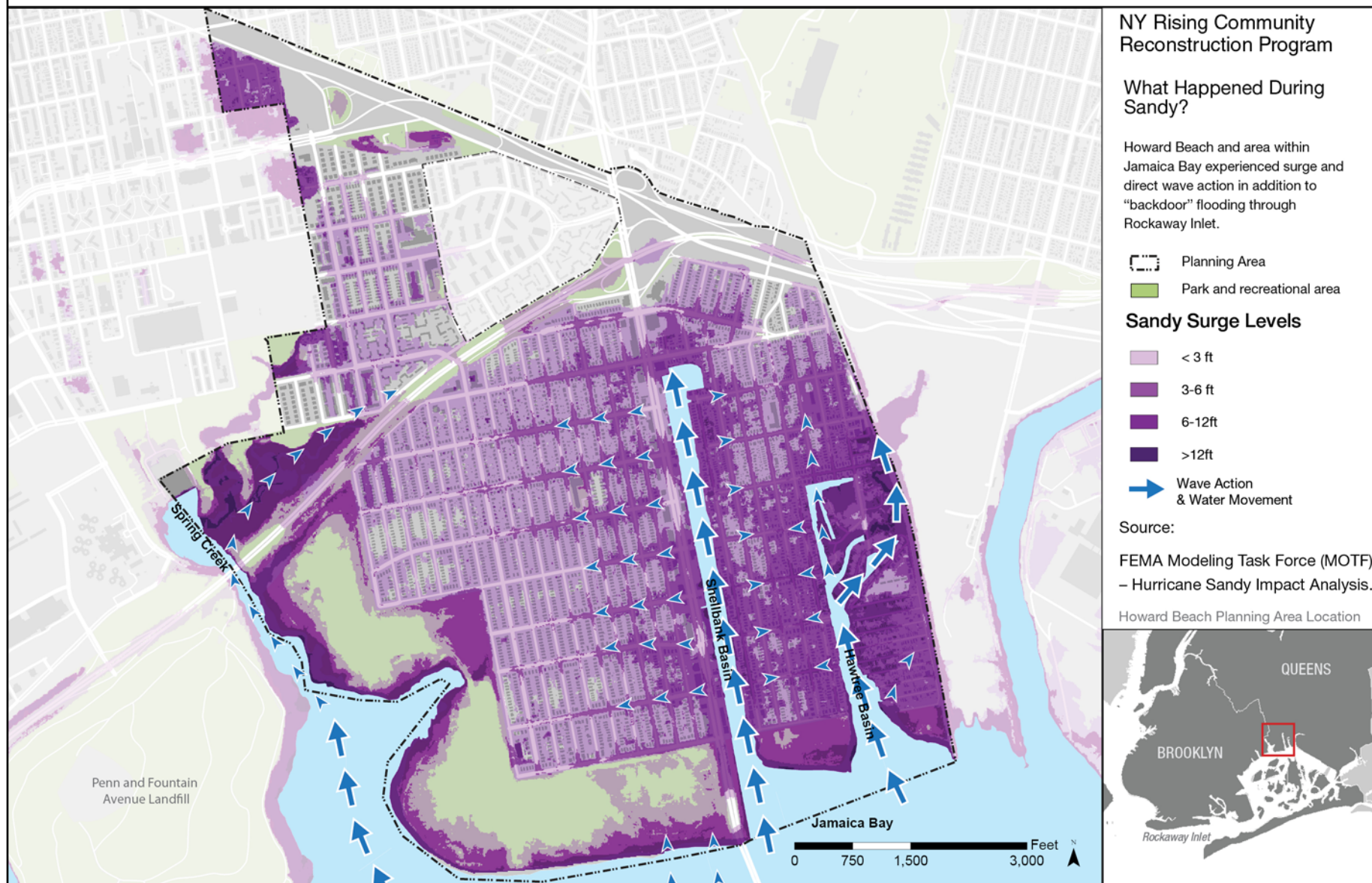
Hamilton Beach Park with MTA A-train in background



Saint Helen's Church



Figure I-3: Superstorm Sandy flood level map



Description of storm damage

Local impact

The greatest impact stemming from Superstorm Sandy (Sandy) in Howard Beach came from extensive flooding. The combination of a high surge coupled with a high-tide condition during a full-moon cycle resulted in waters rising well above the height of bulkheads and natural river banks at Hawtree Basin, Shellbank Basin and Spring Creek. Once the banks local edges were crested, waters ran unabated through the mostly flat street network to locations that had never experienced flood conditions before.

Lindenwood experienced major flooding for the first time in people's memories as waters poured into the district through the upper portions of Spring Creek past 84th Street and as far north as 149th Street, knocking out half of the Lindenwood Shopping Center. Flood waters from Shellbank Basin and Hawtree Basin converged, covering Old Howard Beach in 3 to 6 feet of water. New Howard Beach/Rockwood Park were similarly inundated as waters crested Shellbank Basin, rushed across Cross Bay Boulevard and ran down streets covering almost every block in up to 3 feet of water. Hamilton Beach was hit the hardest, with waters from Hawtree Basin exceeding 6 feet on many streets. According to the Federal Emergency Management Agency (FEMA), 62% of all non-seasonal residential units in Howard Beach were damaged by the storm.⁶

The large section of the coastal edge comprising Lower Spring Creek withstood the storm more effectively than did the basins and streams. Much of this wild and natural area has high points that prevented flood waters from charging over the land and into New Howard Beach/Rockwood Park.

Sewer back-up was a significant issue and was exacerbated when the pump station serving Howard Beach was shut down during the storm. While the pump station returned to operation right away, the recovery from sewer back-up was a slow process, and individual homeowners and businesses needed private services to come in and blow-out sewer lines to restore them to full functionality.

Power loss was a major problem both during and after Sandy. The surge knocked out the power at the Con Edison substation located in New Howard Beach/Rockwood Park and their substation directly adjacent to Cross Bay Boulevard in Old Howard Beach. The third substation (located in Lindenwood) was partially knocked out, causing power outages in parts of Lindenwood. Power was not fully restored in much of the community for two weeks. Many who experienced flooding and other storm damage to their homes and businesses had to wait even longer for power to be restored.



Damaged home along Hawtree Basin



Damaged home adjacent to Upper Spring Creek



Home under repair in Old Howard Beach

Recovering from the storm

In the days following the storm, the Community realized that it lacked an emergency response plan or significant recovery training. In addition, the community lacked a large gathering space and a network of spaces that could support the relief effort in each neighborhood. During this time, the Community expressed significant dismay over the lack of a cohesive recovery operation.

Many people in Howard Beach were stranded, having lost their cars and boats to the storm. Not having a designated local recovery location was problematic for people who suddenly had no means of transportation. Not knowing where or when supplies—especially food and water—were being delivered in Howard Beach was a significant challenge. People often went to the wrong

destination or experience extended waiting periods to get provisions. The lack of clear and available information hampered recovery and heightened the significant sense of distress that lingered in the community in the weeks and months after the storm.

The Community universally praised the local community institutions that opened their doors and pitched in to help in the relief effort. Howard Beach is a close-knit community, with connectivity revolving around its community organizations, its public and private schools, and its religious institutions. After the storm and during cleanup and recovery, the religious institutions and community organizations stepped-up and provided sorely needed relief services.



Resorts World worker distributing food

Credit: Resorts World Casino



Relief effort after Sandy

Credit: local resident



Meeting with NYPD and Red Cross

Credit: Resorts World Casino

Lingering effects

The lasting damage of Sandy continues to impact Howard Beach. Most of the homes in Howard Beach have basements and there was significant flooding throughout the community, 285 homes had flooding of up to 2 feet in their basements and 1,935 homes had flooding in excess of 2 feet.⁷ Many religious institutions have ground floor and basement community centers that incurred flood damage. Most homes and businesses took several months to clean up, become habitable, and reopen. Businesses incurred significant costs to rebuild. Some of the smaller businesses remain closed and others have changed ownership and use. The costs of recovery have been significant, and many businesses have incurred additional costs to take preventive measures and they do not have the assets to rebuild from another severe storm event.

Another impact is the Community's renewed commitment to being prepared for future storm events. Howard Beach was caught off-guard by the magnitude of this event and the widespread damage that it caused. The Committee is particularly concerned about its senior population and the long-term impacts of the storm upon their mobility and well-being.

As the Community recovers, there is a sense that it is not enough to just replace what has been lost, but that there is a real need to prepare for future storm events through physical measures and to help the Community endure and rebound from future events with a more organized relief strategy.



Two homes in New Howard Beach/Rockwood Park



Homes being repaired in Hamilton Beach



Key Food under renovation on Cross Bay Boulevard

Critical issues

Sandy highlighted multiple critical issues that must be addressed if Howard Beach is going to become a resilient community.

The Committee is focused on protection, but the critical issue is where to protect. Flooding could be addressed within Jamaica Bay or even at the outside edge of New York Harbor. As flood protection strategies increase in scale, they incur longer timelines, greater costs, and more complex jurisdictional coordination. The community must determine the optimal strategy and location for protection with the greatest likelihood for implementation. Even with a local protection strategy, the larger issues of the long-term resiliency of Jamaica Bay will have a significant impact upon

Howard Beach. The NYRCR Plan for Howard Beach needs to be coupled with a larger regional effort that looks at the relationships between bayside communities and local, State, and Federal governments.

Howard Beach wants to ensure that its physical and symbiotic relationship with water is preserved. It is critical that an active relationship with the water is maintained, even as flood prevention measures are undertaken. Protection must preserve the relationship with water that makes Howard Beach such an attractive place to live. There are three locations where this relationship will be tested: Spring Creek, Shellbank Basin and Hawtree Basin. All three provide access to water and all three are

weak points in any edge protection strategy to keep flood waters out of Howard Beach. As protection measures are developed, it is critical that they be considered within the larger Community context. Protection should have a positive impact upon the surrounding landscape and Community. If properly integrated, protection can enhance views, beautify natural spaces, provide increased access to water and natural spaces, improve connectivity, and enhance the quality of the surrounding Community.

The roads, sewer lines, power lines, and subway system are all essential to the economic continuity of this community. If Howard Beach is going to be resilient against future climate change impacts such as extreme heat waves, high winds, sea level



View of homes along Hawtree Basin



NYC DEP aerator installed to increase oxygen levels in Shellbank Basin



Pedestrian bridge over Hawtree Basin at 163rd Road

rise, and flooding, it will need to harden its critical infrastructural systems. Infrastructure also provides access; many parts of Howard Beach have limited access and are vulnerable to being cut off during emergencies. Increased access is important for emergency services and for evacuation.

Not all critical issues are physical. As this Community faces future challenges, better knowledge, better communication, and better Community networks are needed so that the people can be prepared to respond and react. These networks are critical during both emergency and non-emergency situations. Particular attention needs to be given

to providing for the needs of the significant senior population both now and in the future, as seniors will be a large segment of the Community's population moving forward.

Preserving Howard Beach starts with ensuring its economic vitality. The foundation of a community can quickly erode when its business community is at risk. The loss of the business base would ripple throughout the Community, lowering property values, reducing attractiveness, and creating a downward economic spiral that could lead to destabilization in Howard Beach. The current business infrastructure is strong, but it needs to be

more resilient. Another critical issue is where and how to utilize limited funds so that the initial actions of the resiliency plan most effectively catalyze long-term resiliency. These initial actions need to leverage other financial resources, build consensus in the Community, and lead to larger resiliency measures.

Recognizing these critical issues, the Committee has put forth an overarching resiliency vision, documented its critical assets, listed its important needs and opportunities, developed strategies to resolve those needs, and created a series of projects to make Howard Beach a resilient community.



Medical office on Cross Bay Boulevard



Infirm person being pushed in wheelchair



Upper Spring Creek



Vision statement

“To be a vibrant and sustainable community that enables residents and visitors to enjoy the bounty of its commercial strip and the natural beauty of Jamaica Bay.”

Superstorm Sandy (Sandy) was a rare confluence of weather patterns, creating a storm that inflicted devastating damage throughout the region. The effect of this storm has forced residents of Howard Beach to recognize that their community must take action to become more resilient to climate change and to reconsider how to continue their relationship with water. The impact of Sandy is far reaching and beyond the damage it inflicted. It has begun to alter

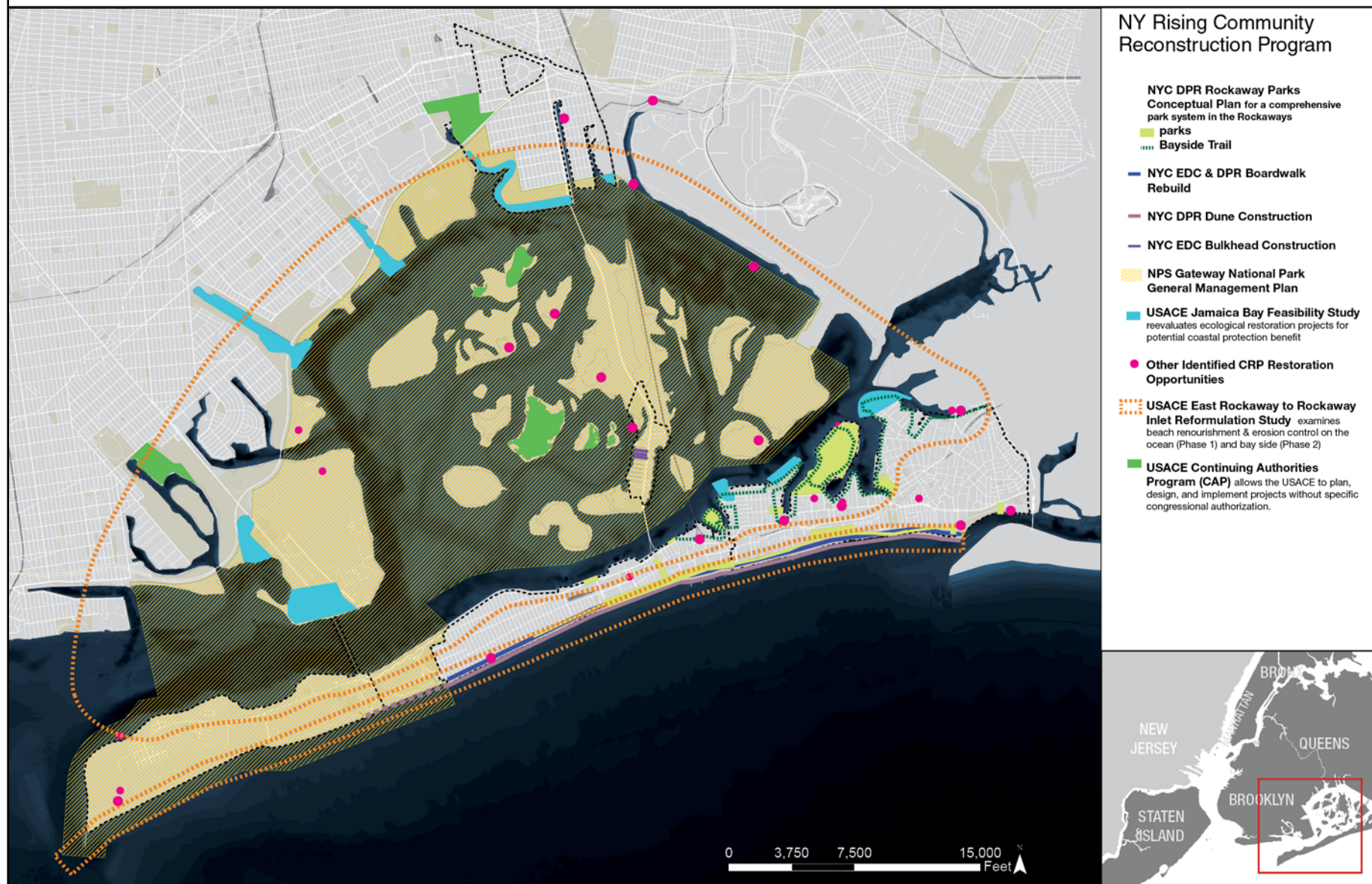
land use policy, and change business strategy and home purchase and renovation considerations. The long-term impacts will challenge communities to stay together and remain strong, healthy, and attractive places for people to live, work, and play.

Through the NYRCR Program, the Howard Beach Community has been allocated up to \$18.4 million in Federal Community Development Block Grant-

Disaster Recovery (CDBG-DR) dollars. The vision for Howard Beach speaks to the desire for retaining and enhancing the quality of life that already exists in this Community: a quality of life with access to water, nature, shopping, good food, usable open space, and an infrastructure system that supports the needs of the Community. If residents and businesses can protect and provide for themselves when disaster strikes, they will be resilient.



Figure I-4: Jamaica Bay regional projects map



Relationship to regional plans

Regional perspectives: Jamaica Bay

Shared risk, shared resiliency

Connected hydrologically and ecologically, Jamaica Bay is a unifying feature tying together six NYRCR Planning Areas in New York City: Breezy Point, Rockaway West, Rockaway East, Broad Channel, New and Old Howard Beach, and Gerritsen Beach/Sheepshead Bay. A seventh Planning Area—the Southern Brooklyn Peninsula, which includes Brighton Beach, Coney Island, Manhattan Beach, and Sea Gate—is in close proximity at the mouth of Jamaica Bay. The Bay and its tributaries have a far-reaching impact that extends beyond New York City. The Villages of Cedarhurst, Lawrence, Hewlett Neck, Hewlett Harbor, and the Hewlett, Woodmere, Meadowmere, Inwood, and South Valley Stream Community Planning Areas in Nassau County are also affected by what happens in the Bay. With their connected shoreline, these communities share a unique ecological amenity, and future resilience strategies that may be undertaken could have a profound impact upon that relationship.

All of the Jamaica Bay communities suffered significantly during Sandy—some from flooding or surge and some from wave action damage. According to an assessment conducted by New York City Department of Buildings, 37% of the buildings destroyed in New York City during Sandy were located in this region. Homes, businesses, beaches, parklands, schools, roadways, and mass

transit were all damaged; the area also endured one of the most extensive and long-lasting power outages in the city.

Flooding risks are likely to be exacerbated throughout the Bay by projected sea-level rise associated with climate change. According to FEMA's preliminary work maps, the 100-year floodplain in the area has expanded for the borough of Queens by 40% since 1983, and floodplain expansion has been especially dramatic for the Jamaica Bay/South Queens area; the number of buildings in the floodplain area has risen by 70%.⁸ This trend is expected to continue, and the low-lying areas in communities surrounding the Bay are likely to continue to experience more frequent flooding and greater flood depths.

Many Jamaica Bay communities also face insufficient emergency access. Single-access routes to communities such as Breezy Point, Broad Channel, and Howard Beach—including bridges and roadways that were damaged or flooded—also constrained emergency response and hindered evacuation.

Jamaica Bay is a tidal estuary. Though severely degraded during the 19th and 20th centuries, the Bay remains a dynamic ecosystem, which provides critical habitat to a variety of species, including a

number of protected and threatened birds. Habitat loss and degradation of the Bay's chemical, physical, and biological environment has largely been due to human activities; however, over the last two decades, Federal, New York State, and New York City policies have yielded dramatic improvements in the Bay's water and habitat quality.

In this hydrologically connected system, projects and interventions in one area of the Bay can have ecological and coastal protection ramifications across the estuary. The cumulative impact of individual projects implemented in different locations around the Bay can be greater than the sum of their individual impacts.

Planning for Jamaica Bay

The NYRCR Program understands that solutions for Jamaica Bay will affect all of the communities that front its borders and extended waterways. This includes NYRCR Communities from New York City and Long Island, as well as communities that are not included in the NYRCR Program.

Recognizing that strategies for Jamaica Bay are complicated and that consensus building will be achieved through dialogue, the NYRCR Program has formed the Jamaica Bay Regional Working Group to bring all affected communities together to research current and planned projects, and meet

with local, State, and Federal officials and groups working in Jamaica Bay. This Working Group began to meet in early 2014 and will continue to meet over the next several months to analyze options and opportunities, discuss goals and challenges, and strive to arrive at a consensus on a long-term approach to resiliency in Jamaica Bay. A more detailed explanation of the Working Group's recommendations can be found in Section V – Additional materials.

To maximize benefits and minimize risk, coordination among NYRCR Communities as well as the various Federal, State, and New York City agencies active within the Bay will be needed. In addition to the NYRCR effort, there are many agencies, organizations, and stakeholders involved in Jamaica Bay. The newly formed Jamaica Bay Resiliency Institute—established through an initiative to be led by the City University of New York in partnership

with the City of New York, the National Park Service (NPS), and the Trust for Public Land, is a potential partner and presents an opportunity for NYRCR Communities abutting Jamaica Bay to collaborate with other organizations and agencies. Other organizations are also working within the Bay and provide ample opportunity for collaboration on regional issues.

To avoid duplication of plans and to best identify how the NYRCR Program may fill existing gaps, past and ongoing plans, studies, and projects in Howard Beach and surrounding areas were reviewed. Major existing plans, studies, and projects in Jamaica Bay and citywide relevant to Howard Beach are described below.

Jamaica Bay initiatives

The New York City Department of Environmental Protection's Jamaica Bay Watershed Protection Plan. Authorized in 2005 and initially published in 2007, the plan is intended to support restoring and maintaining the water quality and ecological integrity of the Bay. A number of ongoing initiatives driven by this plan include wastewater treatment upgrades, green infrastructure and other stormwater management improvements and a variety of ecological improvements and pilot projects. While there are no specific projects identified in Howard Beach, the stormwater management and pollution control initiatives laid out in the plan are relevant to all watersheds surrounding the Bay.

Gateway National Park General Management Plan. The majority of the undeveloped land in and around the Bay is part of Gateway National Recreation Area (GNRA), one of the nation's few



urban national parks, encompassing 26,607 acres in Brooklyn, Queens, Staten Island, and New Jersey. Given this large presence, NPS will be an important player in resiliency efforts in the Bay. The park is updating the General Management Plan (GMP), which has been prepared over the last four years and will guide future management of the park. The GMP is particularly important to strategies in Howard Beach. NPS is manager of parts of Lower Spring Creek Park, Charles Memorial Park, and Hamilton Beach Park. As the Committee looks to integrate protection into the edge, all of these assets could be affected, and any action taken will need to be in compliance with the GMP. NPS will need to be involved early and actively in the development of coastal protection in Howard Beach.

U.S. Army Corps of Engineers (USACE) efforts.

The USACE is a major player in both coastal protection and ecological restoration efforts within

Jamaica Bay through a number of ongoing studies and projects that could provide resiliency benefits. These include studies that were completed pre-Sandy as well as post-Sandy updates to the previous plans and studies. While initiated and led by the USACE, the projects that stem from these studies may have many implementation partners, including multiple New York State and New York City agencies.

Hudson Raritan Estuary (HRE) Comprehensive Restoration Plan (CRP). Adopted in 2009, the USACE and Port Authority of New York and New Jersey developed the HRE-CRP in collaboration with Federal, State, municipal, and non-governmental organizations as well as other regional stakeholders. The plan sets forth a vision, master plan, and strategy for future ecosystem restoration in the New York/New Jersey Harbor. In Jamaica Bay, the plan

identified 39 potential restoration sites, including Upper and Lower Spring Creek as well as Hawtree Point.

Jamaica Bay, Marine Park and Plumb Beach, New York Ecosystem Restoration Feasibility Study. The study is a joint undertaking of the USACE and the New York City Department of Environmental Protection (NYC DEP). It was initiated following Sandy and is intended to provide an expedited limited reevaluation of USACE restoration projects in the Bay to address post-Sandy changes. The interim draft report identified eight priority restoration sites (550 acres) from the HRE-CRP recommendations. Two of those sites—Spring Creek and Hawtree Point—are in the Howard Beach study area. In addition, the feasibility study will look at Marsh Island Restoration Projects



being undertaken under the USACE's Continuing Authorities Program as well as Upper Spring Creek, which falls in the Howard Beach study area.

Since the initiation of the NYRCR Program, a number of the projects in Howard Beach identified in this study have advanced. In November 2013, Governor Andrew M. Cuomo announced that federal funding has been approved to advance the \$50 million New York State Department of Environmental Conservation (NYS DEC) Lower Spring Creek project. This project will incorporate natural features, which can provide Coastal Storm Risk Management (CSRM) benefits in addition to the project's initial ecosystem restoration components. While NYS DEC will be the project sponsor,

implementation of the project may be managed by USACE. Design and engineering for this project is expected to begin spring 2014.

In addition, while funding has not yet been secured, the New York City Department of Parks and Recreation (NYC DPR) applied for a \$5 million grant from the U.S. Department of the Interior (USDOL) National Fish and Wildlife (NFWF) Hurricane Sandy Coastal Resiliency Competitive Grant program for implementation of the Upper Spring Creek project with similar resiliency improvements to address localized flooding in Howard Beach.

East Rockaway Inlet to Rockaway Inlet (Rockaway Beach). This study entails the reevaluation of the recommendations of the existing USACE plan for the area in light of the impacts of Superstorm Sandy. Phase 1, for which the draft report is scheduled to be completed in October 2014, looks at storm damage risk-reduction measures on the ocean side of the Rockaway Peninsula. Phase 2, for which the draft report is expected in fall 2015, will investigate flooding on the Jamaica Bay side of the peninsula and evaluate potential CSRM measures. It is under this study and the projects that stem from it that coastal protection measures proposed by Howard Beach and other communities around the Bay may be studied or considered by the USACE.



Additional citywide initiatives

Special Initiative for Rebuilding and Resiliency.

On June 11, 2013, then Mayor Michael Bloomberg announced the release of *A Stronger, More Resilient New York*, (SIRR Report) forming New York City's plan for rebuilding post-Sandy and ensuring resiliency into the future. The plan contains actionable recommendations both for rebuilding communities in the city affected by Sandy and for increasing the resiliency of buildings and infrastructure citywide. More broadly, the plan lays out numerous citywide initiatives to improve resiliency for systems including coastal protection, buildings, insurance, utilities, liquid fuels, health care, telecommunications, transportation, parks, water and wastewater, and other critical networks. The report and latest updates on implementation can be found on the SIRR website: <http://www.nyc.gov/html/sirr/>.

The **New York City Comprehensive Waterfront Plan—Vision 2020 (CWP)** is a comprehensive analysis and overall vision for New York City's 520 miles of shoreline. It includes a strategic framework for the city's waterfront, and short- and long-term strategies, and is used to guide land and water use decisions. Priorities in the plan focus on expanding public access, supporting the working waterfront, improving water quality, restoring the ecology of the waterfront, enhancing the Blue Network (the waterways between the five boroughs), and increasing the resiliency of the city in respect to climate change and sea-level rise.

The **New York City Waterfront Revitalization Program (WRP)** is the city's principal coastal management tool, and implements the CWP. It establishes New York City's policies for development and use of the waterfront, and provides the framework for evaluating the consistency of all discretionary actions in the coastal area. When a proposed project is located in the city's designated waterfront area, and it requires a local, State, or Federal discretionary action, a determination of the project's consistency with the policies and intent of the WRP must be made before the project can move forward.

The **Designing for Flood Risk** report identifies key principles to guide the design of new buildings in flood zones so that construction will be more resilient to the effects of climate change and coastal flood events. Recognizing the distinct character and needs of higher-density urban environments, the report provides recommendations for how regulations and individual project design can incorporate these principles. The study informed the New York City Department of City Planning's (NYC DCP) Flood Resilience Zoning text amendment adopted by the New York City Council in 2013.

The **Urban Waterfront Adaptive Strategies (UWAS)** report, prepared by the NYC DCP, provides a systematic assessment of the coastal flood hazards from climate change and sea-level rise that face New York City. The UWAS lays out a risk-based, flexible process for identifying, evaluating and implementing potential coastal



Source: NYC, "A Stronger, More Resilient New York" report

Howard Beach and NYC's Strategic Initiative for Rebuilding & Resiliency (SIRR)

This SIRR plan includes several initiatives for Howard Beach. Key initiatives include:

- Develop an implementation plan to address frequent tidal inundation in Hamilton Beach
- Call on and work with USACE to study and install wetlands for wave attenuation in Howard Beach and to study further flood protection for improvements with Jamaica Bay
- Repair and rebuild housing units destroyed and substantially damaged by Sandy
- Support local merchants in improving and promoting local commercial corridors



Elements: +14' NAVD berms, restored marsh and nibbed mussel hard toe in Spring Creek Park; berm and rock groins at Charles Memorial Park; movable flood gates at entrances to Shellbank and Hawtree Basins; berm at parkland in Hamilton Beach.

Source: Alternative 4 from Integrating Natural Infrastructure into Urban Coastal Resiliency study: Hybrid with operable flood gates

Combining Green and Gray Infrastructure

The Nature Conservancy study, “Integrating Natural Infrastructure into Urban Coastal Resiliency,” released in December 2013 examined four approaches integrating natural systems with traditional coastal protection infrastructure, with a hybrid approach that included tide gates at Shellbank and Hawtree Basins having the greatest cost benefit.

protection strategies. It recognizes that waterfronts vary, and may require a range of strategies at different scales. The report also identifies a range of potential adaptive strategies, and analyzes each for their ability to protect waterfront communities.

Particularly relevant to NYRCR Communities are ongoing and potential future updates to the building and zoning codes. New York City’s Building Resiliency Task Force identified 33 recommendations to the City Council. Many of these recommendations are still in various states of review by the council, but 16 initiatives have been passed. In addition, the NYC DCP’s Flood Resilience Zoning Text Amendment was approved by City Council on October 9, 2013.

NYC Recovery Program. In addition to resiliency, the City of New York has launched several initiatives to help residents across the 16 boroughs recover from the damage caused by Sandy. The “Build It Back” program seeks to assist homeowners, landlords, and tenants whose homes were damaged by Sandy. The NYC Recovery Program is also offering business loans and grants to small business owners damaged by the storm. Most of these recovery programs support resiliency investments and will help improve individual homes and businesses in the communities surrounding Jamaica Bay. More information on the NYC Recovery Program can be found here: <http://www.nyc.gov/html/recovery/>. (The Governor’s Office of Storm Recovery administers housing and small business

recovery programs in communities outside of New York City that were impacted by Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee.)

FEMA Flood Maps and Flood Risk Assessment.

The agency describes its assessment of flood risk through flood maps referred to as Flood Insurance Rate Maps (FIRMs). These maps are used by the National Flood Insurance Program (NFIP) to set flood insurance rates. When Sandy hit New York City, the FIRMs in use were based on information from 1983. Superstorm Sandy inundation extended well beyond what these maps estimated would be the 100-year floodplain, calling attention to the fact that an update to these maps was needed. In fact, before the storm, FEMA had begun a coastal flood study to update FIRMs for portions of New York and New Jersey using improved methods and data to better reflect coastal flood risk.

After Sandy, FEMA first released Advisory Base Flood Elevation (ABFE) maps based on the partially completed flood study for certain communities which were designed to help in rebuilding and recovery efforts. In June of 2013, FEMA released preliminary work maps for New York City, including the full results of the coastal flood study. The preliminary work maps are based on the same underlying data as the earlier ABFE maps, but include the results of a more refined analysis of shoreline conditions, including the effects of erosion and wave run-up. The maps were a draft product that FEMA shared in advance of the preliminary FIRMs, which were released at the end of 2013. The final updated



FIRMs are anticipated to be released in 2015. These final FIRMs will guide new flood insurance rates for homeowners and businesses in the floodplain.

FEMA's flood maps do not take into account future conditions and thus do not factor in potential sea-level rise. The New York City Panel on Climate Change (NPCC) is continuing to analyze potential climate change impacts on New York City, namely sea-level rise. The NPCC released a report, *Climate Risk Information 2013: Observations, Climate Change Projections, and Maps*, in conjunction with the SIRR Report and provides New York City's estimates for sea-level rise over various time frames. They are expected to update these estimates in the near future. In addition, New York City has hired the Stevens Institute of Technology to map flood zones with added sea-level rise for future decades. This is being done within the NPCC framework and will be reported and released through NPCC in the winter of 2014.

In a move to bring flood insurance rate relief to coastal communities, on March 4, 2014, the U.S. House of Representatives passed a bill that would limit flood insurance premium increases to 15% of the average rate in a particular flood zone or 18% for each individual policy. The U.S. Senate approved

the same bill on March 13, 2014, and on March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act into law.

NYC Wastewater Resiliency Plan: Climate Risk Assessment and Adaptation Study. In October 2013, the NYC DEP released a report that examined wastewater facilities that are at risk from future storms and suggested protection measures with potential costs. The report recommended specific protection measures for facilities that service the Howard Beach community: the Howard Beach pumping station and the Jamaica Wastewater Treatment Plant. The recommendation for the pumping station is to install water tight access doors and emergency generators. The treatment plant is mostly located out of the flood zone with the exception of a unit substation, which would be protected with sandbags in advance of the storm. http://www.nyc.gov/html/dep/html/about_dep/wastewater_resiliency_plan.shtml

Integrating Natural Infrastructure into Urban Coastal Resilience: Howard Beach, Queens. The City of New York asked The Nature Conservancy to undertake a study to examine how to integrate natural and built coastal protection into a strategy to protect vulnerable low-lying communities.

The report released December 2013 used the Howard Beach Community as an example to see how well their methodology worked. The study identified four approaches for Howard Beach with a preferred hybrid approach that included tide gates at Shellbank and Hawtree Basins—having the greatest cost benefit. <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/newyork/natural-infrastructure-study-at-howard-beach.xml>

The following key takeaways from review of existing plans, studies, and projects that specifically address Broad Channel illustrate that gaps in planning and implementation can be addressed through NYRCR:

- Surge protection for the Shellbank and Hawtree Basins, and Spring Creek
- Resiliency of the commercial corridors including Cross Bay Boulevard and Coleman Square
- Hardening of the utility infrastructure
- Hardening of community social services, evacuation planning and protection of vulnerable populations
- Determining funding and priority of Jamaica Bay resilience projects

II. Assessment of risk and needs





Recovery support functions

Early in the planning process, the NY Rising Community Reconstruction (NYRCR) Howard Beach Planning Committee (the Committee) and the public created a set of needs and opportunities that embody the critical issues facing the community after Superstorm Sandy (Sandy). Through the framework of Recovery Support Functions established in the NYRCR planning process, these needs and opportunities developed into a set of strategies that shaped how the Committee and the NYRCR Howard Beach Community (the Community) prioritized the selection of projects and allocation of federal Community Development Block Grant-Disaster Recovery (CDBG-DR) funding.

A number of the projects developed to meet these needs involve multiple Recovery Support Functions. Tracking the Recovery Support Functions through the asset inventory, needs and opportunities, strategies, and project development will help to organize the plan around this set of principles. By designing with these principles in mind, each project will strive to involve co-benefits, solve for complex problems, and plan holistically for the varied needs of the Community.

Recovery support functions

Throughout this plan, six Recovery Support Functions are used to categorize assets, frame needs and opportunities, and organize strategies. These functions are derived from Federal Emergency Management Agency's (FEMA) National Disaster Recovery Framework developed by President Barack Obama in 2011. They are defined as follows:



Community Planning and Capacity Building. This function addresses a community's ability to implement immediate storm recovery activities and organize long-term resiliency plans. Formal and informal community networks, dedicated emergency education and planning efforts, and experience recovering from past emergency events are characteristics that may enhance this function.



Natural and Cultural. Natural infrastructure systems can play an important role in resiliency and recovery. The ability of natural features to withstand disruptive events as well as their ability to mitigate damage are addressed by this function. Cultural resources can play an important role in recovery through provision of spaces and forums for recovery.



Health and Social Services. This function addresses the ability of public health, health-care facilities, and essential social services to be restored after a disruptive event.



Economic Development. This function addresses the ability for economic and business activities to return to normal. Developing new economic opportunities that result in a sustainable and economically strong community is a component of this function.



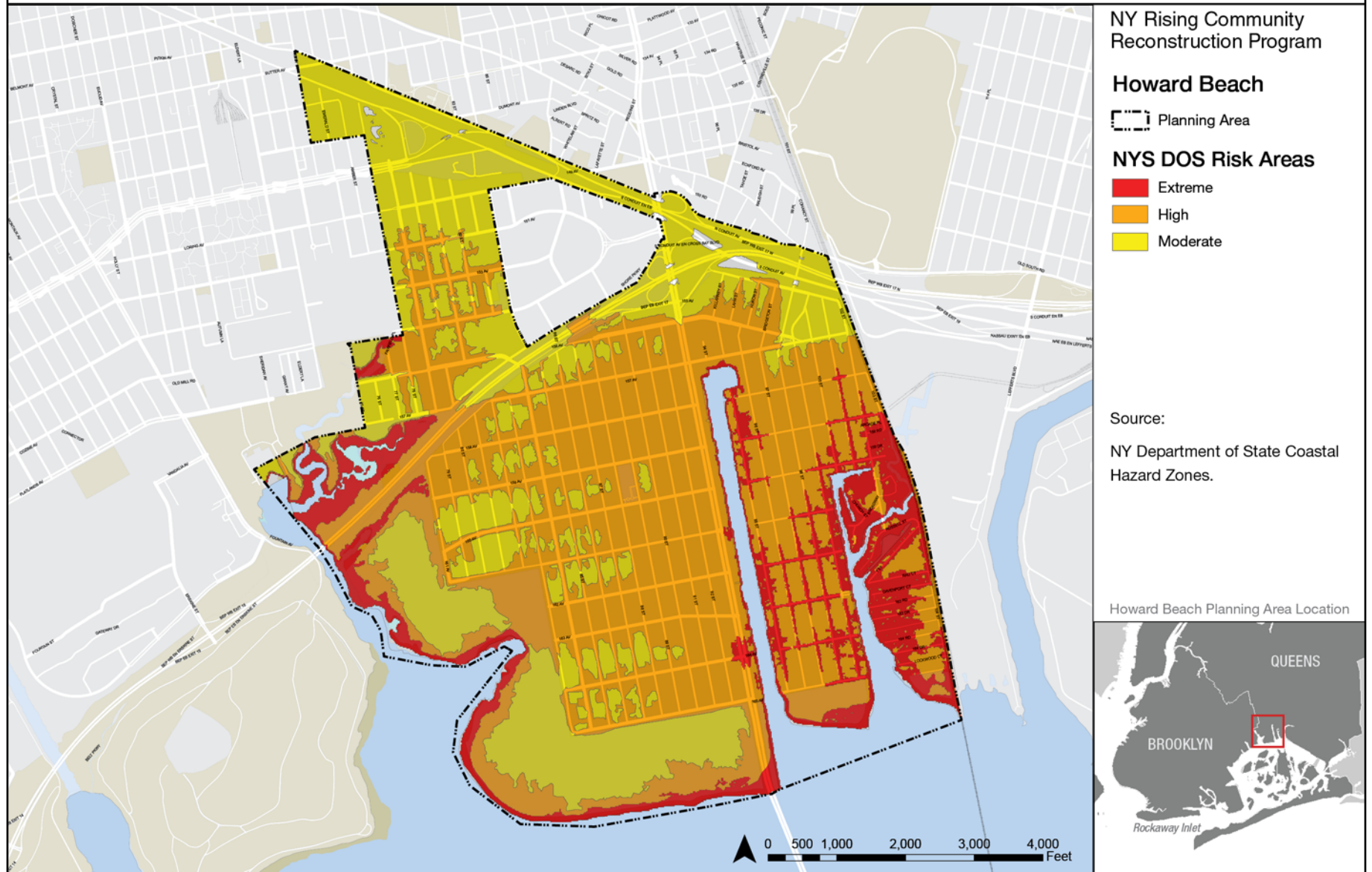
Infrastructure Systems. This function relates to local and regional transportation, water management, utility systems, and the ability of these to withstand and recover from disruptive events. The economic development and job creation capacity of these systems are also critical to this function.



Housing. The resiliency of a community's housing stock is addressed by this function—including both physical resiliency and financial health and resources.



Figure II-1: NYS DOS risk areas



Description of community assets and assessment of risk

The goal of the asset inventory process is to assemble a complete description of the assets located within the community, targeting assets whose loss or impairment due to flood and storm events would compromise essential social, economic, or environmental functions or critical facilities of a community. The inventory includes sufficient information to assess risk to the assets under current and future conditions. Assets include a variety of valued places and resources within a community. Assets may facilitate economic and social activities or refer to critical infrastructure required to support those activities. Assets may also be part of the built or the natural environment.

Howard Beach's asset inventory has been developed based on a combination of public data and input from the Committee and the public. The inventory and associated maps were initially generated using publicly available land use and infrastructure data to identify assets within the planning study area. (The primary data source used was the New York City Department of City Planning's MapPluto data, release 13v1.) The first draft of an asset inventory was presented at the first Committee meeting. The maps were refined based upon input from the Committee and presented to the Community at the initial Public Engagement Event. Attendees identified any missing and priority assets. The Committee then reviewed and confirmed the inventory. Additional public input

was captured through an online community asset map located at <http://howardbeach.nyrisingmap.org/>. The Committee reviewed and confirmed the inventory.

The asset inventory is organized by key NYRCR asset class and Recovery Support Function. In the case of Howard Beach, assets related to community planning and capacity building and health and social services are combined as there is extensive overlap between these two categories.

Health and social services and community planning and capacity building assets



Cross Bay Boulevard is home to multiple critical response facilities, including New York City Fire Department (FDNY) Engine Company 331 and Ladder Company 173, along the East Side of Cross Bay Boulevard. The New York City Police Department (NYPD) Harbor Unit uses office space within the FDNY facility and docks its harbor patrol boats in Shellbank Basin. The West Hamilton Beach Volunteer Fire Department sits along 104th Street in Hamilton Beach. The Howard Beach post office is located on Cross Bay Boulevard, and the Howard Beach library is located near Cross Bay Boulevard on 156th Avenue.

Risk area definitions

NYS DOS, with the assistance of the National Oceanic and Atmospheric Administration, mapped geographic areas representing the likelihood for coastal flooding. They identified three risk areas:

Extreme – Areas currently at risk of frequent inundation and vulnerable to erosion and wave action over 3 feet (FEMA V Zone), subject to shallow coastal flooding (within the National Weather Service's shallow coastal flooding advisory threshold), or likely to be inundated in the future due to sea-level rise (assumes 3 feet).

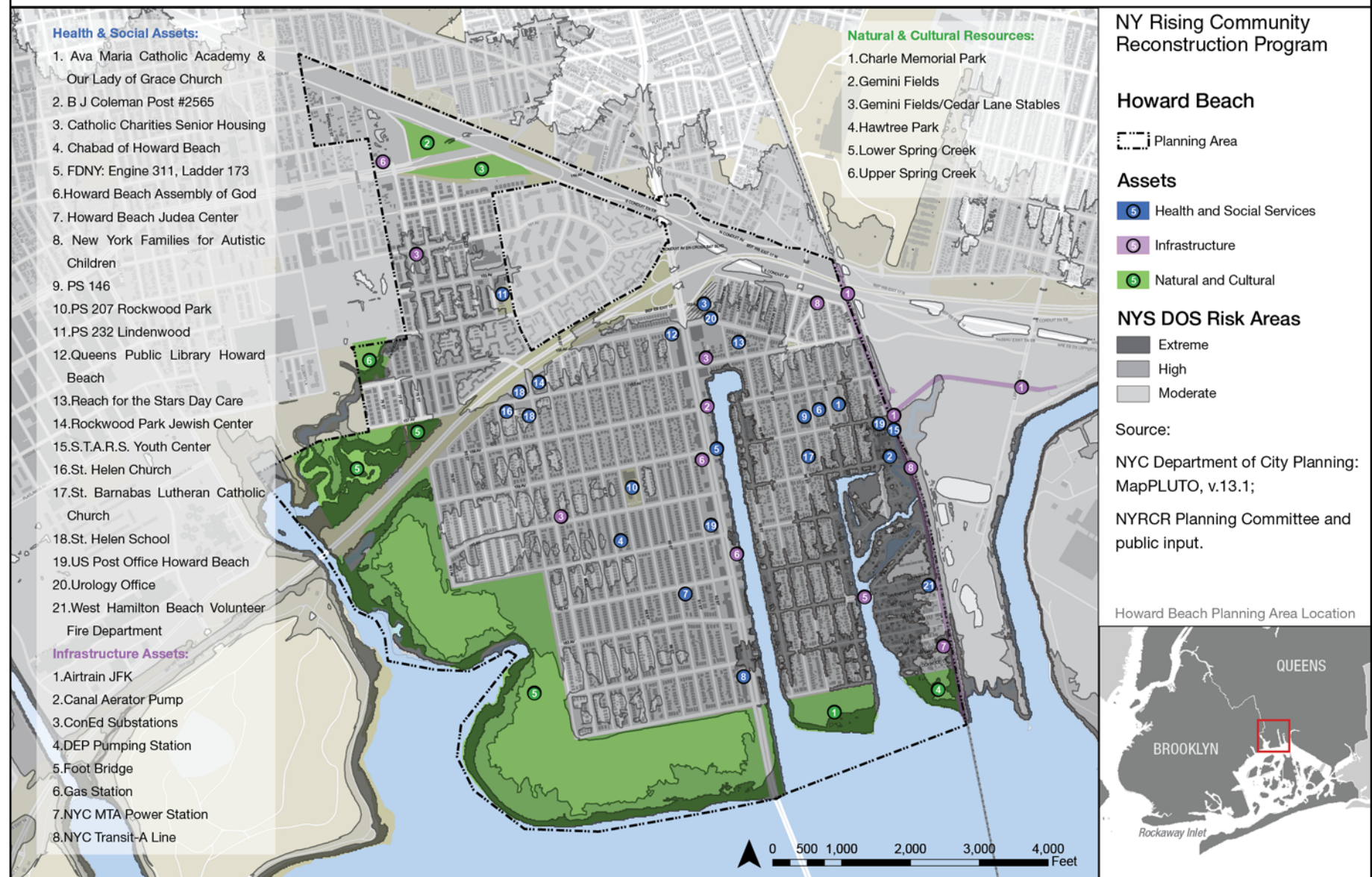
High – Areas outside the extreme risk area that are currently at risk of infrequent inundation (FEMA A Zone, meaning there is a 1% annual chance of flooding) or at future risk of shallow coastal flooding with sea level rise (assumes 3 feet).

Moderate – Areas outside the extreme and high risk areas but currently at moderate risk of inundation from infrequent events (FEMA shaded X Zone, meaning there is a 0.2% annual chance of flooding) or at risk of being in the 100-year floodplain with sea-level rise (assumes 3 feet), and any areas expected to be inundated by a Category 3 hurricane.

A more detailed description of the NYS DOS Risk Assessment Area Mapping Methodology can be found at <http://stormrecovery.ny.gov/community-reconstruction-program>.



Figure II-2: Health and social services and infrastructure assets



There are seven houses of worship located in the community, which serve as important community gathering places on a regular basis and contributed to relief efforts after Sandy. There are three public schools: PS 146 in Old Howard Beach, PS 207 in New Howard/Rockwood Park and PS 232 in Lindenwood. Two of the religious institutions also house parochial schools, providing multiple local educational outlets for the approximately 3,357 children under 14 who live in Howard Beach.¹ There are facilities to support youths, including day care centers and youth centers scattered throughout the community.

There are multiple medical offices along Cross Bay Boulevard and in Lindenwood that support seniors and residents of all ages. Additional specialized health service organizations are located in Howard Beach to provide assistance to Howard Beach residents and the larger region of South Queens.

Howard Beach lacks critical care facilities for seniors. The former Howard Park General Hospital, which provided local emergency care, has been converted into senior housing after remaining vacant for many years, and there are few additional health facilities scattered throughout the community. The lack of local health-care and emergency facilities forces many residents to travel outside of the community to access health services. Furthermore, the majority of health and social assets are located upland in the community, so residents living closer to Spring Creek Park and Jamaica Bay may not have the same access to those services.

Infrastructure assets



Cross Bay Boulevard, a six-lane commercial corridor that links Howard Beach to surrounding communities, is the primary connection to the rest of central and southern Queens, Conduit Avenue, and the Belt Parkway. It is also the sole roadway connection to Broad Channel via the Joseph P. Addabbo Bridge and the Rockaway Peninsula via the tolled Cross Bay Veterans Memorial Bridge. Access for vehicles into and out of Howard Beach is therefore limited and concentrated.

The A-train line represents the one subway connection, servicing Howard Beach via the Howard Beach JFK Airport subway station, which lies at the northeastern corner of the community. The station also houses the AirTrain to JFK International Airport. Additional local and express bus service runs along Cross Bay Boulevard.

The Community also highlighted the footbridge on 163rd Avenue, which provides an east-west connection to Hamilton Beach, as a transportation asset, as it provides another means of exit for the Community. Both ends of the footbridge come down at low points in the community, making the footbridge inaccessible during severe flood events. The neighborhood only has one north-south road—104th Street—which is susceptible to flooding.

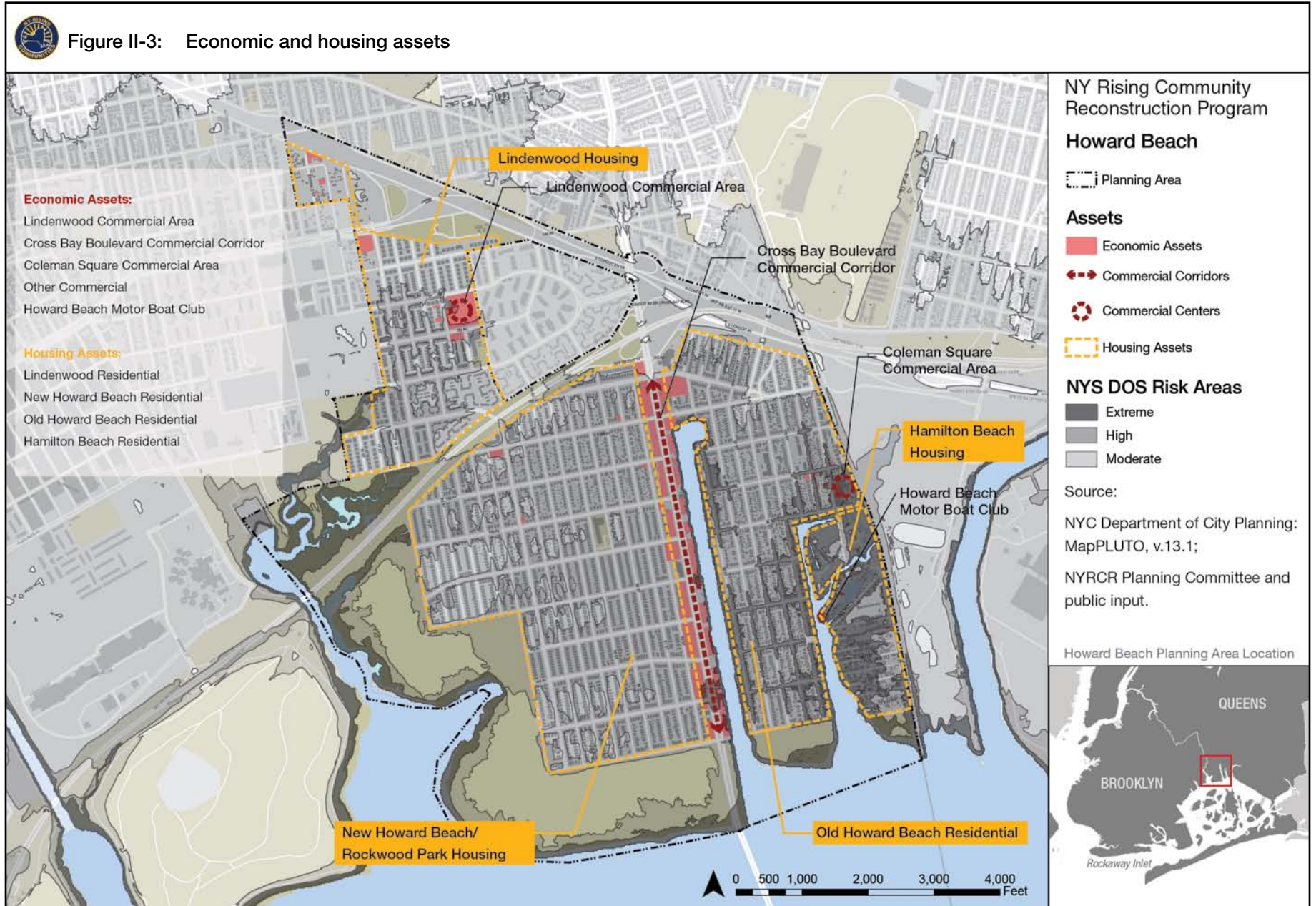
Power is provided to the community from three at-grade Con Edison substations: one in Lindenwood, one in New Howard Beach/Rockwood Park, and one in Old Howard Beach. The Howard Beach pumping station, located at 155th Avenue and 99th Street, pumps sewage from the community to the Jamaica Wastewater Treatment Plant located northwest of JFK International Airport.

Natural and cultural resources assets



Howard Beach contains extensive parkland and natural open space concentrated primarily at the edge of the communities. The south and western edge of Lower Spring Creek contains large marshlands, natural open space and recreational areas. Between the basins and the creek, the edge is soft, providing beach, natural areas and active parkland for the Community and providing expansive and unparalleled views of Jamaica Bay.

Spring Creek Park, part of the Gateway National Recreation Area, is a large expanse of natural open space fronting on New Howard Beach/Rockwood Park. This area is a passive natural area and could be a significant coastal park amenity. Gateway is a major natural and recreational asset for the entire Bay and includes two additional recreational facilities located within the Howard Beach Planning Area: Charles Memorial Park and Hamilton Beach Park. Both provide active and passive recreational amenities, and both were originally part of the



inventory of the New York City Department of Parks and Recreation but were transferred to the Gateway system during the fiscal crisis in the 1970s. These are heavily used parks, but are seen by the public as needing a more effective maintenance strategy.

The Community highly values these assets and wants to protect them as part of larger asset and community resiliency project.

Shellbank and Hawtree Basins are also critical natural assets to the Community, providing access to boating, fishing, and other water-based recreational activities. The two basins provide docks for recreational and commercial boats and access to Jamaica Bay and out into the Atlantic Ocean. Both basins are used for fishing and can be used as kayak and small-craft recreation areas.

Economic assets



Economic assets are concentrated in the three economic districts: Coleman Square; along 153rd Avenue in Lindenwood; and most significantly, along the length of Cross Bay Boulevard. These business districts are central to the economy and livelihood of the Community.

The largest commercial area runs along both sides of Cross Bay Boulevard for more than a mile between South Conduit Avenue and 165th Avenue. Many larger stores, restaurants, banks and other

commercial establishments are situated along this mixed one- and two-story automobile-oriented shopping district. The Cross Bay Boulevard commercial strip's eastern edge is Shellbank Basin. Some of the businesses along the basin have taken advantage of waterfront access, providing docking facilities for commercial and recreational boating. All of the businesses along Cross Bay Boulevard are at high risk due to their proximity to Shellbank Basin.

Often referred to as “the town” or “the Square,” Coleman Square is a small one-block, tightly constrained commercial district of two-story buildings that sits just north of the northernmost point of Hawtree Basin. The square is directly adjacent to the Howard Beach A-train stop and the AirTrain JFK station and services the local communities of Old Howard Beach and Hamilton Beach. Coleman Square is a local center of great importance, offering restaurant space, convenience stores, a youth center, and second-floor office space. The square is highly susceptible to flooding from Hawtree Basin during spring and fall equinox and monthly full-moon tide conditions.

The Lindenwood Shopping Center sits on a two-block footprint bounded by 82nd and 84th Streets and 151st and 153rd Streets at the point where Lindenwood transitions from single-family homes into apartment buildings. This heavily used shopping center receives a large mix of automobile shoppers and pedestrians from the surrounding community. The area is home to multiple banks and is adjacent to PS 232. The main anchors are the Waldbaums

grocery store and the Medical Arts Center, which houses multiple doctors' offices. The Lindenwood Shopping Center became an important resource to the Community during the relief effort. When Cross Bay Boulevard and Coleman Square stores were out of commission, the Waldbaums in Lindenwood was the only major grocery store that remained in operation and was heavily used by residents in need of food and supplies.

Housing assets



Much like many other communities hard hit by Sandy, housing was deemed more critical than any other asset in the Community by both the Committee and the public.

The Howard Beach Planning Area is made up of mostly detached single-family residences, with the exception of a cluster of garden apartments, and large multifamily apartment buildings in Lindenwood. During Sandy, these apartment buildings did not flood and were able to maintain power since they are only partially in the 500-year floodplain. As such, they have been excluded from the NYRCR Program Planning Area.

The community has grown back from the water's edge and some of the oldest homes are in Hamilton Beach. Houses on or near to Hawtree Basin are often raised and some are placed on stilts. However, even many of the newer houses are built

with staircases set up to entrances well above street level. Many of the houses in Old Howard Beach and New Howard Beach/Rockwood Park are built with basements. Old Howard Beach and New Howard Beach/Rockwood Park have about 150 attached houses. In Lindenwood less than 5% are single family, detached homes.²

The New York City Mayor's Office Special Initiative for Rebuilding and Resiliency (SIRR) report³ found that 95% of the buildings throughout New York City that were "red tagged" for structural damage by the New York City Department of Buildings, or destroyed as a result of Superstorm Sandy, were built before 1961. In Howard Beach, more than a third (39%) of the homes were constructed prior to 1960, which, based upon the SIRR findings, is a point of concern for the future.⁴



Homes on stilts along Hawtree Creek



Apartment homes in Lindenwood

Future conditions: dealing with a changing climate

Climate change is a real and significant concern for New York's coastal communities. Two impacts of climate change have the most bearing on the future risk to New York's coastal communities from future storm events and flooding: (1) sea-level rise and (2) increased frequency and intensity of storm events. On March 31, 2014, the International Panel on Climate Change (IPCC) released *Climate Change 2014: Impacts, Adaptation and Vulnerability*,¹ reiterating the risk to coastal communities across the globe and assigning a high confidence that risks from extreme weather events and of sea-level rise will continue to increase due to climate change. Closer to home, the New York Panel on Climate Change (NPCC) continues to look at the potential risks presented to New York City in light of climate change. In its *Climate Risk Information 2013*,² the NPCC made the following projections for 2050:

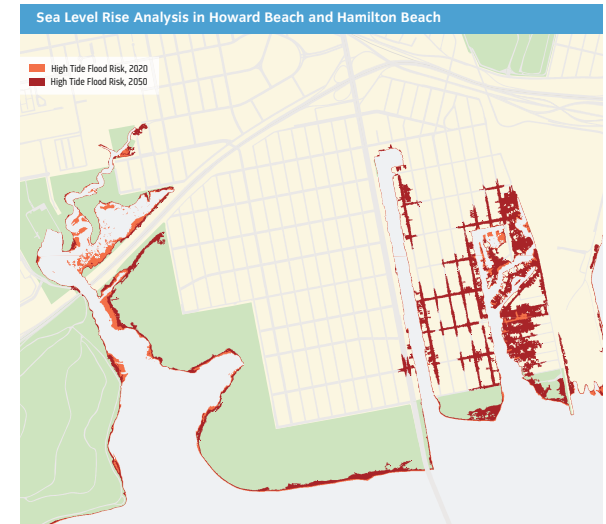
- Sea level will increase between 7 and 31 inches with a mid-range projection of 11 to 24 inches.
- The annual chance of today's 100-year storm (which is a 1% chance) will increase to between 1.4% and 5.5% with a mid-range estimate of 1.7% to 3.2%.
- Flood heights associated with a 100-year storm event will increase between 0.6 and 2.6 feet, with a mid-range projection of 0.9 to 2.0 feet.
- Precipitation (rain/snowfall) will increase by 1% to 15% with a mid-range projection of 5% to 10%.

These projected changes all increase the extent and likelihood of flooding in New York's coastal communities.

Notes:

1 International Panel on Climate Change (IPCC). *Climate Change 2014: Impacts, Adaptation and Vulnerability* (3/31/2014), <http://www.ipcc.ch/report/ar5/wg2/>.

2 New York Panel on Climate Change (NPCC). New York Panel on Climate Change (NPCC). (2013). http://www.nyc.gov/html/planyc2030/downloads/pdf/npcc_climate_risk_information_2013_report.pdf.



Source: NYC, "A Stronger, More Resilient New York" report



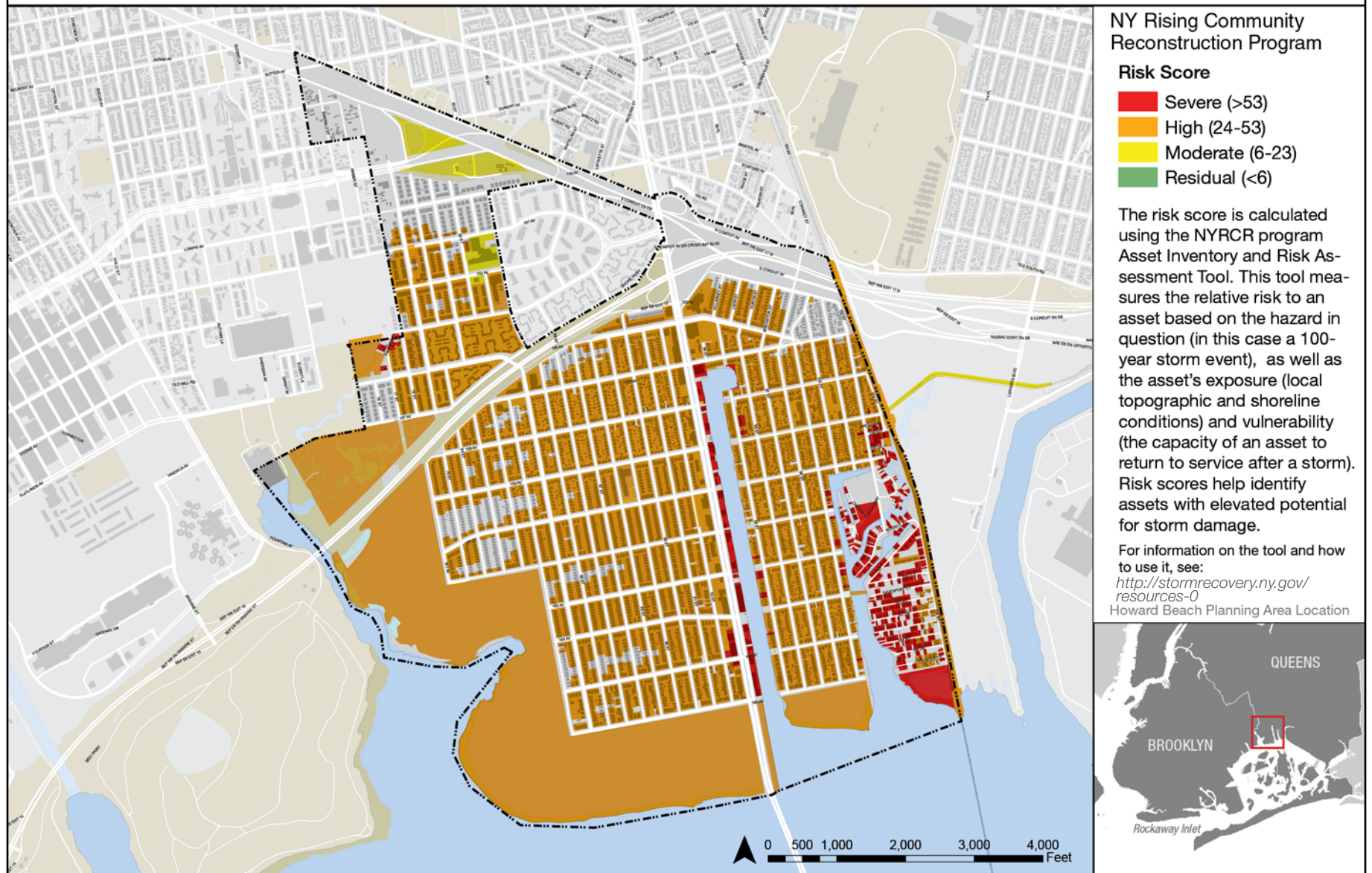
Abandoned boat at far northern end of Hawtree Creek



Snow over wetlands in Hamilton Beach



Figure II-4: Geographic distribution of risk scores



Assessment of risk to assets and systems

Assets at risk

The physical factors that led to the tremendous damage caused by Sandy remain vulnerabilities in the community, and hazards may increase because of sea level rise.

The majority of the Howard Beach Planning Area lies in high-risk areas, with most of Hamilton Beach and portions of Old Howard Beach in extreme risk areas according to New York State Department of State (NYS DOS) risk analysis.

Community capacity building and health and social service assets at risk

There is a large vulnerable population in Howard Beach, including seniors, people with disabilities, low and very-low income populations, young children, and people at risk of becoming homeless. Vulnerable populations that reside within the high and extreme risks areas are at increased risk to harm and need special consideration and assistance during and after storm events.

There are a number of important community assets in the high risk zone, including the FDNY Engine 331 and Ladder 173 and NYPD Harbor Unit on Cross Bay Boulevard, along with the West Hamilton Beach Volunteer Fire Department on 104th Street in Hamilton Beach. These emergency response facilities need to be hardened against flooding, and provided with reliable power and emergency

supplies. A number of important community centers are in the high-risk zone, including Our Lady of Grace, Howard Beach Assembly of God, PS 146, PS 207, PS 232, the Howard Beach Branch of the Queens Public Library, Saint Helen's Church and School, Saint Barnabas, and the two post offices in the Planning Area.

Several assets in the NYS DOS high risk area were severely affected during Sandy and are at risk from future disaster events. These assets include portions of the residential neighborhoods and commercial areas that are not in the extreme zone, such as residential units in parts of Hamilton Beach, Old Howard Beach, New Howard Beach/Rockwood Park and Lindenwood.

Infrastructure and natural and cultural assets at risk

Most of Howard Beach's infrastructure systems are at risk, including electrical supply, water and wastewater systems, and the transportation network. All three Con Edison substations in the community are located at grade and in the high-risk areas. All were inundated with flood waters during Sandy, resulting in weeks of power outages. All three are vulnerable to future flooding and storm events.

Much of the Community suffered from sewer back-ups as a result of Superstorm Sandy. The NYC Department of Environmental Protection's Howard

Assessing risk

Risk, in this context, is the potential for an asset to be damaged or destroyed in a future storm event. The assessment of risk to assets or systems of assets in a community produced important information to evaluate needs and opportunities and help guide Committee decisions about resiliency strategies and projects. NYS DOS developed a risk assessment tool that is aimed at understanding flood risk to community functions to support this process. The tool assigns each asset a risk score by evaluating three factors:

Hazard – the likelihood and magnitude of future storm events

Exposure – the local topographic and shoreline conditions that tend may increase or decrease the impact of coastal hazards

Vulnerability – the capacity of an asset to return to service after a storm, taking into account its material strength relative to the coastal hazard as well as its regenerative capacity

Collectively, hazard, exposure, and vulnerability determine the risk that an asset could be damaged or destroyed by a coastal storm event. This analysis identifies which assets within the Community are most at risk from future storms in comparison to other assets. Furthermore, it allows potential projects to be evaluated by their ability to reduce risk to assets. For access to the NYS DOS Risk Assessment Tool and additional information how to use it, see <http://stormrecovery.ny.gov/resources-0>

Beach pumping station is located in the moderate risk area but provides a key function in preventing the sewer back-ups. The shutdown of the Jamaica Bay Wastewater Treatment plant during the storm, although outside the study area, contributed to the sewer back-ups, and remains vulnerable to flooding in the future.

Portions of 102nd Street, Russell Street, and 104th Street flood during any higher than normal tides, cutting off access to residents who live in Hamilton Beach. The A-train line and AirTrain stations in Howard Beach are also at risk; Spring Creek Park, Hamilton Beach Park, and Charles Memorial Park are all in the extreme zone. Flood waters inflicted damage on park facilities that have yet to be repaired by the National Park Service.

Economic and housing assets at risk

Businesses along Cross Bay Boulevard south of the Belt Parkway all lie in either the extreme or high risk zone. This includes two gas service stations

that were knocked out of service during Sandy. Coleman Square, the smallest commercial hub in the Planning Area, sits in Zone A (FEMA's 100-year floodplain) and New York State's risk analysis deems it as an extreme-risk area. The entire node is highly exposed to flooding from a future 100-year storm event and also smaller, more-frequent storms and high tides from the adjacent Hawtree Basin. This high level of exposure places the retail and infrastructure surrounding the square at high risk of future flooding.

The Lindenwood Shopping Center, while partially in Zone A, is mostly in the 500-year floodplain. Flood waters forced half of the shopping center to close down. Given its location, this commercial area is least vulnerable commercial area and an important asset to sustain through an emergency.

Almost all of Hamilton Beach is in the extreme flood zone, with remaining pockets of houses in the high risk zone. Old Howard Beach has a number of

blocks in the extreme-risk zone, especially in the southern area close to the two basin edges. Old Howard Beach/Rockwood Park is almost entirely in the high-risk zone with only portions of a few blocks in the western portion of the neighborhood falling into the moderate zone. Lindenwood has several blocks in the high-risk zone, primarily in the single-family home blocks west of 84th Street.

This analysis informs the definition of projects, particularly those that protect assets from flooding. A subsequent section discusses how some of the Committee's Proposed and Featured Projects reduce the risk to assets identified here. A more detailed description of the Risk Assessment Methodology is on the NYRCR website, and the output from the Risk Assessment Tool is included in Section V – Additional materials.



Damaged home in Old Howard Beach



Medical office in Lindenwood



Fire standpipe set at original road height in New Howard Beach/Rockwood Park

Assessment of needs and opportunities

In Howard Beach, the primary needs focus on stopping flood waters and protecting vulnerable populations, including the large senior population and helping out businesses, homes and particularly hard hit neighborhoods to become more resilient to climate change impacts. Assisting businesses and residents in particularly hard hit neighborhoods to become more resilient to climate change impacts and emergency events is also a primary need.

The protection of businesses is very important to the Committee, as the reduction in sales after a disaster endangers the viability of the local economy. It is important that local businesses bounce back quickly after a disaster, to provide goods to the Community and to protect the long-term presence of local businesses.

Howard Beach's housing is at risk due to its continued vulnerability to future flood events. Since much of Howard Beach was not within previously

mapped floodplains, many homes were not built or maintained with the expectation that they would be exposed to flooding.

As the Committee began to dig deeper into the challenges presented by Sandy, additional needs surfaced, such as the need for better access between neighborhoods, more effective strategies for parks and open space, better community services connected to resiliency, and better networks to increase the ability to support the Community. A comprehensive approach to resiliency is needed, fixing physical attributes as well as building strength in community-based services.

Each need identifies corresponding Recovery Support Functions and potential opportunities. In the case of Howard Beach, many needs incorporate multiple Recovery Support Functions. This is indicative of a community strategy to integrate multiple projects that would work together to solve the critical needs of the Community.

NYRCR project development process

The projects in this plan were developed through the following Community-based process:

- Resiliency needs and opportunities were brainstormed through extensive public engagement. Needs were discussed in the context of reducing short and long-term risk and increasing the resiliency of assets, systems, and people. Opportunities to build off existing community strengths were also identified.
- With a thorough, baseline understanding of the Community's resiliency needs and opportunities, the Committee identified overarching strategies to address the most critical needs in the community, and to take advantage of existing opportunities. Public input guided the refinement of these strategies.
- In order to implement strategies, the Committee identified specific projects. These projects directly address the needs and opportunities identified at the beginning of the process.

Strengthen the edge



The Community has consistently stated that the protection of Howard Beach from future flooding is its greatest need. However, several factors make flooding protection in Howard Beach difficult. First, the housing stock is not designed to be lifted, precluding that potential solution to rising waters. Secondly, Howard Beach is low-lying and flat, and extremely vulnerable to flooding. Lastly, there are multiple points of entry for storm surge, making it a difficult community to protect fully.

These factors inhibit the Community's long-term resiliency based solely on local measures. This fact spurred a debate among the Committee to consider larger protective measures at the mouth of Jamaica Bay or even at the edge of the Rockaway Peninsula and Sandy Hook. The Committee ultimately resolved that while comprehensive protection would solve flooding problems, the uncertainty of its timing and feasibility necessitates a strategy that protects at the edge of the community.

Opportunities:

- Adjacent high ground could provide the elevation needed for protective measures, creating a protected zone.
- Ongoing studies and actions are already providing a pathway to a protection strategy.
- Edge protection could improve the waterfront parks, increase access, create new connections and enhance the value of adjacent homes and businesses.



View of Lower Spring Creek from Cross Bay Boulevard



Edge condition along Shellbank Basin

Enhance emergency preparedness and recovery operations



Emergency services facilities must be made more resilient. FDNY Engine 331 and Ladder 1743 and NYPD Harbor Patrol on Cross Bay Boulevard are in high-risk flood areas. The West Hamilton Beach Volunteer Fire Department lost all of its trucks in the storm. These critical response facilities need to be equipped with reliable power and emergency supplies.

It became clear after Sandy that the Community was ill-prepared to deal with the storm's immediate impact and lasting effects. Vulnerable populations were particularly at risk, and communication between these populations and first responders was difficult given the fragility of telecommunications infrastructure after the storm.

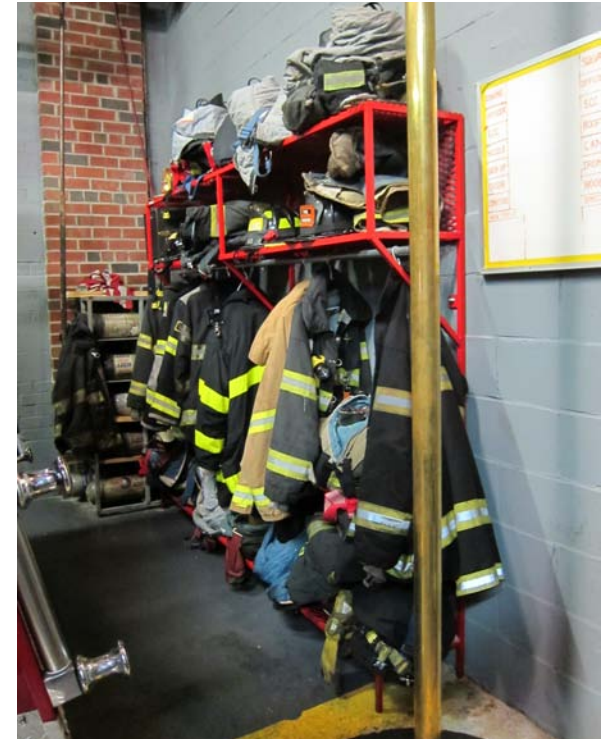
These experiences highlighted the need for a localized disaster plan specific to Howard Beach. Such a plan would help the Community both prepare and recover from a major disaster, and would include several foci, including the resiliency of communications infrastructure, the need to protect vulnerable populations, and the resiliency of businesses.

Community members also expressed a need for additional resilient community centers that could function as service centers during and after

emergency events. After Sandy, the American Red Cross, Federal Emergency Management Agency (FEMA), and the City of New York used community centers as a base of operations for emergency supply and information distribution across the Community. These locations were largely ad-hoc and setup as Community need was determined. The lack of large, accessible space in the Community was a huge challenge in providing these services. There is a strong desire to pursue plans for a community facility that could double as a safe, resilient building for emergency and post-storm needs. In addition, a wider network of facilities that could reach out into the local neighborhoods is strongly desired, as a single location may be difficult for many people to access. In addition to physical facilities, a larger communications network that would communicate important emergency information, including facility location and supply distribution, is strongly desired.

Opportunities:

- Multiple community-based organizations that could participate in the recovery network
- Strong local base of organizations, including civic associations that could play a role in communications
- Partnerships with the City of New York to increase the resiliency of important emergency facilities



West Hamilton Beach Volunteer Fire Department equipment

Improve community and health services



Overall, the Howard Beach Planning Area has a diverse set of community and social service assets, but it is lacking in health-care facilities. Over the last several years, there has been a reduction in local health-care services in Howard Beach. To ensure sufficient emergency care during a life-threatening weather-related event, health services in the area need expansion.

Opportunities:

- Existing organizations within Howard Beach that could service the aging and vulnerable communities
- Potentially available land outside the flood zone that could be used to create new health-care facilities.



Walking to Waldbaums in Lindenwood for groceries



People enjoying coffee at local restaurant on Cross Bay Boulevard



Youth Center in Coleman Square

Develop resilient power supply



The power went out in Howard Beach as local electrical power stations were flooded. All three local substations were completely or partially compromised during the storm, leaving homes, businesses, and other assets without power for in excess of two weeks. Brown outs due to heavy usage during heat waves, age of infrastructure, and other factors could also affect the current power supply network. These three locations should be the focus of specific local interventions to both protect and maintain power sources.

Opportunities:

- The substations all sit in highly visible locations. There is an opportunity to integrate protection with beautification treatments to more effectively integrate these sites into their surroundings. Where substations coincide with commercial uses, especially at Cross Bay Boulevard, there is an opportunity to consider shared use that could make the substation more resilient and create new economic opportunity.
- Off-the-grid technologies could reduce the demand on the system and mitigate against power failures.

Mitigate against sewer back-up



There is a need to understand how the Community is affected by sewer back-ups and how back-ups can be prevented in the future. The issue is both a network level issue and a local issue. Local home sewer connections seemed to be a source of many of the basement flooding conditions that were reported. Mitigating against sewer back-up could take the form of individual home installation of check valves. In many cases, the problem could be handled downstream by providing greater capacity to pump sewage and by protecting those facilities responsible for pumping.

Opportunities:

- Technical assistance and local homeowner and business incentives to fix problems locally
- Partnerships with the City of New York to increase the resiliency of important sewer facilities that maintain the sewer infrastructure in Howard Beach



Con Edison substation at Cross Bay Boulevard



Sewer outfall onto Shellbank Basin

Enhance economic resiliency



The three major business districts in Howard Beach serve important local and community-wide functions. To ensure their protection, resilience, and growth, businesses will require a holistic, multi-project approach. There is a need to focus on business resiliency not only from a physical improvement perspective, but also from an organizational perspective, where businesses would work collaboratively to create resiliency opportunities. Each business district is unique, and each could take on a localized approach to protection, however a larger, collective organizational effort would help businesses to share resiliency resources and solutions. Whether solutions cut across districts or focus specifically on a single location or corridor, the need to preserve and protect businesses is at the core of the economic strategy for Howard Beach.

Opportunities:

- Technical assistance to provide businesses with better understanding and specific approaches to become more resilient
- Howard Beach businesses could be organized to tap into larger citywide recovery and resiliency programs
- Businesses could organize to share and shape recovery strategies at the district level
- Combining resiliency measures that protect businesses while also providing additional community benefits (such as local flood protection for homeowners and businesses)



Delicatessen in Lindenwood Shopping Center



Ragtime Deli on Cross Bay Boulevard



Stores along 103rd Street in Coleman Square

Create resilient housing



The Community needs to protect its housing assets. Protecting homes can be achieved in numerous ways, ranging from large infrastructure projects to flood-proofing first floors and raising electrical equipment. However, there is a lack of clear information and training around how to rebuild damaged homes. The Committee and Community expressed confusion and frustration around understanding building code changes and the financial implications of raising or not raising homes within the boundaries of the FEMA flood map. Residents need assistance to understand the issues and implications associated with flood insurance.

Opportunities:

- Training and communication programs to help individuals understand and make decisions about their homes
- No-cost or low-cost financing to help fund housing improvements (such as low-cost loans from community banks, or tax-incentive programs from the government)

Expand and protect open space



Howard Beach needs comprehensive coastal protection strategies for its active recreational park spaces. Open space serves as a buffer between the water and the community. There is an immediate need for coastal protection on National Park Service (NPS)-managed parks space, including Spring Creek Park, Charles Park, and Hamilton Beach Park. Additionally, comprehensive maintenance strategies and park enhancements are needed on NPS managed properties, especially if park space is expanded as part of resiliency efforts.

Opportunities:

- NPS is actively reviewing its General Management Plan; coordination with NPS could be achieved consistently with this plan.
- Expansion of park space and community access along with protection measures in multiple locations (Upper Spring Creek, Lower Spring Creek, Charles Memorial Park, Hamilton Beach Park).
- Coordination with regional park planning efforts, including the Shore Parkway Greenway.



Houses at Upper Hawtree Basin



Lower Spring Creek Park after recent fire

Protect Jamaica Bay



The Community recognizes that Jamaica Bay and the tributaries that reach into Howard Beach are a tremendous amenity for the Community. The loss of habitat and further degradation of the ecosystem have direct impacts upon the quality of life of the residents of Howard Beach. The preservation of Jamaica Bay is a critical Community concern. Any regional strategy must account for the preservation of this important natural system. That being said, the Community recognizes that the resilience of Jamaica Bay is an ongoing dialogue being shaped by many voices. Multiple Federal, State, and local agencies are already working on solutions to make Jamaica Bay more resilient. The Community must continue to monitor these efforts and participate in the dialogue that will shape Jamaica Bay's future, as it is intertwined with the future of Howard Beach.

Opportunities:

- The NY Rising Community Reconstruction program offers a formal platform for regional conversation and collaboration



Jamaica Bay edge at Hawtree Basin

III. Reconstruction and resiliency strategies



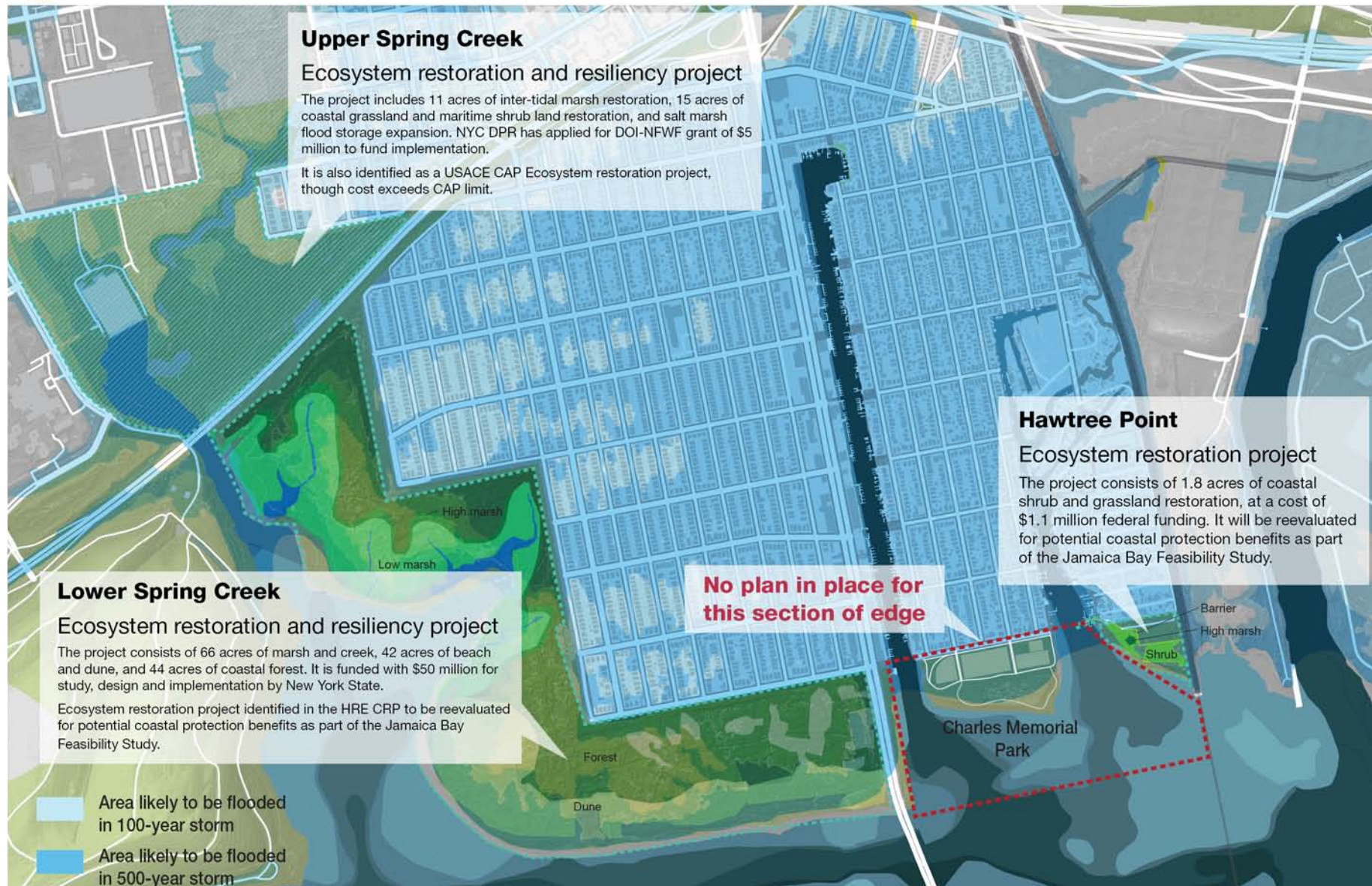


The NY Rising Community Reconstruction (NYRCR) Program's Howard Beach Planning Committee (the Committee) has shaped a plan that will strengthen the edge against future flooding and sea-level rise, protect critical infrastructure against damage, and fundamentally build capacity within the NYRCR Howard Beach Community (the Community) to protect and provide assistance and relief to its businesses, residents, and vulnerable populations in times of crisis.

Strategies	Howard Beach comprehensive coastal protection study	Coastal protection – Phase I: Charles Memorial Park berm	Upper Spring Creek ecosystem restoration	Upper Hawtree flood protection and drainage improvements	Relief center hub	West Hamilton Beach volunteer fire department resiliency improvements	Satellite relief centers	Business resiliency program	Residential resiliency program
Protect the edge									
Provide a relief infrastructure focused on vulnerable populations									
Establish a power protection plan that integrates substation sites into the community									
Mitigate sewer back-up by protecting key assets in the network									
Mitigate localized flooding									
Develop programs to fund protection measures and technical assistance for vital economic corridors									
Protect housing by providing education and technical assistance									
Integrate improvements in park and recreational areas into resilience plans									
Increase access to isolated sections of the community									
Protect Jamaica Bay									



Figure III-1: Howard Beach comprehensive coastal protection strategies



Protect the edge



The edge of Howard Beach comprises four sections: Upper Spring Creek; Lower Spring Creek; Shellbank and Hawtree Basins and Charles Memorial Park (the Basin Zone); and Hawtree Point (Hamilton Beach Park). The entire edge is in public ownership. Three sections—Hawtree Point, Lower Spring Creek and Upper Spring Creek—are progressing towards implementation through various studies being undertaken as part of the larger Jamaica Bay Comprehensive Restoration Plan (CRP).

When Superstorm Sandy (Sandy) struck, flood waters entered through Hawtree and Shellbank Basins. While protection measures in Upper and Lower Spring Creek will benefit the Community, without protection that includes the basins, much of the Community will continue to be susceptible to flooding from future storm events.

If edge protection of the fourth area (the Basin Zone) can be linked in, protection across the edge of Howard Beach can be achieved. Protection of the Basin Zone is essential to any comprehensive edge protection strategy for Howard Beach. In addition, addressing the Basin Zone will increase the value of the other protection measures by completing the weakest line in the system.

The Committee and the Howard Beach Community received a major boost when Governor Andrew M. Cuomo announced that \$50 million in Federal

funds have been awarded to the New York State Department of Environmental Conservation (NYS DEC) for a resiliency and restoration project in Lower Spring Creek. This announcement galvanized the Community to consider a strategy that could build off this important initiative. The Committee has tagged Lower Spring Creek protection as an Additional Resiliency Recommendation that is central to their edge protection plan.

The City of New York has also stepped in, re-envisioning the Upper Spring Creek ecosystem restoration project to incorporate coastal protection measures that will address flooding into Lindenwood. The City of New York is actively seeking funding in order to implement this revised design. The Committee has proposed contributing \$250,000 in matching funds for the recently submitted U.S. Department of the Interior (USDOI) National Fish and Wildlife (NFWF) grant by New York City Department of Parks and Recreation (NYC DPR) for this project.

With the Federal Government, the State of New York, and the City of New York working together to move these critical pieces on a path towards implementation, the Committee has focused its attention on the Basin Zone, which are linchpins in the comprehensive coastal protection strategy that has yet to be addressed. However, incorporating the Basin Zone into the larger ongoing effort is complicated.

Upper Spring Creek, Lower Spring Creek, and Hawtree Point are all identified as restoration opportunities in the Hudson-Raritan Estuary (HRE) Comprehensive Restoration Plan (CRP). The HRE-CRP is the guiding document for Federal decision-making and action for ecological restoration projects in Jamaica Bay. In addition, the Jamaica Bay, Marine Park and Plumb Beach, New York Ecosystem Restoration Feasibility Study, being undertaken by the U.S. Army Corps of Engineers (USACE) and the New York City Department of Environmental Protection (NYC DEP) is intended to provide an expedited limited reevaluation of USACE restoration projects in the Bay to address post-Sandy changes. Upper Spring Creek, Lower Spring Creek, and Hawtree Point are all sites identified as potential priority sites in the interim draft report.

Coastal protection strategies for the Basin Zone are not being studied as part of the ongoing efforts in the Bay, as they are not ecological restoration projects. However, they could be considered in Phase 2 of the East Rockaway Inlet Reformulation Study, which will consider various coastal storm risk management strategies for Jamaica Bay. It is imperative to the resiliency of Howard Beach that a study of coastal protection strategies for Shellbank and Hawtree Basins themselves, and not only the ecosystems restoration sites that flank them, be considered as part of the reformulation study. Strategies to address flooding in the Basin Zone



Charles Memorial Park edge condition

should be advanced to a level of detail so that they can be analyzed for their feasibility, cost, and risk reduction benefits.

The ideal scenario would be to advance the study of coastal protections for the Basin Zone in coordination with and to the same level of detail as Upper and Lower Spring Creek. These projects would need to work cohesively together to provide effective coastal protection for Howard Beach. This will allow the Federal agencies to analyze the entire edge and establish an action plan for a more comprehensive protection strategy.

Recognizing that the window of opportunity to have any basin protection advanced as part of the USACE's effort is quickly closing, the Committee has identified the study of the Basin Zone protection as a near-term imperative that must be advanced. The Committee has proposed allocating \$2.5 million in Community Development Block Grant-Disaster



Soft edge at Shellbank Basin

Recovery (CDBG-DR) dollars to fund the feasibility study and other key assessment and planning steps needed to advance the Basin Zone project.

The feasibility study is only the first step. The Committee wants to be an agent of change in Howard Beach and has identified a protection measure that can be advanced as a first-phase implementation project. The project consists of floodgates for Shellbank and Hawtree Basins and an on-land berm protecting the length of Charles Memorial Park and connecting the floodgates to high ground and other planned protection features. The Committee is prepared to pledge significant funds to ensure that a first phase of the construction of the Basin Zone protection strategy is implemented and has targeted the landside berm at Charles Memorial Park as an effective Phase 1 project. A preliminary analysis of multiple options to protect the Charles Memorial Park edge will cost between \$20 million and \$30 million. The Committee has proposed \$10 million to partially fund Phase 1 coastal protection in the Basin Zone. This pledge is



Upper Spring Creek

intended to start a dialogue with the Federal funding agencies, the National Park Service, the State of New York, and the City of New York on a combined effort to build the Phase I: Charles Memorial Park Berm.

There are additional strategies that can be achieved through edge protection. The first is improved access. Hamilton Beach, Old Howard Beach, and New Howard Beach/Rockwood Park are physically separated by the basins. Increased access, both for emergency situations and for general community connectivity, are important. Floodgates at Hawtree and Shellbank Basins could incorporate either pedestrian or vehicular crossings. While pedestrian connectivity was positively received, automobile access was met with concerns about congestion and new pass-through traffic routes that could negatively affect certain roads and neighborhoods. In addition, the incremental costs of pedestrian and automobile access incorporated into floodgate design could be significant and could outweigh



Hawtree Basin soft edge



Hawtree Basin soft edge



Shellbank Basin hard edge

the benefits achieved. The Committee is looking for increased access opportunities to be evaluated during a feasibility assessment.

Table III-1 – Strategy: Protect the edge (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N
Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	\$10M	Featured	N
Upper Hawtree Flood Protection and Drainage Improvements	Targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and Coleman Square to limit the impact of regular (equinox) flooding	\$3.0M	Proposed	N
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$250,000	Featured	N

Provide a relief infrastructure focused on vulnerable populations



The Committee recognizes that supporting vulnerable populations (which includes people with disabilities, low and very-low income populations, the elderly, young children, and people at risk of becoming homeless) is a critical strategy for the recovery, rebuilding, and resiliency of Howard Beach. The very young and the very old are particularly vulnerable to severe weather events and other disasters as they are more likely to suffer consequences because of limited mobility, social isolation, physical constraints, and limited financial and other resources.

The Committee has focused its efforts to support vulnerable populations by bolstering existing, trusted organizations through a “hub and spoke” relief center network. Response and recovery activities would be coordinated through a central hub, responsible for providing a safe public space and ensuring adequate distribution of information and resources throughout the relief network. This connection would be through a series of virtual spokes (defined roles, processes, communications, and services) to a series of satellite relief centers situated throughout the community. This networked system would create service redundancy,

strengthening the Community’s capacity to respond after an emergency. The relief network would strengthen social networks, while establishing safe, protected physical locations where residents could find security and information after an event.

A network of relief centers would have the additional benefit of strengthening the capacity of local Community Based Organizations (CBO) and strengthening the overall social connectedness and resiliency of the Community. The Committee asserts that investing in established and trusted CBOs is the strongest strategy to a resilient community. This practice would engage the larger community, neighborhood-by-neighborhood, through the local civic associations or other local block and neighborhood organizations. Regular communication between these groups would increase networks and consensus gathering, bringing the Community closer together and helping them prepare collectively for future emergencies.

To ensure the relief network is built up throughout the community and reaches vulnerable populations, the Committee proposes to provide funding to not only harden network buildings but also to

establish outreach, engagement, and coordination programs. While the relief center hub would be largely responsible for establishing programs and tools to connect with all residents, it and the satellite centers would be responsible for establishing strategies and programs to reach and assist the community’s vulnerable population. The most resilient communities are those that work collaboratively on a regular basis. The Committee has stressed the need for programming to expand beyond emergency preparedness to provide regular services for vulnerable populations in addition to support during times of crisis.

The Committee recommends including key, critical assets in the relief center network to ensure that those assets are physically hardened and operationally connected to others before and after an emergency. For example, the West Hamilton Beach Volunteer Fire Department (WHBVFD), which is located on the low-lying somewhat isolated peninsula of Hamilton Beach, is the Community’s primary first responder, and residents rely on it for emergency response and relief. The Committee will support funding to harden the WHBVFD facility and include it as a key satellite in the relief center network.



Students walking at Coleman Square



Families on Cross Bay Boulevard



Seniors at Peter J. Striano Senior Center

Table III-2 – Strategy: Provide a relief infrastructure focused on vulnerable populations (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Relief Center Hub	Create a relief center hub to provide information and coordination of relief supplies and services	\$3.0M	Proposed	N
Satellite Relief Centers	Create a system of hardened satellite relief centers	\$1.0M	Proposed	N
West Hamilton Beach Volunteer Fire Department Resiliency Improvements	Make recovery and resiliency improvements to West Hamilton Beach Volunteer Fire Department.	\$500,000	Proposed	N

Establish a power protection plan that integrates substation sites into the community



When Howard Beach was flooded during Sandy, its three at-grade Con Edison substations were compromised, knocking out power to homes throughout Howard Beach. Lack of resiliency in the power network is a major concern expressed in the Community throughout the NYRCR planning process. In response, Con Edison is placing temporary barriers that use water filled bladder technology at the three Howard Beach substations to hold back future flood waters. While the Committee is thankful that a plan has been put forth, there is

consensus in the Committee that more needs to be done to protect and to take steps to integrate that protection into a more effective and comprehensive solution for all three sites. The Committee strongly recommends that Con Edison revisit its strategy for Howard Beach and develop more effective and more permanent solutions against flooding for all three locations. The Committee sees an opportunity to incorporate an aesthetic component to integrate these sites more effectively into the surrounding fabric.



Con Edison substation in New Howard Beach

Table III-3 – Strategy: Establish a power protection plan that integrates substation sites into the community (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N
Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	\$10M	Featured	N
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$250,000	Featured	N

Mitigate sewer back-up by protecting key assets in the network



During Sandy, sewer back-up was rampant in homes and businesses. Sewer back-up can cause significant damage, and the Committee considered both localized solutions (in homes and businesses) and community-wide solutions to mitigate sewer overflow experienced during Sandy. The critical piece of sewer infrastructure in Howard Beach is the Howard Beach pumping station. From this station, sewage is pumped to the Jamaica Wastewater

Treatment Plant. The City of New York has identified \$8.2 million for resiliency upgrades to the pump station so that it will be able to maintain functionality during future storm events. While out of the future sea-level rise 100-year flood plain, NYC Department of Environmental Protection (NYC DEP) is also adding protection measures to the main treatment plant. The Committee strongly recommends that scheduled upgrades at both facilities be prioritized.



Culvert at Hawtree Creek

Table III-4 – Strategy: Mitigate sewer back-up by protecting key assets in the network (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Upper Hawtree Flood Protection and Drainage Improvements	Targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and Coleman Square to limit the impact of regular (equinox) flooding	\$3.0M	Proposed	N
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$250,000	Featured	N
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N
Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	\$10M	Featured	N

Mitigate localized flooding



While Sandy was a historic storm that carried a significant flooding impact, many low-lying sections of Howard Beach flood routinely during full-moon and equinox tides. The comprehensive strategy for Howard Beach is to address flooding in layers. Protective measures targeted in low-lying areas would help to mitigate flooding resulting from both regular and infrequent events such as Sandy.

The Coleman Square business district is particularly vulnerable to flooding. Its retail and commercial establishments are small and the building stock is significantly older than in other parts of the neighborhood. The district also lies adjacent to Hawtree Basin, which floods routinely. Store owners and businesses complain of flooding problems

during typical monthly full-moon tides. Standing water often remains on the streets for days after a rain event, with water rising above the curb-line and onto sidewalks, making pedestrian passage difficult. When Sandy struck, the first floors of many of these establishments were under water. This business hub is struggling to maintain its presence within Hamilton Beach and Old Howard Beach, and is widely recognized as an important community need and a valuable location to house the business and community centers needed by these neighborhoods.

If Howard Beach is able to protect the edge and build a floodgate to control the tides in Hawtree Basin, the flooding problems will be mitigated. However,

in the intervening years prior to its implementation, Coleman Square needs a flood protection plan. The Committee has developed a strategy to protect the businesses of Coleman Square from flooding and to improve drainage conditions on the surrounding streets through a focused protection plan for the Upper Hawtree Basin. This strategy would not protect against a future 100-year storm but could protect the Community, and both the businesses in Coleman Square and the residences along 100th and 101st Streets, against equinox tides and flooding up to 6 feet, which is roughly equivalent to a 10-year storm flood level.

Table III-5 – Strategy: Mitigate localized flooding (Proposed and Featured Projects)				
Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$250,000	Featured	N
Upper Hawtree Flood Protection and Drainage Improvements	Targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and Coleman Square to limit the impact of regular (equinox) flooding	\$3.0M	Proposed	N

Develop programs to fund protection measures and technical assistance for vital economic corridors



From the development of its initial vision statement, the Committee has focused on the economic stability of its commercial corridors, believing they are essential to the long-term economic sustainability of the Community. There are three major business hubs in Howard Beach: the Cross Bay Boulevard corridor, Coleman Square, and the Lindenwood Shopping Center, all of which were

affected during Sandy. Those most at risk, Cross Bay Boulevard and Coleman Square, must be considered as business and corridor protection strategies are developed.

Recognizing the connection between businesses and the overall economic viability of the Community, the Committee is proposing to help businesses

make resiliency improvements. This program would ensure that a portion of businesses in Howard Beach would receive financial relief for reconstruction, preserving vital business corridors. Additionally, localized flooding strategies, such as the protection measure for Upper Hawtree Basin, are designed to protect both homes and businesses that experience flooding.

Table III-6 – Strategy: Develop programs to fund protection measures and technical assistance for vital economic corridors (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Business Resiliency Program	Project would help small, at-risk businesses implement resiliency improvements through a technical and financial assistance program	\$3.0M	Proposed	N
Upper Hawtree Flood Protection and Drainage Improvements	Targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and Coleman Square to limit the impact of regular (equinox) flooding	\$3.0M	Proposed	N
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$5.25M	Featured	N
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N
Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	\$20M–\$30M	Featured	N

Protect housing by providing education and technical assistance



Many individual homes in Howard Beach were flooded and damaged during Sandy. Complaints ranged from basement flooding, to sewer back-up to flood waters in first floors of homes that did not have basements. While the housing stock in Howard Beach does not lend itself to mass home raisings, there are a number of improvements that can be undertaken to make the housing stock throughout Howard Beach more resilient to flooding. Waterproofing measures for basements, the raising of electrical equipment, check valves for sanitary pipes and flood protection for first-floor and basement doors are all smaller-scale

initiatives that would provide protection for homes from flood waters. The Committee wants to help individual home-owners take the necessary steps to become more resilient. The Committee has structured a locally-based homeowner program to be established through a local organization that would be geared to provide assistance for the types of problems faced by residents in Howard Beach during Sandy. The program would provide general education and counseling on the local impacts on climate change, technical assistance on home repairs, and assistance connecting to home improvement specialists.



Homes in New Howard Beach / Rockwood Park

Table III-7 – Strategy: Protect housing by providing education and technical assistance (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Residential Resiliency Program	Residential Education and Technical Assistance program entails two components – (1) education, and (2) counseling and technical assistance	\$1.5M	Proposed	N
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$5.25M	Featured	N
Upper Hawtree Flood Protection and Drainage Improvements	Targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and Coleman Square to limit the impact of regular (equinox) flooding	\$3.0M	Proposed	N
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N
Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	\$20M–\$30M	Featured	N

Integrate improvements in park and recreational areas into resilience plans



Much of the waterfront edge of Howard Beach comprises natural and non-accessible park space. Developing an overarching strategy to build in natural protection into these park spaces would protect the edge and create opportunities for enhanced park usage and increased amenities for the Community. While some of the land is under the jurisdiction of the New York City Department of Parks and Recreation, much is under the jurisdiction of the National Park Service (NPS) and many of these areas suffer from deferred maintenance. Greater opportunities for public access and improved stewardship of both natural and active recreational park areas should be incorporated into any coastal protection strategy.

The Committee wants a plan of action for the active and passive recreation areas in Howard Beach that are under the jurisdiction of the NPS, especially since

all three will factor into the protection effort. NPS is in the process of updating its Gateway National Recreation Area General Management Plan, and the Community is hoping to coordinate with NPS on a strategy for maintaining Lower Spring Creek, Charles Memorial Park and Hamilton Beach Park. With a more effective plan of action for improving and maintaining these parks in place, park development and management can be more effectively integrated into the design of the protection measures, creating even better and more usable park space for the Community while enhancing protection.



People relaxing in Charles Memorial Park



Playground at Hamilton Beach Park

Table III-8 – Strategy: Integrate improvements in park and recreational areas into resilience plans (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	\$250,000	Featured	N
Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	\$10M	Featured	N
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N

Increase access to isolated sections of the community



The Community consists of multiple residential neighborhoods separated by large inlets and basins. East-west access is extremely limited between neighborhoods in the Planning Area. This isolation is particularly acute in Hamilton Beach where Hawtree Basin extends to Coleman Square. Vehicular access here is limited to a single roadway assemblage along 102nd Street, Russell Street, and 104th Street, and across the 102nd Street bridge. This road is frequently flooded and becomes impassable. Pedestrian access is also limited. There is a second pedestrian access at the midpoint of Hawtree Basin at 163rd Avenue that connects from Hamilton Beach to Old Howard Beach. However, the landing points

at both ends for this bridge are often the first areas to flood during tidal events. Creating conditions for better pedestrian movement along the coastal edge and to key destinations would greatly enhance mobility during emergency conditions and on a day-to-day basis.

The Committee is also concerned about the lack of availability of non-floodable pathways out of Hamilton Beach during an emergency. The Committee recommends a feasibility study to determine if elevating the streets at these locations is possible, to ensure a safe passage out of Hamilton Beach.

A second means of egress for pedestrians, the boardwalk adjacent to the Metropolitan Transit Authority's A-train line right-of-way, was severely damaged during Sandy. The New York City Department of Citywide Administrative Services has already developed a design for a replacement walkway from Hamilton Beach to Coleman Square and the A-train and AirTrain stations and is actively applying for the necessary permits to construct this walkway. The Committee strongly supports this effort.

Table III-9 – Strategy: Increase access to isolated sections of the community (Proposed and Featured Projects)

Project name	Short project description	Estimated cost	Proposed or featured project	Regional project (Y/N)
Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	\$2.5M	Proposed	N



Pedestrian Bridge at 163rd Road

Protect Jamaica Bay



The Committee recognizes that Jamaica Bay is a vital regional environmental asset that is already at risk. Federal, State, and local agencies are already developing strategies to restore this critical environmental asset. Since Sandy, these studies and pilots have begun to evolve into a shared environmental and flood protection effort. For example, the Strategic Initiative for Rebuilding and Resiliency (SIRR) produced by the City of New York to prepare for a resilient future, studied long-range Jamaica Bay and harbor-wide flood protection solutions.

The Committee feels strongly that a larger, long-term comprehensive Jamaica Bay strategy needs to be developed. Through the Jamaica Bay Regional Working Group formed out of the NY Rising Community Reconstruction (NYRCR) effort, Howard Beach and other NYRCR Communities are collaborating with Federal, State, and New York City partners to determine the best approach moving forward. The Committee recognizes that any flood prevention action that may result will be tremendously expensive and decades in its formation and implementation. Recognizing the uncertainty of

larger-scale solutions and the timeframe that would be needed for implementation, the Committee has resolved to recommend further study of a Jamaica Bay-wide solution, while also looking at its own edge as the appropriate place to propose flood protection measures.

No specific Proposed or Featured Project was identified for this strategy.



Jamaica Bay



IV. Implementation – project profiles





Upper Spring Creek
Ecosystem Restoration

Satellite Relief Centers

Potential Relief Center Hub

Bike Path

Lower Spring Creek
Resiliency Project

Tidal Creek

Coleman Square
Proposed Projects

Rebuilt Boardwalk

West Hamilton Beach
Volunteer Fire Department

Hawtree Basin Tide Gate

Hawtree Point Protection

Dune

Maritime Forest

Shellbank Tide Gate

Charles Memorial Park Berm

Oyster Reef

Restorative Salt Marsh

Elders Point Wetland Restoration

Introduction

Guided by its resiliency strategies, the NY Rising Community Reconstruction Plan (NYRCR) Howard Beach Planning Committee (the Committee) focused on creating an optimal mix of short- and long-term projects to achieve a resilient future for Howard Beach. Every project considered was viewed from the perspective of how it would affect the entire NYRCR Howard Beach Community (the Community). The result was the selection of nine projects that would solve the Community's most acute needs.

To tackle the critical issue of coastal protection, the Committee surveyed other existing mitigation strategies and focused on gaps left by ongoing projects that might leave the Community vulnerable in the event of another storm. Through this process, the Committee developed its proposed **Howard Beach Comprehensive Coastal Protection Study**, which would dig deeper into the presumed gaps in coastal protection, and address specific projects to fill the missing links. The Committee also put its support behind the first phase of this larger coastal protection strategy by allocating funding to the **Charles Memorial Park Berm**.

Another critical issue is the regular flooding that occurs throughout the Community, especially in vulnerable locations like Coleman Square. To address the strategy of alleviating localized infrastructure deficiencies, the Committee proposes the **Upper Hawtree Flood Protection**

and **Drainage Improvements** project to mitigate flooding and provide more stability to residents and business owners in dealing with continual flooding and related damage. Similarly, the Committee's support of the **Upper Spring Creek Ecosystem Restoration** project, already spearheaded by New York City Department of Parks and Recreation, would mitigate flooding by rehabilitating Spring Creek Park and reducing runoff to the Community's drainage system.

In the aftermath of Superstorm Sandy (Sandy), a critical issue for the Community was the lack of formal relief networks, both physical and social, that could provide assistance to vulnerable populations, and distribute information and supplies to community members across a variety of situations. To deal with this critical issue and meet the strategy of increasing community capacity, the Committee is putting their support and funding behind a range of projects that would create a more coherent, coordinated, and effective relief network for the Community. The foundation of the solution to community capacity building lies in a relief center concept that would comprise a **Relief Center Hub**, **Satellite Relief Centers**, and the **West Hamilton Beach Volunteer Fire Department** projects. Through a coordinated effort among these projects, Howard Beach would implement a network that would inform and support the public after another emergency event while leveraging the institutional capital of major community organizations.

Proposed and Featured Projects

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.

In addition, the Committee proposes two technical assistance projects to address the dearth of information available to community members on how to rebuild in a more resilient fashion after the storm. The first project, the **Business Resiliency Program**, would aid small business and retail owners in implementing resilient capital improvement and preparedness plans. It could leverage existing New York City programs to allocate more funding to the Howard Beach business community. A similar project on the residential side is the **Residential Resiliency Program**, which would provide a repository of educational information and outlets for counseling and technical assistance for individuals seeking information about how to rebuild and make their homes more resilient.

Proposed Projects are projects that the Committee has recommended for funding through the NYRCR allocation of up to \$18.4 million of Community

Development Block Grant–Disaster Recovery (CDBG-DR) monies. Featured Projects may require additional funding sources for implementation, and for which the Committee has recommended funding an initial phase. These Proposed and Featured Projects would tackle coastal protection, resolve critical infrastructure deficiencies with sustainable solutions, and focus on creating formal community relief networks to effectively disseminate information and support to Howard Beach residents and

businesses. Where possible, the projects would leverage the efforts of partners at the neighborhood, City, State, and Federal levels to maximize the effectiveness of the Community's allocation and minimize redundancies with successful resiliency efforts already present in the region.

To provide cost estimates that account for the preliminary level of design work that has been conducted, conservative markups are included. As

a percentage of estimated hard costs these include general requirement (10%), general contractor overhead and profit (21%), design contingency (25%), soft cost allowance (30%), and 3% annual escalation. All construction job estimates are based on local construction cost and construction wage data, as well as standard industry assumptions of labor as a percentage of total hard costs.¹



A. Howard Beach Comprehensive Protection Study

Develop design for tide gates and berms



B. Coastal Protection – Phase I: Charles Memorial Park Berm

Construct edge protection measures for Charles Memorial Park



C. Upper Spring Creek Ecosystem Restoration

Restore and enhance salt marsh and coastal upland ecosystem



D. Upper Hawtree Flood Protection and Drainage Improvements

Target Coleman Square flood protection and make associated drainage improvements



E. Relief Center Hub

Expand health-care and social infrastructure to support senior and other vulnerable populations



F. Satellite Relief Centers

Expand the health-care and social infrastructure network to support senior and other vulnerable populations



G. West Hamilton Beach Volunteer Fire Department

Make resiliency improvements to West Hamilton Beach Volunteer Fire Department



H. Business Resiliency Program

Establish a fund for economic resilience initiatives for Howard Beach



I. Residential Resiliency Program

Provide technical assistance to homeowners to make homes more resilient



Figure IV-1: Howard Beach projects overview

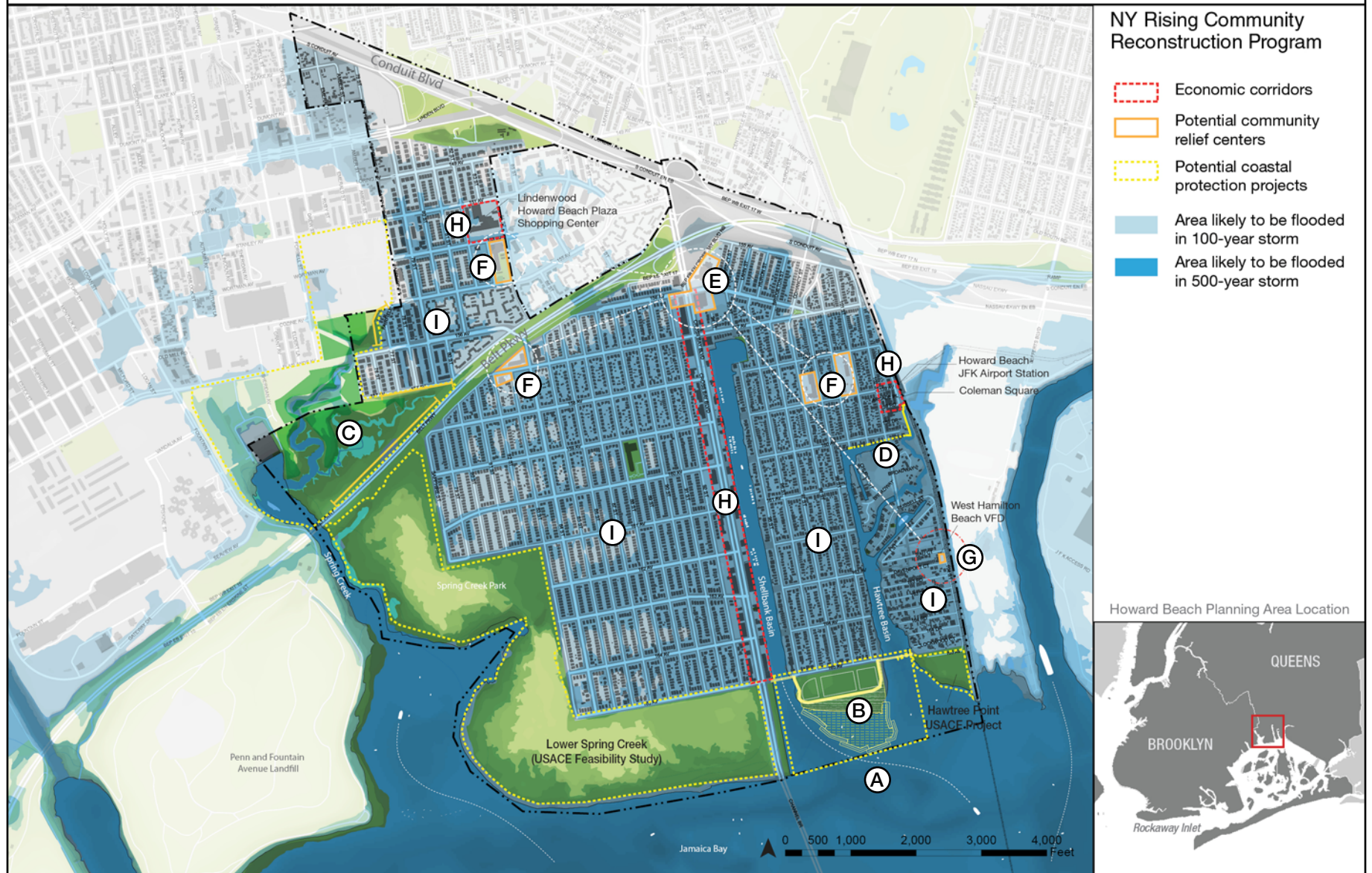


Figure IV-2: Howard Beach comprehensive coastal protection strategies



Howard Beach Comprehensive Coastal Protection Study

Proposed Project

Shellbank and Hawtree Basins represented the weak point where flood waters entered into Howard Beach. A feasibility study for protection of these two waterbodies could be partnered with New York City, New York State, and Federal agency efforts to formulate a comprehensive protection plan for the Community.

The project is the development of a study to determine the cost and feasibility of tide gates at Shellbank and Hawtree Basins and a berm at Charles Memorial Park. The tide gates and the berm would connect with protection features in the New York State Department of Environmental Conservation's (NYS DEC) Lower Spring Creek project and U.S. Army Corps of Engineers (USACE) Hawtree Point project. The study, coupled with the NYS DEC and USACE projects, would create a comprehensive flood protection strategy for all of Howard Beach. The funds directed to this project could bring the feasibility assessment up to a level of completeness suitable for scrutiny by the Federal Emergency Management Agency and/or USACE. Additional funds would allow the assessment of initial environmental impacts, setting the stage for a full environmental review as part of the next step in the process.

This study would be the first step to preserving Howard Beach's unique relationship with Jamaica Bay and its access to waterborne activities, while also protecting its edge against future surge and sea level rise.

Cost estimate

\$2.5 MILLION

The conceptual-level cost estimate is based on engineer experience with projects of similar scope and scale, and would likely vary as the project is further developed and refined.

Benefits/co-benefits

The feasibility study would analyze the steps needed to supplement the flood protection addressed by the Upper Spring Creek, Lower Spring Creek, and Hawtree Point projects. Additionally, the study would include design for the tide gates and Charles Memorial Park Berm in order to fulfill USACE requirements, moving this protection measure toward implementation on a parallel track with adjacent USACE projects.

Project Summary

Recovery Support Functions



Infrastructure



Natural and Cultural
Resources

Cost

\$2.5M

Risk Reduction

HIGH

Economic Benefits

MEDIUM

Economic benefits

MEDIUM

This project would not secure or add any new permanent jobs, and would entail no substantial increases in local economic activity. However, the study could lead to the construction of the tide gate and berm. According to the Nature Conservancy study, Integrating Natural Infrastructure into Urban Coastal Resilience, coastal protection projects can help avert estimated economic losses of \$466 million suffered during a 1-in-100 year flood, including losses to the facilities in the basins, the parks, homes, and businesses adjacent to the basins. This effect would be felt most notably along Cross Bay Boulevard, which is the retail core of the Community.

Cost-benefit analysis

The substantial risk reduction and potential benefits of the fully built tide gate and berm project would justify the \$2.5 million estimated cost of the

study. Without the study, this project could not be considered for Federal funding nor would there be any indicators of the compound positive impact that a comprehensive flood mitigation strategy can have on Howard Beach. The funding of the study would provide numerous benefits in creating a strategic plan for completing the tide gate and berm project.

Risk reduction

HIGH

The study itself would not reduce risk to community assets and population, but would provide an opportunity to assess the feasibility of a mitigation strategy that would have a high impact on risk reduction in the future. If the study is not funded, the tide gate and berm project is less likely to gain traction in the region due to uncertainties surrounding its cost and feasibility. Without the tide gate and berm, the Community will lack a complete flood mitigation strategy.

Implementation timeframe

The timeframe for completion of the study will be 9 to 12 months from the commencement of the study.

Regulatory requirements

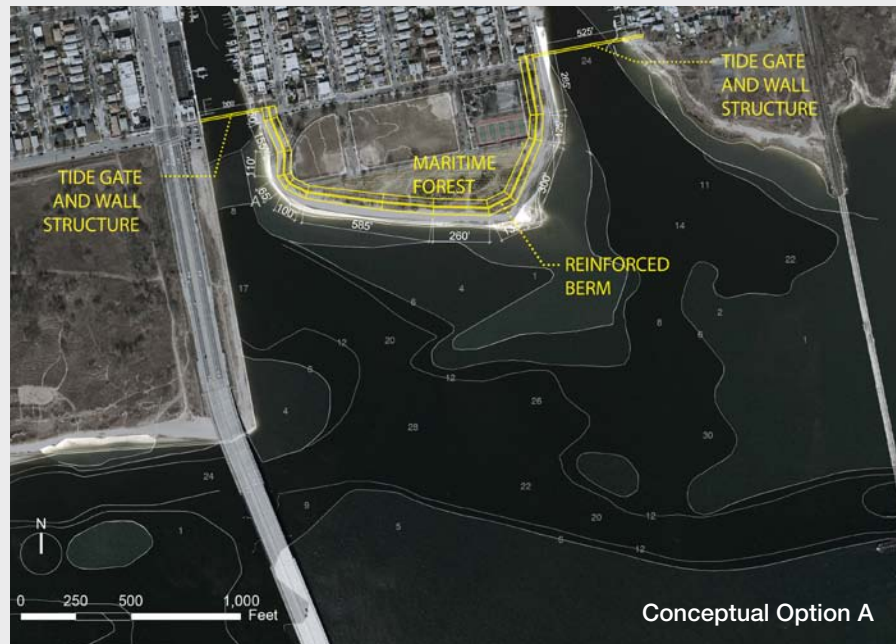
There are no regulatory review requirements for the feasibility study, but there would be necessary coordination with National Park Service (NPS), NYS DEC, New York State Department of State, USACE, and New York City Office of Long-Term Planning and Sustainability throughout the process. The study should be undertaken with a clear intent to move to environmental assessment through the National Environmental Policy Act process and all research and analysis should be undertaken with these regulatory parameters in mind.

Jurisdiction

The project would be in the jurisdiction of the NPS. The berm construction will be on NPS property.



Figure IV-3: Coastal protection – phase I: Charles Memorial Park berm plans



Coastal Protection – Phase I: Charles Memorial Park Berm

Featured Project

Implementing the first phase of the Shellbank Basin – Hawtree Basin – Charles Memorial Park coastal protection project emphasizes the commitment of the Committee to the protection of Howard Beach against sea-level rise and future storm surge. This phase is intended to leverage additional New York City, New York State, and Federal agency involvement in the implementation of the complete protection strategy for both basins and the park.

Implementing a comprehensive coastal protection strategy via construction of tide gates at Hawtree and Shellbank Basins is prohibitively challenging due to the cost of the large-scale infrastructure needed. Without this protection, however, related projects already moving toward implementation will be significantly less effective. The NY Rising Community Reconstruction (NYRCR) Howard Beach Committee (the Committee) is looking to leverage additional support by funding a portion of the project—the on-land berm construction for Charles Memorial Park. This would be the first phase of the coastal protection strategy for Howard Beach.

Two options have been considered by the Committee for the construction of the project:

- A reinforced berm on the edge of the park
- A berm further inland with breakwaters

Another important consideration in the development of a Phase I construction project is Hawtree Point, which must also undergo improvements to ensure that full protection along the entire edge is completed.

Cost estimate

\$10 MILLION: ALLOCATED

The Committee has allocated \$10 million to the berm with the intention that this significant commitment of funds would leverage additional funding from an agency or agencies (to be determined) that would contribute the remaining funds to construct and manage this project, and follow through with the construction of the larger connected tide gate.

A conceptual-level cost estimate was developed based on current unit pricing and typical soft cost assumptions. Two protection strategies were developed with costs ranging between \$20 million and \$30 million for on-land protection at Charles

Project Summary

Recovery Support Functions



Infrastructure



Natural and Cultural
Resources

Cost
\$10M

Risk Reduction

MEDIUM

Environmental Benefits

HIGH

Figure IV-4: Phase I: Charles Memorial Park berm (Option A illustrative plan and section)



Memorial Park. Cost estimates would continue to be refined as more information is developed about the project.

Benefits/co-benefits

The proposed project would provide benefits to Charles Memorial Park by enhancing the resiliency of the park and supplementing the existing protection strategies of Lower Spring Creek and Hawtree Point.

Environmental benefits

HIGH

The project would include restoration of either a maritime forest or high marsh, depending on the chosen berm option. Both would be an improvement to the current edge condition in terms of environmental benefit.

Cost-benefit analysis

The proposed project has high potential to set the stage for completion of a comprehensive coastal protection strategy for Howard Beach. The future projects could result in a wide range of benefits, including risk reduction benefits for residents, employees, and business owners in Howard Beach, as well as environmental benefits. The potential far-reaching benefits justify the cost of the proposed berm, which would be a necessary precursor to implementation of the comprehensive coastal protection strategy.

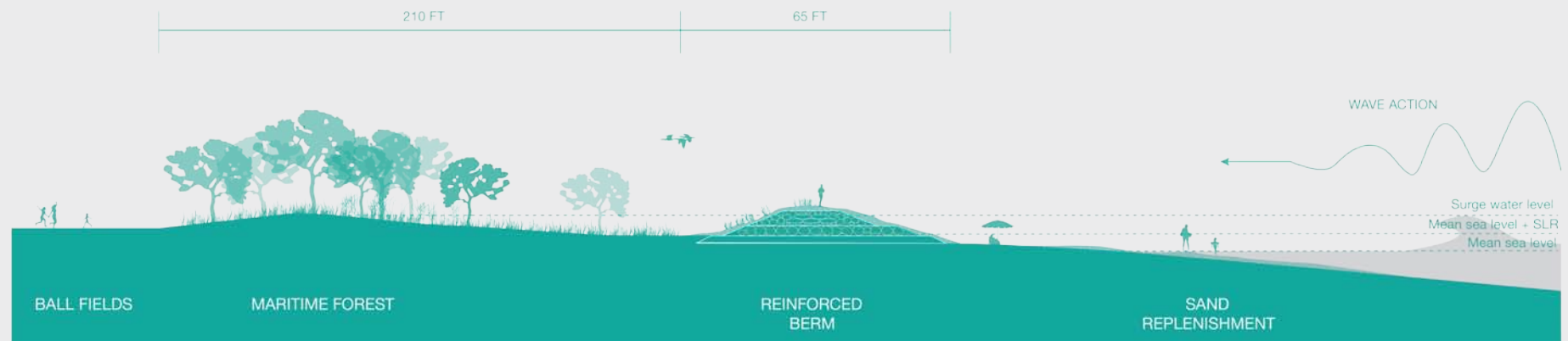
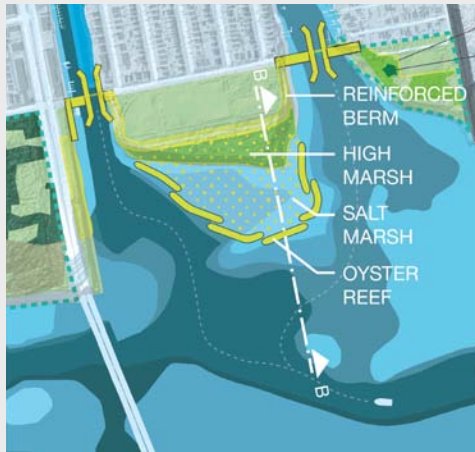


Figure IV-5: Phase I: Charles Memorial Park berm (Option B illustrative plan and section)



Risk reduction

MEDIUM

This project would reduce some risk to Charles Memorial Park and the adjacent houses, and would represent a key step in the completion of a holistic protection strategy for Howard Beach. A protection strategy that includes tide gates at Shellbank Basin and Hawtree Basin is the best option for significantly reducing the risk for the entire Howard Beach Community.

Implementation timeframe

The berm is the first phase after the completion of the Howard Beach Comprehensive Coastal Protection Study. The construction of the berm would be less than five years once commenced.

Regulatory requirements

The berm construction would be on National Park Service (NPS) land and would need to go through a National Environmental Policy Act environmental review process. This may also involve the NYS DEC, USACE, and Coastal Zone Management consistency concurrence (NYS DOS)

Jurisdiction

This project would fall under the jurisdiction of NPS.

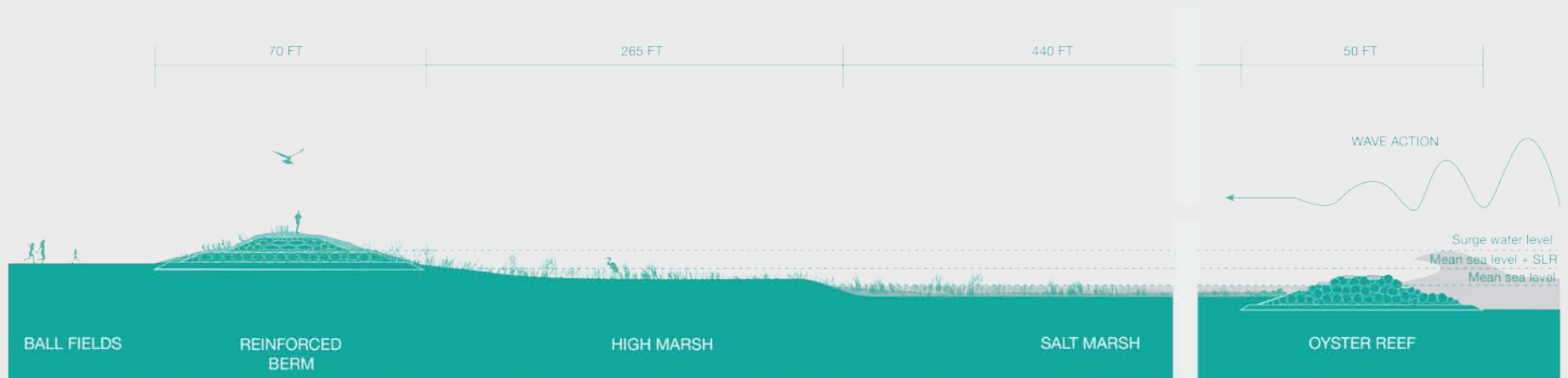
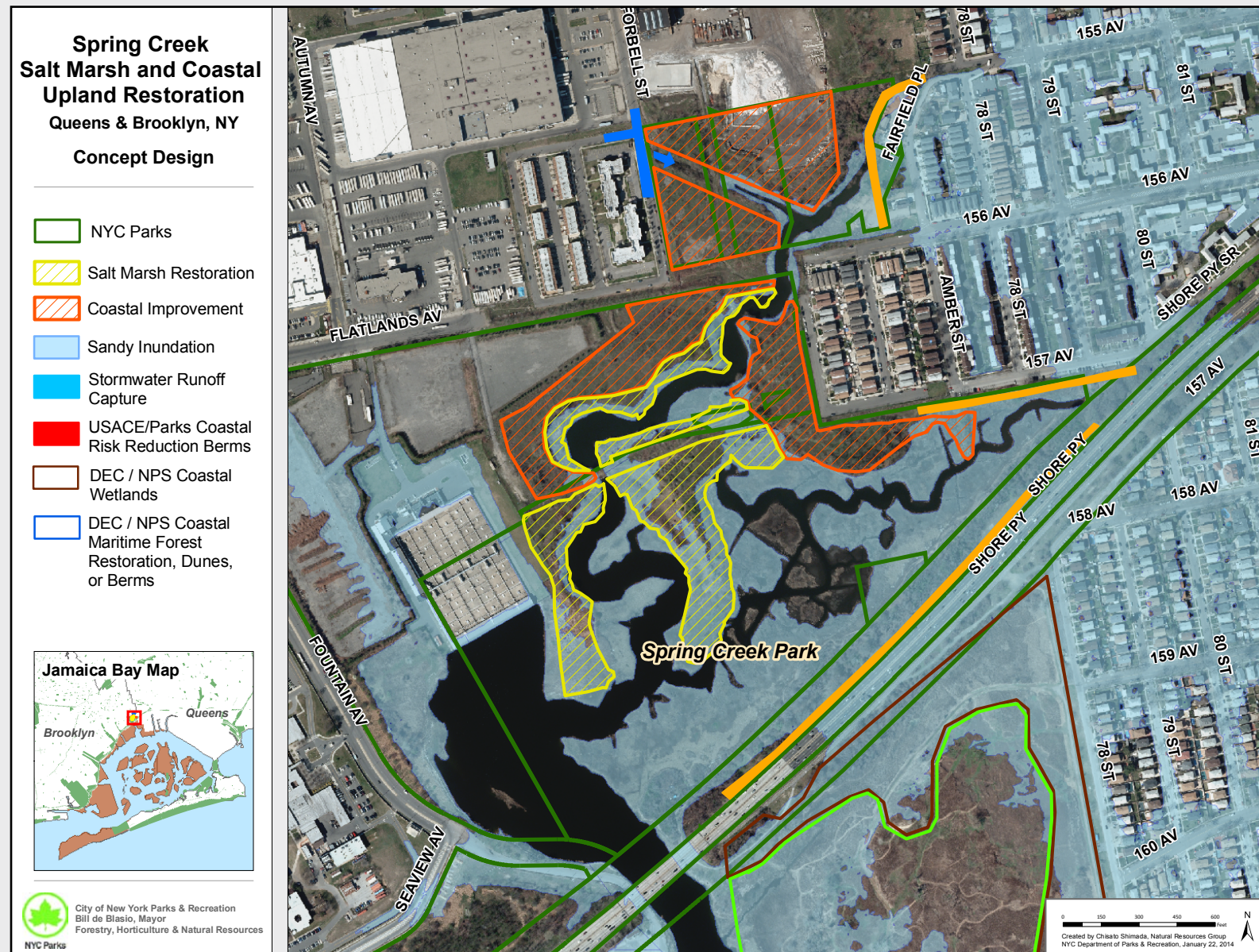


Figure IV-6: Upper Spring Creek salt marsh and coastal upland restoration



Upper Spring Creek Ecosystem Restoration

Featured Project

Spring Creek was the source for flooding in the neighborhood of Lindenwood during Superstorm Sandy. The Spring Creek project is an ecosystem restoration project that has been modified to include berms and other protection measures to mitigate against flooding.

The project would contribute to the New York City Department of Parks and Recreation (NYC DPR) project for Upper Spring Creek Park. The intention is that the NY Rising Community Reconstruction (NYRCR) Howard Beach Planning Committee's (the Committee) allocation would fund coastal protection features, including berms situated at locations where flooding occurred in Lindenwood during Superstorm Sandy.

The NYC DPR project would restore and enhance 11 acres of salt marsh and 16 acres of coastal forest and scrubland. This location has become an illegal dumping ground with a large amount of marshland being filled and degraded by construction materials. The restoration would excavate the fill and significantly increase ecosystem function along one of the few semi-natural tributaries remaining on Jamaica Bay's north shore.

Restoring the park would create new passive open space and allow for environmental education. In addition, the restoration would increase storm

water capture and reduce runoff to the combined sewer system. The park is a priority in the U.S. Army Corps of Engineers Jamaica Bay Ecosystem Restoration Study.

Cost estimate

\$250,000: ALLOCATED

\$5 MILLION+: TOTAL COST

NYC DPR has submitted a grant application for \$5 million to the U.S. Department of the Interior (USDOI) National Fish and Wildlife Foundation's (NFWF) Hurricane Sandy Coastal Resiliency Competitive Grants Program.

The conceptual-level cost estimate is based on current unit pricing and typical soft cost assumptions. Cost estimates would continue to be refined as more information about the project is known.

Project Summary

Recovery Support Functions



Infrastructure



Natural and Cultural
Resources

Cost

\$250,000

Risk Reduction

HIGH

Environmental Benefits

HIGH

Benefits/co-benefits

Environmental benefits

HIGH

The restoration would significantly increase ecosystem function in the area by restoring and enhancing damaged parkland. The project would also provide the surrounding community with passive recreation open space.

Cost-benefit analysis

The substantial benefits justify the \$250,000 contribution to the project. The protection strategy would reduce the risk to the Lindenwood and the restoration would add passive open space, benefiting the surrounding neighborhood. There are no apparent negative externalities associated with

the proposed project. The Committee's financial contribution signals its strong support of the benefits of the project.

Risk reduction

HIGH

The Committee's allocation of funds would be targeted to implementing coastal protection, specifically addressing the cause of flooding from Superstorm Sandy in the Lindenwood area.

This project would include berms at the locations where the storm surge flowed through Spring Creek Park. This mitigation strategy would reduce risk to Lindenwood during future storm events.

Implementation timeframe

The project would be completed within 2 to 3 years once commenced.

Regulatory requirements

It is anticipated that the project would have to go through a National Environmental Policy Act environmental review process if it receives funding through the USDOJ. This may also involve the NYS DEC, USACE and a Coastal Zone Management consistency concurrence from the NYS Department of State.

Jurisdiction

The project would be under the jurisdiction of NYC DPR and NYC Department of Environmental Protection.

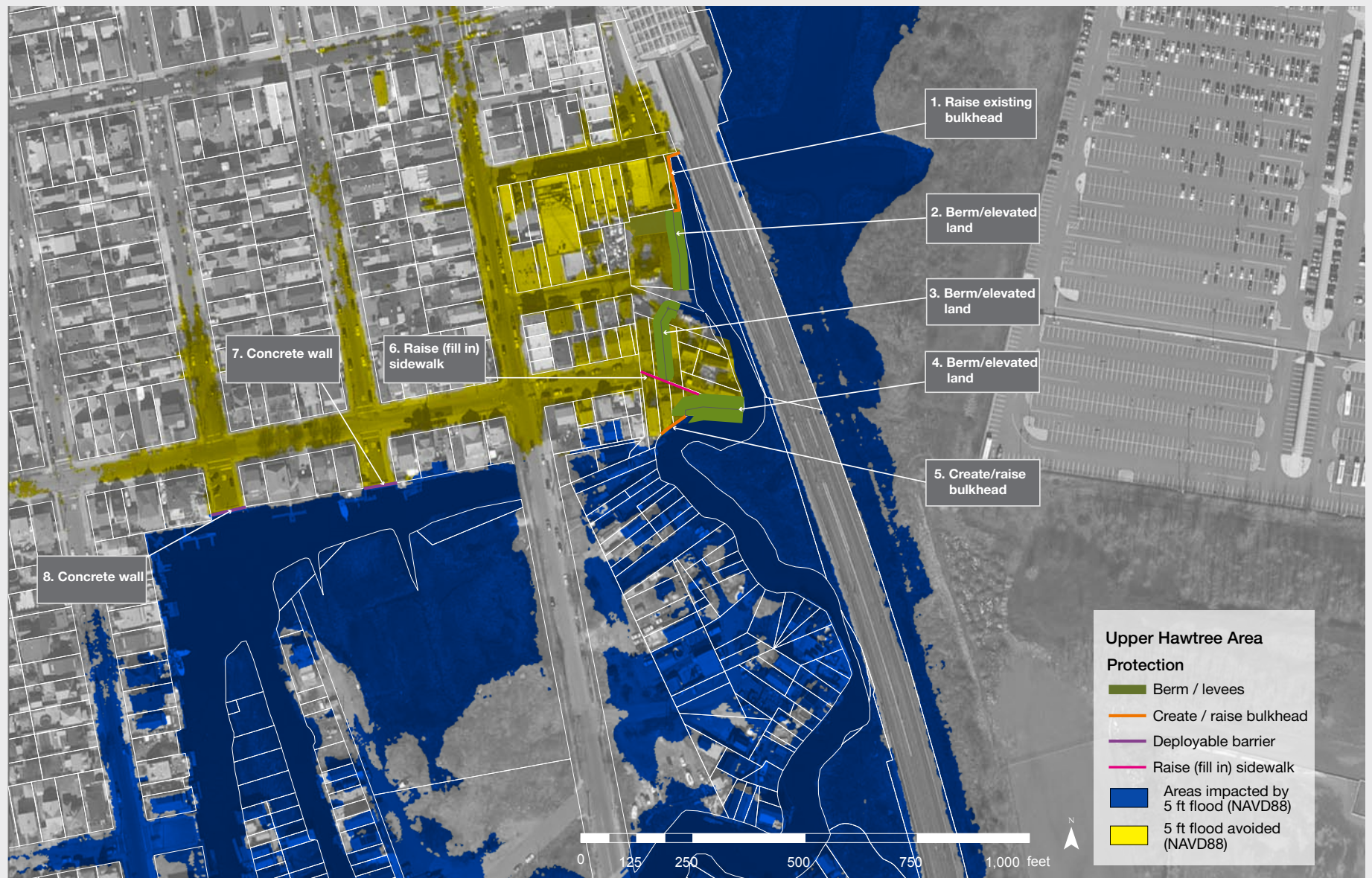


Upper Spring Creek Park visited by HUD Rebuild By Design team



Upper Spring Creek Park marshes and water body

Figure IV-7: Upper Hawtree flood protection strategies



Upper Hawtree Flood Protection and Drainage Improvements

Proposed Project

This project proposes targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and in Coleman Square to limit the flooding impact of full-moon tides that plague this Community.

The project would combine berm, coastal protection, and drainage improvement measures to mitigate flooding problems. Components include the following:

- Berms/elevated land
- Creating or raising bulkheads
- Raising sidewalks
- Underground retention
- Concrete walls

Cost estimate

\$3 MILLION

The cost includes the raising of existing bulkheads and a sidewalk, construction of berms and concrete walls, and the construction of an underground retention system. This estimate is based on engineer experience with projects of similar scope and scale, and would likely vary as the project is further developed and refined.

Benefit/co-benefits

Environmental benefits

MEDIUM

Implementation of the targeted drainage and protection improvement projects could help to secure environmental assets and facilitate environmental cleanup. The details of the potential environmental benefits that could accrue are unknown at this time as the project scope is at a high level.

Economic benefits

MEDIUM

Implementation of the targeted drainage and protection improvement projects would lower the amount of damage suffered by businesses in the area. This benefit would improve the viability of businesses in the Coleman Square area by lowering the costs of dealing with flooding or flood-related damages. This project would provide a high level of protection (up to a 6- to 7-foot flood) through the implementation of small, discrete protection measures that would take advantage of multiple

Project Summary

Recovery Support Functions



Infrastructure



Natural and Cultural
Resources

Cost
\$3M

Risk Reduction

MEDIUM

Economic Benefits

MEDIUM

Environmental Benefits

MEDIUM

high points to tie back to in order to achieve an effective level of protection. It was therefore perceived as a low-cost, high-benefit protection project for an important economic center that suffers from constant flooding.

Cost-benefit analysis

The improvements could result in a wide range of benefits, including risk reduction benefits for residents, employees, and business owners in Coleman Square, as well as economic and environmental benefits.

Risk reduction

MEDIUM

Although the project would not protect the area from a 100-year storm, it would lessen the impacts from such a storm and protect against a storm that would create up to a 5-foot surge. The drainage improvements would reduce the frequency and intensity of flooding from rain events, moon and equinox tides, and the damaging effects of these events on property and infrastructure.

The potential protection and drainage improvement projects would reduce costly damages to commercial, and residential buildings caused by regular, recurring flooding, preserving this important commercial downtown.

Implementation timeframe

The construction, once commenced, is anticipated to be completed within 3 to 5 years.

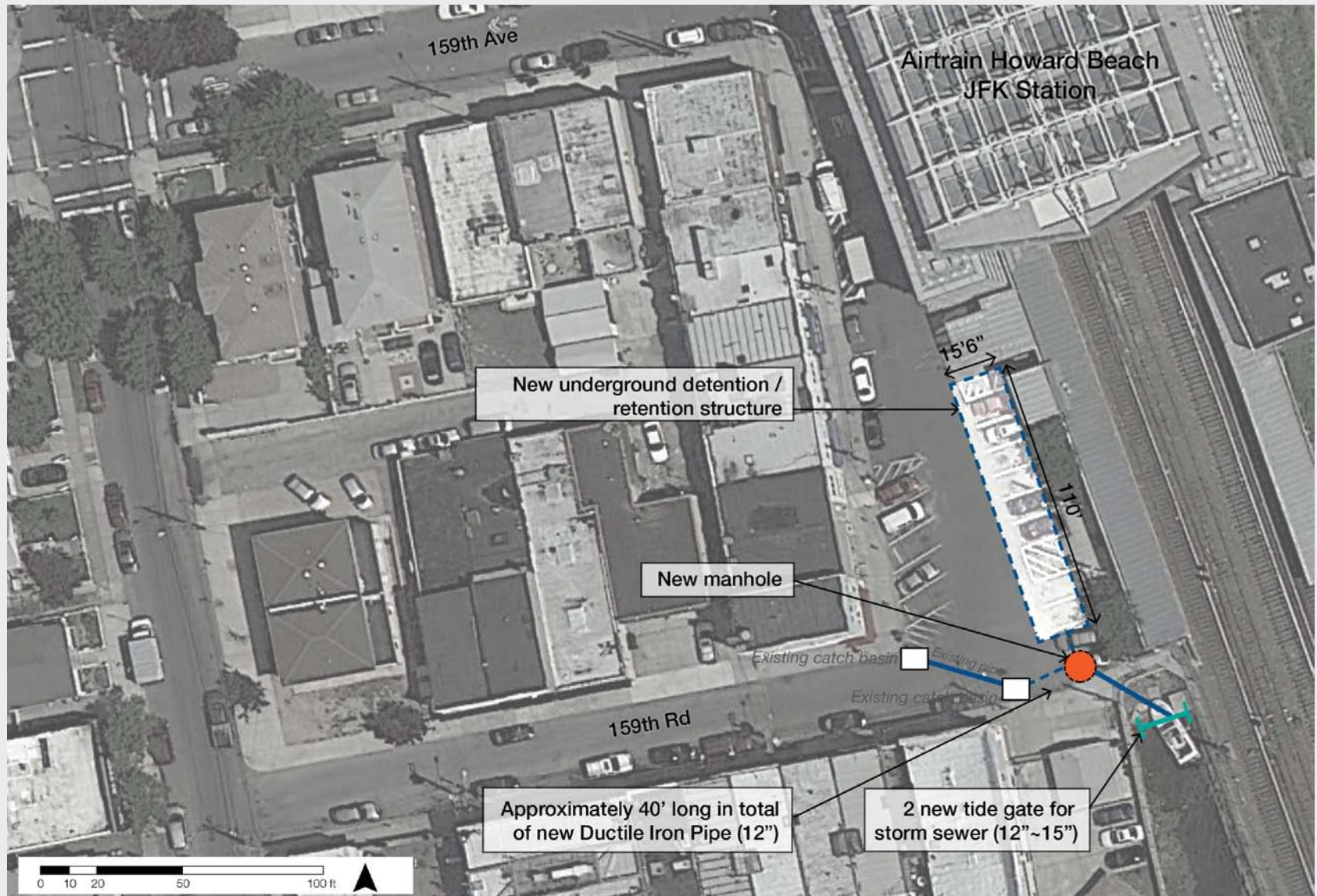
Regulatory requirements

Depending on the location and specifications of the targeted flood protection system, the project would be subject to regulatory review from a number of agencies. Agencies would include the New York City Department of Environmental Protection, New York City Department of Transportation, New York State Department of Environmental Conservation, the U.S. Army Corps of Engineers, and Coastal Zone Management consistency concurrence (New York State Department of State).

Jurisdiction

The project would be in the jurisdiction of the City of New York.

Figure IV-8: Upper Hawtree drainage improvements



Relief Center Hub

Proposed project

A Relief Center Hub would provide the community with a central location to organize relief efforts, provide a safe haven for charging electronic equipment, distribute supplies and services, and provide a central communications hub during relief efforts. The Relief Center would provide technical assistance programs to the community to ensure effective recovery and relief efforts after future storm events.

To ensure that the Howard Beach Community is more aware and prepared for the next disaster event, the NY Rising Community Reconstruction (NYRCR) Howard Beach Planning Committee (the Committee) recommends developing a formalized community-led relief center network. This network would complement the emergency response and recovery activities of organizations such as the New York City Office of Emergency Management (NYC OEM), New York State Division of Homeland Security and Emergency Services (DHSES), Federal Emergency Management Agency (FEMA), and American Red Cross.

The project would provide funding to an existing community facility for on-site capital improvements, such as hardening. Additionally, funding would provide initial staffing costs to support coordinating a network of relief centers that provide physical and informational resources in the wake of a disaster. The project would also facilitate disaster preparedness coordination across community based organizations (CBO) in advance of an event.

The proposed relief center “hub” would be a community gathering space where logistics, communications, and supplies can be managed and distributed. It would have backup power and sufficient heat/cooling to provide for community needs when power is out elsewhere. The hub would serve as a neighborhood contact for government emergency workers and first responders and coordinate with smaller satellite locations throughout the community that serve as additional, localized distribution centers.

The array of services to be provided may include:

- Access to food, water, power, and basic supplies
- Information about citywide emergency response activities and local efforts
- Non-urgent medical services (first aid, mental health, etc)
- Special services for seniors or other vulnerable populations

Project Summary

Recovery Support Functions



Health and Social
Services



Community
Planning and
Capacity Building

Cost
\$3M

Risk Reduction

HIGH

Economic Benefits

MEDIUM

Health and Social Benefits

HIGH

Relief centers would be housed within existing buildings and organizations that provide year-round community services. The Committee developed criteria to identify potential hub locations within the community based on organizational capacity, facility capacity, proposed services, and potential to provide a cohesive network of support in conjunction with other selected sites.

The relief center hub building should meet the following physical requirements, based upon Committee discussions and national best practice building and siting criteria:

- Location outside of the floodplain or in a flood-proof structure
- Reinforced building
- Reliable source of power and heat/cooling
- Potable water system
- Restrooms (ideally with showers)
- Parking lot/car-accessible
- Large space on ground floor
- Assembly area
- Americans with Disabilities Act (ADA)-accessible

Based on needs identified by the Committee, the relief center hub host organization would exhibit the following characteristics:

- A history of community engagement and strong community ties
- Regular community programming
- Capacity to provide emergency programming
- Demonstrated ability to conduct outreach to vulnerable populations
- Capacity to provide a selection of social and/or health services
- A long-term occupancy agreement or ownership of the building
- A business continuity plan
- Financial stability

The relief center hub host organization would also designate a resiliency and emergency management program manager. The program manager would oversee resiliency capital investments and hub preparedness, build community and organizational capacity, and coordinate activities across the network. To ensure rapid response and effective coordination during an emergency, the program manager would be expected to maintain regular

Figure IV-9: Potential relief center hub program layout



contact and coordination with satellite sites and NYC OEM. The program manager would manage disaster preparedness-related programming, which could include trainings and practice drills, “know your neighbor” events, and outreach to vulnerable populations. The center can also host other related emergency preparedness and social resiliency programs, such as provide meeting space for emergency preparedness trainings.

Cost estimate

\$3 MILLION

The Committee wishes to allocate \$3 million to the development of a relief center hub. The relief center would require funding to cover two types of expenses:

- **Capital to harden existing building.** Key costs would likely include building hardening (including flood-proofing), and back-up power generation through a fixed source.
- **Operating support to build host organization’s capacity to support a part-time program manager.** This would also include providing year-round emergency programming and deploying and coordinating resources during an emergency, as necessary and appropriate.

After two years, the organization would be responsible for supporting the program services as well as any maintenance costs associated with the capital improvements.

It should also be noted that the operation of a relief center hub may require the purchase of items, such as medical supplies, extended shelf-life food, water, blankets, walkie-talkies, ham radios, or gasoline. The organization would need to identify alternative funding sources for these items.

Benefit/co-benefits

Health and social benefits

HIGH

The relief center hub would coordinate and share information about the location and availability of social and health services, as well as provide medical and legal services directly on site. Provision of these services would strengthen the social resilience of the Community on a regular basis and during times of crisis.

Vulnerable populations would benefit the most from this project, given that they are likely to require assistance, yet less likely to have reliable and convenient access to critical supplies and services.

Economic benefits

MEDIUM

The relief center hub would support a part-time employee embedded in the host organization to help plan and build organizational capacity at hubs and across satellites over the course of two years. Capital expenses associated with hardening community centers would create a small number of temporary jobs for construction and installation of resiliency building improvements. These jobs should be sourced locally to ensure investment in the community.

Cost-benefit analysis

This project would provide numerous public benefits to the Community in the event of a disaster, including reduced overall risk to all Howard Beach residents—especially vulnerable populations. The reduced vulnerability of all residents justifies the relatively modest cost of implementing this project.

The benefits of the network would be sustainable beyond the two-year funding period so long as the partnering organizations dedicate resources to maintaining emergency equipment, updating emergency plans, and maintaining communication with the other relief network locations as well as the City of New York. There would be no apparent negative externalities associated with the proposed project.

Risk reduction

HIGH

The relief center hub would reduce risk to Howard Beach residents by providing publicly accessible back-up power, a centralized source for information, social and support services, and more secure emergency and recovery services due to the redundancy inherent in a network of relief centers. Furthermore, investment in the relief center network would reduce the vulnerability of the organizations and community centers participating in the program. Organizations would be able to secure funding to make critical improvements such as flood doors, elevated electrical equipment, check valves and other resiliency measures to protect against future storm events.

Implementation timeframe

Once the project has been formally initiated, it would take approximately two years to implement.

Depending on the scope of the work, and taking into account the seasonality of construction, the capital improvement construction phase could take up to 18 months. Programming could be implemented in a shorter time, ideally three to six months after the project is initiated.

Regulatory requirements

Regulatory reviews would likely not be required for the execution of this project, though all capital investments would be required to meet building codes, including any modifications to construction in a flood zone.

Because the sites would provide relief and would not function as formal shelters or evacuation centers they would not be held to Federal Emergency Management Agency (FEMA) regulations.

Jurisdiction

The relief center network would be located in Howard Beach and the development of the relief center network would fall under the jurisdiction of the City of New York.

Figure IV-10: Illustrative satellite relief centers



Satellite Relief Centers

Proposed project

Working with the relief center hub, satellite relief centers would serve as local neighborhood locations that people could access to charge electronic equipment, retrieve needed supplies and services, and get information from the larger relief network on relief efforts taking place throughout the community.

This project would fund the creation of a network of “satellite” relief centers to provide and coordinate local relief supplies and services following a disaster, such as provision of food, water, power, health, basic medical services, and information.

The project may provide funding to community facilities and organizations for the following:

- Capital improvements to harden the building
- Initial staffing expenses to develop and coordinate resiliency plans and programs

Local organizations interested in participating in the relief center network would apply to the program with a proposal, highlighting expected needs and level of engagement.

Relief centers would serve as local safe stations, whether serving as a cooling center during a heat wave or a supply distribution center after the immediate dangers of a hurricane have passed. Relief centers would leverage the local knowledge and trusted relationships of existing community based organizations (CBO) to provide essential

information to local residents and businesses, coordinate across multiple providers of community-based emergency health and social services consistent with a local Emergency Preparedness Plan, and evaluate community needs and efficiently distribute resources.

Satellite sites would serve a supporting role to the hub. Satellite sites should be physically distributed across the community and accessible within walking distance to large sections of the community. They would ideally have a parking lot (or other outdoor space) to accommodate relief vehicles or act as a service or assemblage area. Based on needs identified by the NY Rising Community Reconstruction (NYRCR) Plan Committee (the Committee), the ideal relief center host organization for satellite sites should exhibit the following characteristics:

- A history of community engagement and strong community ties
- Regular community programming and capacity to provide emergency programming

Project Summary

Recovery Support Functions



Health and Social
Services



Community
Planning and
Capacity Building

Cost
\$1M

Risk Reduction

HIGH

Economic Benefits

LOW

Health and Social Benefits

HIGH

- Demonstrated ability to conduct outreach to vulnerable populations
- Capacity to provide a selection of social and/or health services
- A long-term occupancy agreement or ownership of the building
- A business continuity plan
- Financial stability

Relief centers should be housed within existing buildings and organizations that provide year-round community services. Selection of satellite sites and participating organizations would occur through a competitive process and be based on analysis of existing efforts in the Community, organizational capacity, facility capacity, proposed services, and potential to provide a cohesive network of support in conjunction with other selected sites.

Cost estimate

\$1 MILLION

The satellite program would fund two types of expenses:

- Capital to harden existing building. Key costs for facility improvements would include the following types of retrofits: flood-proofing (if

the building is located in the floodplain), back-up communications equipment, and back-up power.

- Operating support to build organization's capacity to provide year-round emergency programming and to deploy and coordinate resources during an emergency, as necessary and appropriate.

The exact costs of building upgrades would vary widely depending on the number of facilities selected to participate in the relief center network, the physical characteristics of those buildings and sites, and the programming planned for each site.

From a generic estimate, hardening a satellite site located in a 7,000-square-foot facility could cost approximately \$375,000, assuming the mitigation measures implemented provide a high degree of flood protection and sufficient back-up power. The annual cost of limited programming could be approximately \$20,000, for a total project cost of approximately \$40,000 over the course of two years for each satellite.

After two years, each participating organization would be responsible for supporting ongoing program costs. Building maintenance would not be included in this program and neither would the purchase of emergency supplies.

Benefits/co-benefits

Health and social benefits

HIGH

By hardening existing buildings to serve as satellite relief centers, these community assets would be more likely to withstand extreme conditions to operate immediately after an emergency. The network would provide information about social and health services and, depending on the organizations, medical, legal, counseling, and other services directly on site.

Satellite relief centers would benefit vulnerable populations who are most likely to need assistance and have the lowest access to supplies and support networks.

The project would also reduce business interruption of the CBO operating each site, helping to ensure business continuity of small, local organizations. Furthermore, the program management funding would increase the capacity of the Community and participating organizations, building not only emergency preparedness capacity across the Community but building ongoing relationships and strengthening social resiliency for Howard Beach.

Economic benefits

LOW

The relief center network funding would be available to support part-time employees embedded in CBOs to help plan and build organizational capacity at satellites over the course of two years; however, funding staff would not be required. Capital expenses associated with hardening satellite sites would create a small number of temporary jobs for construction and installation of resiliency measures. These jobs should be sourced locally to ensure investment in the community.

Cost-benefit analysis

A Howard Beach relief center network would provide numerous benefits to the Community in the event of a disaster, including reducing overall risk to residents, and providing critical health and social services. Once the network is established, benefits would be sustainable, with little added cost.

The reduced vulnerability of all Howard Beach residents justifies the relatively modest per capita cost of implementing this project. There are no apparent negative externalities associated with the proposed project.

Risk reduction

HIGH

The proposed relief center network could result in risk reduction to residents of Howard Beach, and could also result in health and social benefits, as well as economic benefits.

Hardening relief centers would reduce risk of flood damage to the satellite locations selected, but more importantly, it would reduce risk to Howard Beach residents by providing publicly accessible back-up power, a centralized source for information, and support and social services distributed throughout the community.

Implementation timeframe

Once the project is formally initiated, it would take approximately one to two years to implement.

Project implementation would begin with a competitive bidding process, inviting local organizations that meet an established criteria to apply to participate in the relief network program. Organizations would submit proposals with their estimated resiliency capital and/or programming scope and costs. The proposal and selection process would take approximately three to six months.

Once participating organizations are identified, detailed programming and capital improvement plans would be implemented. Depending on the scope of the work, and taking into account the seasonality of construction, the capital improvement construction phase could take up to 18 months. Programming would be implemented faster, ideally three to six months after the program manager is on board.

Regulatory requirements

Regulatory reviews would not be likely for the execution of this project, though all capital investments would be required to meet building codes, including any modifications to construction in a flood zone.

Because the sites would provide relief and would not function as formal shelters or evacuation centers they would not be held to Federal Emergency Management Agency (FEMA) regulations. NYC OEM must also be engaged in facilitating coordination with citywide emergency preparedness efforts.

Jurisdiction

The relief center network would be located in Howard Beach and fall under the jurisdiction of the City of New York laws.

West Hamilton Beach Volunteer Fire Department Resiliency Improvements

Proposed project

The West Hamilton Beach Volunteer Fire Department (WHBVFD) is located in Hamilton Beach, a community surrounded by the many inlets of Hawtree Basin and therefore prone to regular flooding. This flooding also impacts the only road into the Community—102nd Street—leaving residents of Hamilton Beach at risk of being isolated during an emergency. The WHBVFD is the primary resource within the Community that can help during and after a disaster.

The proposed project would bolster the WHBVFD to support social and physical resiliency in the Community before, during, and after disasters. The project would fund the following capital improvements to strengthen the fire house:

- Flood-proofing measures for the facility including entry doors and garage bay doors
- A fixed back-up generator on the roof or side of the building elevated above the Base Flood Elevation
- Check valves for the drain on the floor under the equipment

Cost estimate

\$500,000

Benefit/co-benefits

Health and social benefits

HIGH

Hardening the facility would allow the WHBVFD to better withstand extreme conditions during an emergency. By strengthening its capacity to provide critical first responder services to the Community, this project would reduce the health and safety risks associated with a disaster. Specifically, a fortified WHBVFD would reduce the risk of death, injury, or sickness related to fire, other emergency conditions, or lack of access to medical attention.

Project Summary

Recovery Support Functions



Housing



Community
Planning and
Capacity Building

Cost

\$500,000

Risk Reduction

HIGH

Economic Benefits

LOW

Health and Social Benefits

HIGH

Economic benefits

LOW

Capital expenses associated with hardening the firehouse would create a small number of temporary jobs for installation of resiliency measures.

Cost-benefit analysis

Hardening the WHBVFD would reduce the overall vulnerability of residents and provide critical health and social services.

This project would benefit residents not only in the immediate aftermath of emergency events, but it would also improve the capacity of the WHBVFD to provide first responder services year-round. There are no apparent negative externalities associated with the proposed project.

Risk reduction

HIGH

The WHBVFD project would reduce risk to residents of Howard Beach, and would provide health and social benefits, as well as some economic benefits.

Hardening the WHBVFD would reduce risk to the community by enhancing the ability of the WHBVFD to provide critical first response services to Howard Beach residents.

Implementation timeframe

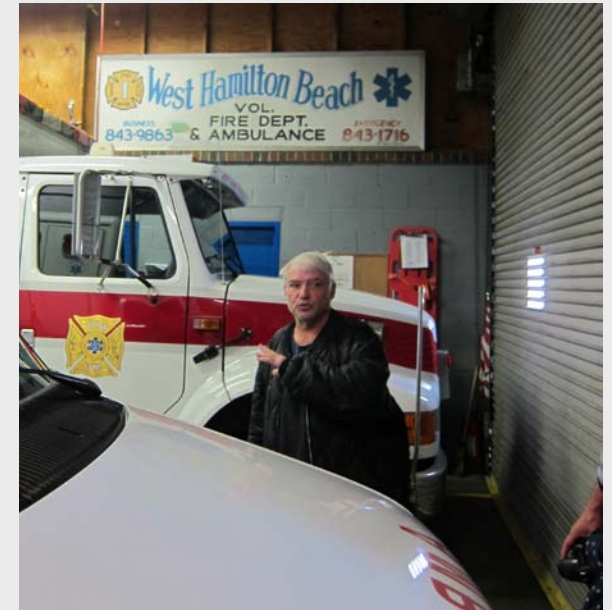
Once the project is formally initiated, it would take approximately 1.5 years to implement. The key issue that could most dramatically affect the timeframe is any challenges that may emerge during construction.

Regulatory requirements

Regulatory reviews are not likely for the execution of this project, although all capital investments would be required to meet building codes, including any modifications to construction in a flood zone. Depending on the scale of the renovation, a New York City Department of Buildings Certificate of Occupancy and building permits might be required.

Jurisdiction

The proposed project would be in Howard Beach and would therefore fall under the jurisdiction of the City of New York.



West Hamilton Beach Volunteer Fire Department

Business Resiliency Program

Proposed project

This project would help business and commercial building owners identify measures to improve the resiliency of business operations and buildings. The project would provide technical assistance to implement resiliency strategies, including both physical improvements and preparedness plans, and offer capital funding to support physical improvements.

The project would offer free technical audits to eligible business owners in order to help identify and recommend resiliency interventions. These interventions may include:

- Business resiliency measures:
 - Business continuity planning and business disaster preparedness planning
 - Elevating or flood-protecting business equipment and inventory
 - Elevating or flood-protecting data systems
- Structural resiliency measures:
 - Elevating mechanical systems
 - Installing backup power
 - Flood-proofing buildings
 - Structurally reinforcing wood-framed buildings

The NY Rising Community Reconstruction (NYRCR) Planning Committee (the Committee) has identified the following criteria to prioritize businesses for the program:

- Small and locally owned businesses
- At-risk businesses located in the flood zone and/or that have suffered repeated storm damage (e.g., Hurricane Irene, Superstorm Sandy)
- Businesses that provide essential goods and services, especially goods needed in recovery after an emergency

Cost estimate

\$3 MILLION

The scope of services and capital would vary by business need, but an average allocation may be up to \$30,000; therefore, the program could serve about 100 local businesses in the community.

Benefit/co-benefits

Economic benefits

HIGH

This project would help prevent future flood-related closures of small businesses—and the related job and economic losses—for the businesses in

Project Summary

Recovery Support Functions



Economic
Development



Community
Planning and
Capacity Building

Cost
\$3M

Risk Reduction

HIGH

Economic Benefits

HIGH

Health and Social Benefits

MEDIUM

Howard Beach by preserving business continuity along key business corridors. Additionally, this project implies the creation of a modest number of temporary jobs to support the implementation of resiliency measures. Through reducing risk, it additionally would help to preserve the economic health of commercial corridors in flood prone areas, aligning this project with the New York City Regional Economic Development Plan's objectives for neighborhood and commercial revitalization.

Health and social benefits

MEDIUM

By promoting business continuity during and after an emergency, this project would ensure access to critical supplies from local businesses. Improving the ability of local businesses to function during emergencies would result in improved access to needed supplies like water, food, batteries and flashlights as well as providing continued access to key services such as ATMs.

Cost-benefit analysis

The benefits of the project would be sustainable beyond the two-year funding period so long as the recipient businesses maintain the knowledge and



Cross Bay Boulevard businesses



Coleman Square businesses

physical equipment received through the program. There are no apparent negative externalities associated with the proposed project.

Risk reduction

HIGH

Small businesses provide essential goods and services as well as employment opportunities to community members. During and after emergency events, small businesses further serve as a critical lifeline for supplies. Both in preparation for and in the aftermath of an emergency, it is important that residents be able to access ATMs, food and water, and other basic needs. Promoting business continuity can help ensure continued access to these items during emergencies, thereby reducing risk to the local population.

Implementation timeframe

Project implementation would begin with the identification of an organization to administer the project. Once the administrator is selected, it would take four to six months to launch the program, which includes establishing program parameters and running the selection processes to identify service providers.

Regulatory requirements

Regulatory reviews are not likely for the execution of this project, though all capital investments would be required to meet building codes, including any modifications to construction in a flood zone.

The New York City Department of Buildings may be involved on a discretionary basis to oversee or certify building resiliency audits. Certain elements

of outreach and intake programming would require close coordination with relevant public agencies that administer the various financial assistance programs geared at small-businesses.

Jurisdiction

The proposed project would be in Howard Beach and would therefore fall under the jurisdiction of the City of New York.



Lindenwood Shopping Center

Residential Resiliency Program

Proposed project

Howard Beach is a predominantly residential community with many low-lying, older single-family homes that are particularly vulnerable to flood damage. Residents need information and technical support to make decisions and take action making their homes more resilient.

The residential resiliency program entails two primary components:

- General education
- Individual counseling and technical assistance

The general educational program information would offer property owners critical residential resiliency information that would be vetted by qualified counselors and auditors to help property owners:

- Identify common insurance pitfalls and loopholes
- Avoid potential rebuilding, insurance, or financial scams
- Understand policies for how to obtain flood insurance
- Understand resiliency retrofits, including elevating and flood-proofing building mechanicals, installing check valve prevention device, etc.

- Identify products, providers and reasonable costs
- Find financing programs for home repairs and resiliency measures
- Learn how to remediate mold

The general education would be available through a common resiliency repository. This “one-stop-shop” would share information through a website, manual, or physical information center.

Information housed in the repository would include:

- Print or online resiliency guidelines (e.g., outlining general costs and benefits of retrofits, products and designs, etc.)
- Online courses
- Publicly digestible resources (e.g., how to interpret rules and regulations)
- Sample documents and forms with instruction (e.g., insurance claims, financial statements, etc.)

Project Summary

Recovery Support Functions



Housing



Community
Planning and
Capacity Building

Cost
\$1.5M

Risk Reduction

HIGH

Economic Benefits

HIGH

Because not all residents would benefit from an online tool, local community based organizations (CBO) offices would house physical materials and expertise that mirrors the online repository. Furthermore, this program could offer the following:

- Introductory, in-person courses
- Monthly speaker series covering different resiliency topics
- Special 'pop-up' housing fairs to bring a series of experts to the communities

The counseling and technical program would be offered as an individualized service that would be tailored to help high-need home and property owners.

Counseling would be conducted by qualified housing, financial, and legal counselors and would include the following:

- Assistance understanding an individual's current flood, homeowner and property insurance
- Potential risks given an individual's home type, location, and personal financial situation



Howard Beach residential houses

- Help assessing how monthly mortgage payments could be impacted by changes in federal flood insurance rules or by an individual making retrofits to their home
- Guidance on specific housing rebuilding, resiliency and recovery issues, questions, programs, and financing tools
- Legal support and representation for foreclosure-risk or other high-risk cases

Qualified auditors would be responsible for carrying out the following technical assistance:

- A physical assessment of existing damage and/or future risk to the individual's residential property
- A list of potential retrofits to mitigate against future storm damage
- Assistance finding a qualified contractor to complete retrofits (if desired)

Cost estimate

\$1.5 MILLION

This amount would cover program administration, education program development, counselors, and auditors for two years.

This allocation assumes that everyone in the community would access general education, but that only a subset of the community would seek counseling and technical assistance. If there is a

significant demand from across the community, additional funding sources may be required to scale up the services.

Likewise, if the program leverages existing citywide programs, there may be efficiencies of scale and program costs could decrease. There are a variety of public- and private-funding sources contributing to like programs today, including Community Development Block Grant-Disaster Recovery (CDBG-DR) and New York State Attorney General funds. If costs are shared by multiple entities, the balance of Howard Beach's budget for this program could be reallocated to individual counseling and technical assistance.

Benefits/co-benefits Economic benefits

HIGH

The program gives homeowners the tools to protect one of their most valuable economic assets—their homes. The program would help property owners decide on the most appropriate, and cost-effective, resiliency measures to invest in. It would also help them to understand the financial implications of their insurance decisions and avoid being over- or under-insured. The program therefore would provide residents with financial security.

For this reason, the project may be especially beneficial to low-income residents who are particularly vulnerable to financial shocks from unforeseen, high-cost repair expenses resulting from flooding.

Finally, this program could help stabilize real estate and micro-economies of neighborhoods. Residential neighborhoods in the flood plain risk disinvestment after a major event if residents can no longer afford to stay in their homes. This disinvestment has a ripple effect on small businesses and property values and could have a deleterious impact on the Community as a whole.

Cost-Benefit Analysis

There is a substantial need for technical and counseling support to homeowners. The program could help an extremely broad array of residents with general education, and would benefit those in greatest need with more tailored assistance. The program could reduce the risk of all residential owners in the community at a very low per capita cost.

Risk reduction

HIGH

The proposed project could result in risk reduction to housing assets and residents in Howard Beach and could also provide health and social benefits.

The proposed education and technical assistance project would help property owners make more informed decisions about how to best protect their homes from future flooding. If residents choose to implement the suggested flood mitigation measures to their properties, the retrofits would help protect the community's residential housing stock from future damage.

Implementation timeframe

There are citywide organizations administering similar programs and providing funding to local community based organizations to provide housing education, counseling, and technical assistance in New York City neighborhoods. To leverage existing expertise and maximize the impact of Howard Beach's Community Development Block Grant – Disaster Recovery (CDBG-DR) funding, this project should leverage and build off existing programs.

Should the Community's allocation go toward an existing program, project ramp-up could be fairly quick—three to six months. All counseling and technical assistance would be provided for two years.

The New York City Department of Buildings (NYC DOB) and the New York City Housing Preservation and Development (NYC HPD) may be involved on a discretionary basis to oversee or certify building resiliency audits and to certify retrofit contractors. NYC HPD and the New York State Department

of Homes and Community Renewal (NYS DHCR) could also provide valuable support and help to identify synergies with existing programs.

Regulatory requirements

Because similar programs exist in New York City today, regulatory reviews or changes are unlikely for the execution of this project. Changes to the federal flood maps and insurance program would have a bearing on the program, but the program administrator would be responsible for maintaining current and accurate materials as regulations and information changes.

Jurisdiction

The proposed project would be in Howard Beach and would therefore fall under the jurisdiction of the City of New York.



Home in New Howard Beach/Rockwood Park



Attached multi-family homes in Lindenwood

V. Additional materials





Additional resiliency recommendations

Table V-1 – Additional resiliency recommendations

Strategy	Project Name	Short Description	Estimated Cost	Regional (Y/N)
Protect the edge	Support and augment State DEC Lower Spring Creek project	The Committee supports the commitment from the Governor and New York State Department of Environmental Conservation to develop Lower Spring Creek and recommends that the project tie into the overall protection for Howard Beach.	\$25M+	N
Develop a protection strategy for local power stations	Provide local protection to all three Con Edison substations	Keeping the lights on throughout future storm events is critical. There are three substations in Howard Beach, all of which were compromised by the flood waters and sit within the high-risk zone in Howard Beach. Either through protection of these facilities or through the possible relocation of one or more facilities to higher ground, a much more resilient power infrastructure can be achieved.	\$1M–\$25M	N
Mitigate sewer back-up	Protect the Howard Beach pump station	The Committee recommends that all necessary precautions be taken to ensure that the Howard Beach pump station does not fail in the next storm event.	\$1M–\$25M	N
	Protect Jamaica Wastewater Treatment Plant	The Committee recommends that all necessary precautions be taken to insure that the Jamaica Wastewater Treatment Plant is protected from flooding and storm surge.	\$1M–\$25M	N
Improve accessibility to park and recreation area	Develop maintenance strategy for National Park Service lands in Howard Beach	The Committee recommends that the National Park Service (NPS) work with all appropriate stakeholders to develop a comprehensive maintenance strategy for NPS lands in concert with the overall protection strategy.	\$1M–\$25M	N

Table V-1 – Additional resiliency recommendations (continued)

Strategy	Project Name	Short Description	Estimated Cost	Regional (Y/N)
Increase access to isolated sections of the community	Create new pedestrian and vehicle access at southern edge across Hawtree Basin	The long basins that stretch deep into Howard Beach reduce the ability for vehicles and pedestrians to move laterally—east to west through the community. The lack of mobility is a concern during emergencies and evacuations. The issue is particularly acute in Hamilton Beach, where the Hawtree Basin extends inward as a creek, leaving a single means of egress out of this residential area along 104th Street. When this road becomes impassable, Hamilton Beach is cut off. The only other means of egress is a pedestrian bridge at 163rd Avenue. New egress could also be combined with protection strategies if set along the coastal edge of the community.	\$25M+	N
Expand health-care and social infrastructure to support senior and other vulnerable populations	Enhance the resiliency of NYPD Harbor Unit in New Howard Beach	The Committee recommends that these buildings are made more resilient, from strengthening the buildings themselves to ensuring sufficient emergency supplies and back-up generators. Both fire departments and police departments were identified as critical assets by community members and are located in high-risk areas.	<\$500,000	N
Protect Jamaica Bay	Develop a regional Jamaica Bay strategy to protect Howard Beach through protection at the mouth of Jamaica Bay	The Committee recommends that a study be undertaken to determine the feasibility of a Jamaica Bay surge barrier, proposed in the SIRR report, which could protect all communities surrounding Jamaica Bay.	\$25M+	Y

Master table of projects

Table V-2 – Projects developed by the community (proposed and featured projects, and additional resiliency recommendations)

Strategy	Project name	Short description	Project category	Estimated cost	Regional (Y/N)
Protect the edge	Howard Beach Comprehensive Coastal Protection Study	Study the cost and feasibility of tide gates for Shellbank and Hawtree basins and a berm across Charles Memorial Park	Proposed Project	\$2.5M	N
	Coastal Protection – Phase I: Charles Memorial Park Berm	This project would contribute significant capital construction dollars to construct a berm that would protect Charles Memorial Park	Featured Project	\$10M	N
	Upper Spring Creek Ecosystem Restoration	Create coastal protection berms in Upper Spring Creek	Featured Project	\$250,000	N
	Support and augment State DEC Lower Spring Creek project	The Committee supports the commitment from the Governor and New York State Department of Environmental Conservation to develop Lower Spring Creek and recommends that the project tie into the overall protection for Howard Beach.	Additional Resiliency Recommendations	\$25M+	N
Provide a relief infrastructure focused on vulnerable populations	Relief Center Hub	Create a relief center hub to provide information and coordination of relief supplies and services	Proposed Project	\$3M	N
	Satellite Relief Centers	Create a system of hardened satellite relief centers	Proposed Project	\$1M	N
	West Hamilton Beach Volunteer Fire Department	Make recovery and resiliency improvements to West Hamilton Beach Volunteer Fire Department.	Proposed Project	\$500,000	N
	Enhance the resiliency of New York City Police Department Harbor Unit in New Howard Beach	The Committee recommends that these buildings are made more resilient, from strengthening the buildings themselves to ensuring sufficient emergency supplies and back-up generators. Both fire departments and police departments were identified as critical assets by community members and are located in high-risk areas.	Additional Resiliency Recommendations	<\$500,000	N

Table V-2 – Projects developed by the community (proposed and featured projects, and additional resiliency recommendations) (continued)

Strategy	Project name	Short description	Project category	Estimated cost	Regional (Y/N)
Establish a power protection plan that integrates substation sites into the community	Provide local protection to all three Con Edison substations	Keeping the lights on throughout future storm events is critical. There are three substations in Howard Beach all which were compromised by flood waters and sit within the high-risk zone in Howard Beach. Either through protection of these facilities or through the possible relocation of one or more facilities to higher ground, a much more resilient power infrastructure can be achieved.	Additional Resiliency Recommendations	\$1 M–\$25M	N
Mitigate sewer back-up by protecting key assets in the network	Protect the Howard Beach pump station	The Committee recommends that all necessary precautions be taken to ensure that the Howard Beach pump station does not fail in the next storm event.	Additional Resiliency Recommendations	\$1M – \$25M	N
	Protect Jamaica Wastewater Treatment Plant	The Committee recommends that all necessary precautions be taken to ensure that the Jamaica Wastewater Treatment Plant is protected from flooding and storm surge.	Additional Resiliency Recommendations	\$1M – \$25M	N
Mitigate localized flooding	Upper Hawtree Flood Protection and Drainage Improvements	Targeted protection strategies and drainage improvements along the northern edge of Hawtree Basin and Coleman Square to limit the impact of regular (equinox) flooding	Proposed Project	\$3.5M	N
Develop programs to funding protection measures and technical assistance for vital economic corridors	Commercial Resiliency and Education Program	Project would help small, at-risk businesses implement resiliency improvements through a technical and financial assistance program	Proposed Project	\$3M	
Protect housing by providing education and technical assistance	Residential Education and Technical Assistance	Residential Education and Technical Assistance program entails two components – (1) education, and (2) counseling and technical assistance	Proposed Project	\$1.5M	N
Integrate improvements in park and recreational areas into resilience plans	Develop maintenance strategy for NPS lands in Howard Beach	The Committee recommends that National Park Service (NPS) work with all appropriate stakeholders to develop a comprehensive maintenance strategy for NPS lands in concert with the overall protection strategy.	Additional Resiliency Recommendations	\$1M – \$25M	N

Table V-2 – Projects developed by the community (proposed and featured projects, and additional resiliency recommendations) (continued)

Strategy	Project name	Short description	Project category	Estimated cost	Regional (Y/N)
Increase access to isolated sections of the community	Create new pedestrian and auto access at southern edge across Hawtree Basin	The long basins that stretch deep into Howard Beach reduce the ability for vehicles and pedestrians to move laterally—east to west through the community. The lack of mobility is a concern during emergencies and evacuations. The issue is particularly acute in Hamilton Beach, where the Hawtree Basin extends inward as a creek, leaving a single means of egress out of this residential area along 104 th Street. If this road becomes impassable, Hamilton Beach will be cut off. The only other means of egress is a pedestrian bridge at 163 rd Avenue. New egress could also be combined with protection strategies if set along the coastal edge of the community.	Additional Resiliency recommendations	\$25M+	
Protect Jamaica Bay	Develop a regional Jamaica Bay strategy to protect Howard Beach through protection at the mouth of Jamaica Bay	The Committee recommends that a study be undertaken to determine the feasibility of a Jamaica Bay surge barrier, proposed in the SIRR report, which could protect all communities surrounding Jamaica Bay.	Additional Resiliency Recommendations	\$25M+	Y

Public engagement process

Public engagement has been central to the identification of needs and opportunities, the formulation of strategies and the refinement of specific projects to create a comprehensive Howard Beach NY Rising Community Reconstruction (NYRCR) Plan. The Howard Beach Planning Committee (the Committee) reached across neighborhoods, age groups, and community interests to construct a comprehensive and engaging public dialogue that will form the foundation for consensus building as the plan evolves into specific implementation efforts. Over the course of the seven-month planning period, more than 400 people participated in Howard Beach NYRCR events.

To get the word out to the public, the Committee advertised its meetings in four local newspapers, placed flyers in backpacks at the local schools, and inserted flyers into church bulletins. Community members took it upon themselves to raise public awareness through their existing neighborhood associations and their respective social networks. Committee members also attended meetings of other area organizations to encourage participation in the process.

Recognizing the extremely important role of the business community within Howard Beach, the Committee reached out to every registered Howard Beach business by placing posters in business

windows, with public meeting invitation letters and with follow up phone calls to encourage businesses to get involved in the public process.

To ensure that the particularly vulnerable senior population was given a voice and kept apprised of the effort, the Committee took the public process on the road to the local senior center, interrupting regular senior center activities to present the NYRCR Plan to seniors and to hear their concerns and opinions.

To engage parents, the Committee reached out to all schools within the Planning Area and engaged in a large-scale literature distribution effort by placing information in students' backpacks about the program and events. Eventually this effort reached over 1,900 students.

In addition to engagement through relationships in the Community and conventional outreach, the Committee used online tools such as an online interactive community map to solicit feedback from community members unable to attend meetings and personal Facebook pages. Continuous public engagement has ensured that the NYRCR Plan reflects the Community's priorities for rebuilding and resiliency.

Planning committee

The Committee comprises volunteer members who represent various constituencies within the Planning Area including but not limited to, homeowners, civic leaders and business owners. The Committee held 10 formal Planning Committee Meetings over the course of seven months. Committee members engaged in lively debate during the meetings, and discussed the issues that would make the Community more resilient. All Planning Committee Meetings were announced publicly on the NYRCR website, open to the public and held at New York Families for Autistic Children on Cross Bay Boulevard.

Committee meetings addressed all topics covered in this NYRCR Plan. Specific topics discussed included identification of community assets, assessment of needs and opportunities, formalization of reconstruction and resiliency strategies, development of Proposed and Featured Projects and Addition Resiliency Recommendations.

The Committee wrote and implemented the community outreach strategy and crafted each public session to most effectively represent the information to be disseminated and to garner effective community feedback. Two local public schools, a local senior center, and a local business were used to conduct the public meetings to the community. Special attention was placed on creating an open public dialogue and on providing

multiple opportunities for people to comment in formal presentations, through on-line polling and through an open house structure where one-on-one attention and specific targeted comments and suggestions could be documented. The following details the objective, approach and results of each public meeting.

Public engagement events

Public Engagement Events were designed to be highly interactive and maximize community feedback on the priorities and needs of the communities. Three Public Engagement Events were held prior to the submission of the NYRCR Plan. The Committee selected community-based venues with accessibility and proximity to targeted stakeholders. At the Public Engagement Events, the Committee offered general information about the NYRCR process; presented outcomes and information gathered to date; and solicited feedback through dynamic discussions and interactive displays. Following each Public Engagement Event, community feedback was aggregated and analyzed in order to guide discussion during Planning Committee meetings.

Public engagement event #1 (October 21, 2013)

Program scope; goals, and timeline; feedback on vision; community assets; and needs and opportunities

Public Engagement Event #1 showcased the NYRCR Program scope and presented the Committee's assessment of community assets and needs and opportunities. The Public Engagement Event took place at Public School 146 and began with a formal presentation that introduced NYRCR and the program's objectives to the Community. Following the presentation, an open house style event was held with facilitated group discussion and invited community input on a number of topics including identification of assets, needs, opportunities, and goals as featured on the display boards. While the public engaged in conversation around the display boards, they were invited to take part in interactive exercises by placing stickers and notes on feedback boards. This feedback mechanism created a documented record of community discussion from the Public Engagement Event for the Planning Committee to use during future meetings.

Public engagement event #2 (November 18, 2013)

Contents of draft conceptual plan; gathering feedback on strategies and projects

The second Public Engagement Event was held at Public School 207 and introduced the public to preliminary project concepts. The meeting included a presentation by each committee member on specific projects. The public was again invited to interact with display boards, engage Committee



Reviewing assets at Public Engagement Event #1



Reviewing Projects at Public Engagement Event #3



Seniors attending special briefing at Peter J. Striano Senior Center

members in conversation, and offer their feedback with stickers and written notes placed on feedback boards. Community members' comments provided powerful guidance to the Committee on the types of projects to pursue that address the Howard Beach priorities and concerns, and substantially shaped project development going forward.

Public engagement event #3 (March 10, 2014)

Presentation of proposed and featured projects, and additional resiliency recommendations; gathering feedback on strategies and projects

The third Public Engagement Event was a critical opportunity to share the Proposed and Featured Projects with the Community and obtain feedback on these projects. The Committee hosted two separate meetings. The first event, which targeted the senior population, was held at the senior center in the Peter J. Striano Residence. The meeting featured a presentation to the senior group and a question and answer session. The second event was held at Russo's on the Bay for a six-hour period to maximize the opportunity for the public to provide comment.

Public Engagement Event #3 featured the Proposed Projects in an open-house setting; community members filtered in-and-out of the event, engaged with the material in lively discussion with fellow community members at their own leisure, and

shared their opinions on the feedback boards. Upon entering the Public Engagement Event, each community member was given \$18.4 million in fake Superstorm Sandy dollars to allocate in \$1 million increments to "vote" for Proposed and Featured Projects. After reviewing the project boards, community members were invited to distribute their "fake" money to the projects they believed the Committee should allocate the money. The total allocation per project was tallied and shared at the formal presentation that evening.

In addition to the open house, special invitations went out to the business community, elected officials and civic leaders for presentations at different times during the day. In the evening, the New York State Department of Environmental Conservation presented on the Lower Spring Creek Project, followed by a formal presentation on the proposed projects that included an open discussion with the public.

Public engagement event #4 (April/ May 2014)

Presentation of final plan and announcement of projects

Public Engagement Event #4 will take place in April or May and conclude the Public Engagement Event series. At this Public Engagement Event, the Committee will present the Proposed Projects and the NYRCR Plan to the public.



Attendees at Public Engagement Event #1



Presentation at Peter J. Striano Senior Center

Public engagement event outreach

The Committee spearheaded outreach for Public Engagement Event meetings. From the first public meeting, the Committee leveraged several different channels to reach the whole community. The Committee distributed palm cards to the local schools to be sent home in the students back packs, to the churches so that they were included in the church bulletins, storefront posters were passed out to the local businesses, and to the local community board. The public outreach also included advertising in the local papers and had several articles written about the public meetings after the first and third public meeting. Committee members also leveraged their extensive connections in the community to spread the word about the process and the program.

In addition, the third public meeting included two rounds of letters and three rounds of phone calls to the local businesses, elected officials, and the civic leaders. The ads were emailed to the civic association email list and lists that were compiled from the previous public engagements.

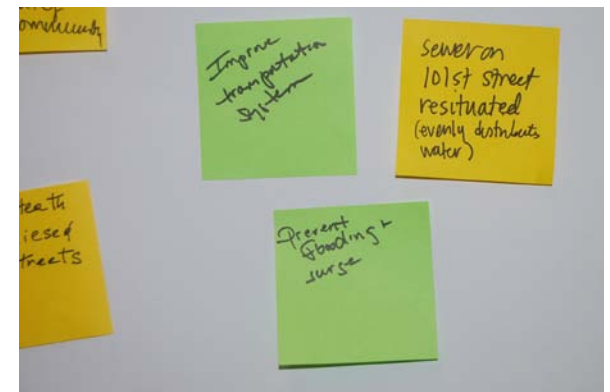
Online engagement and social media outreach

The NYRCR website, located at www.stormrecovery.ny.gov/nyrcr, served as a valuable public resource. The Howard Beach NYRCR page is located at <http://stormrecovery.ny.gov/nyrcr/community/new-howard-beach-and-old-howard-beach> and featured announcements, meeting dates and locations, and materials produced by the Committee throughout the process. The NYRCR website also directed visitors to the NYRCR Facebook page (located at <https://www.facebook.com/NYStormRecovery>) and Twitter account (@NYStormRecovery). Communities were also able to submit comments through the NYRCR website and by emailing info@stormrecovery.ny.gov.

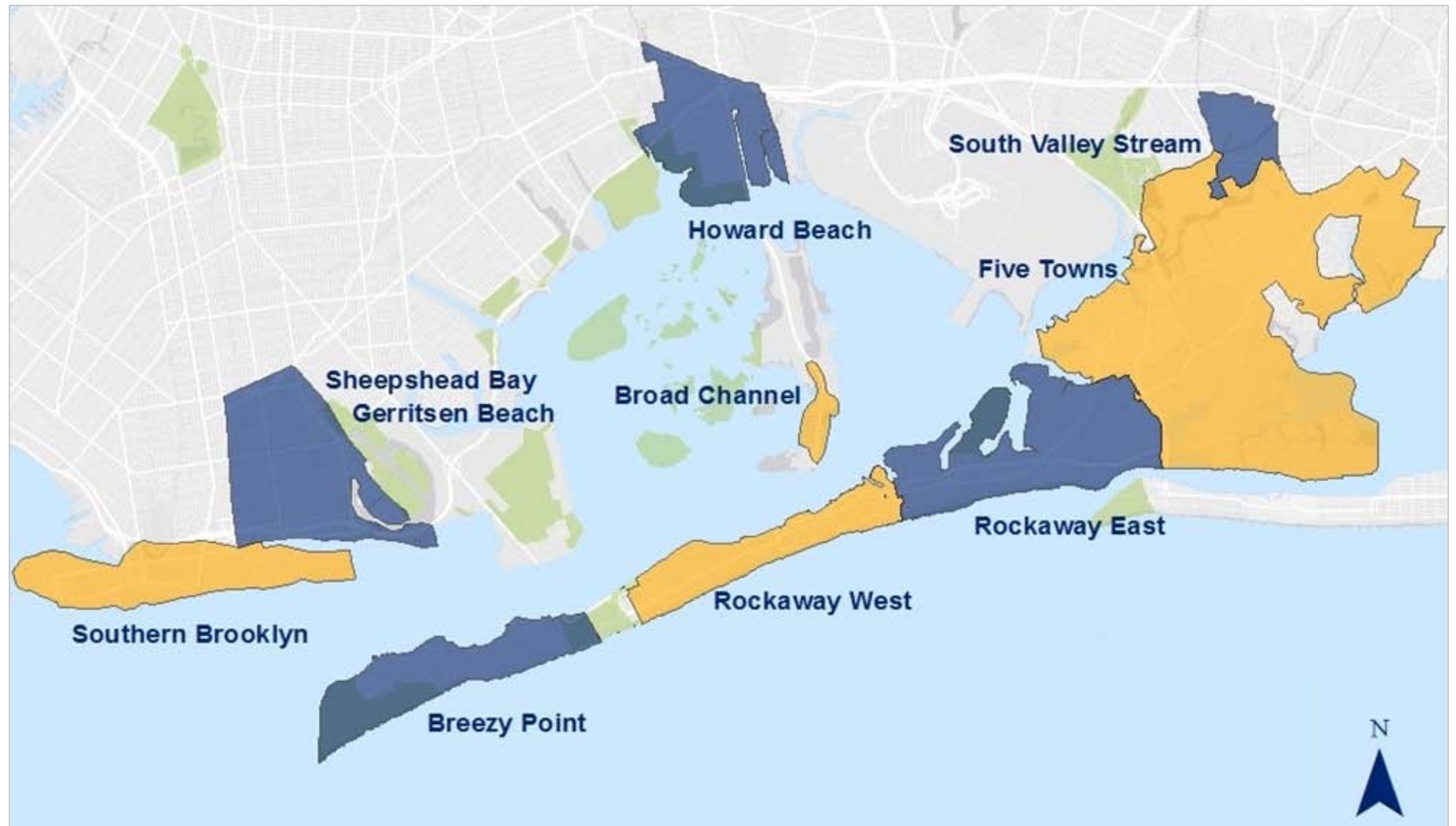
A customized interactive online public engagement was generated for the Community through an online Interactive Community Map located at <http://howardbeach.nyrisingmap.org/>. The Community Map allowed users to confirm specific physical and cultural assets significant to Howard Beach, identify recovery and resiliency needs, and suggest rebuilding and resiliency initiatives. The Committee distributed flyers and conducted outreach to promote the Interactive Community Map. Public comments on the map were summarized and presented to the Committee and utilized as an additional feedback metric.



Providing comments at Public Engagement Event #2



Comment notes on strategies at Public Engagement Event #2



The JBRWG comprises members from the following NYRCR Committees: Breezy Point/Roxbury, Rockaway West, Rockaway East, Broad Channel, New, Old Howard Beach and Hamilton Beach, Gerritsen Beach and Sheepshhead Bay, the Southern Brooklyn Peninsula (which includes Brighton Beach, Coney Island, Manhattan Beach, and Sea Gate), and in Nassau County, the Five Towns (which includes Village of Cedarhurst, Hewlett, Village of Lawrence, Woodmere, Village of Hewlett Neck, Village of Hewlett Harbor, Meadowmere and Inwood), and South Valley Stream.

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 surged up 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. 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 comprising 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.

Community asset inventory

Table V-3 – Asset inventory summary

Asset	Risk area	Recovery support function	Community value	Risk score
Lindenwood Shopping Center	High	Economic	High	21
Cross Bay Boulevard Commercial Corridor – Extreme	Extreme	Economic	High	54
Cross Bay Boulevard Commercial Corridor – High	High	Economic	High	42
Coleman Sq Commercial Area- Extreme	Extreme	Economic	High	54
Coleman Sq Commercial Area – High	High	Economic	High	42
Other Commercial – Extreme	Extreme	Economic	High	54
Other Commercial – High	High	Economic	High	42
Howard Beach Motor Boat Club	Extreme	Economic	High	41
Rileys Yacht Club	Extreme	Economic	High	41
Ave Maria Catholic Academy & Our Lady of Grace Church	High	Health and Social Services	High	42
B J Coleman Post #2565	Extreme	Health and Social Services	High	41
Peter J. Striano Residence	High	Health and Social Services	High	32
Chabad of Howard Beach	High	Health and Social Services	High	32
FDNY: Engine 311, Ladder 173	Extreme	Health and Social Services	High	54
NYPD Harbor Patrol	Extreme	Health and Social Services	High	54
Howard Beach Assembly of God	High	Health and Social Services	High	32
Howard Beach Judea Center	High	Health and Social Services	High	32
New York Families for Autistic Children	High	Health and Social Services	High	53
PS 146	High	Health and Social Services	High	42
PS 207 Rockwood Park	High	Health and Social Services	High	42
PS 232 Lindenwood	High	Health and Social Services	High	42
Queens Public Library Howard Beach	High	Natural and Cultural Resources	High	42
Reach for the Stars Day Care	High	Health and Social Services	High	42
Rockwood Park Jewish Center	High	Health and Social Services	High	53
S.T.A.R.S. Youth Center	Extreme	Health and Social Services	High	54
St. Helen Church	High	Health and Social Services	High	42
St. Barnabas Lutheran Catholic Church	High	Health and Social Services	High	42
St. Helen School	High	Health and Social Services	High	42

Table V-3 – Asset inventory summary (continued)

Asset	Risk area	Recovery support function	Community value	Risk score
US Post Office B Howard Beach	High	Health and Social Services	High	32
US Post Office Howard Beach	High	Health and Social Services	High	32
Urology Office	High	Health and Social Services	High	42
West Hamilton Beach Volunteer Fire Dept	Extreme	Health and Social Services	High	68
Hamilton Beach Residential – Extreme	Extreme	Housing	High	54
Hamilton Beach Residential – High	High	Housing	High	32
Lindenwood Residential – Extreme	Extreme	Housing	High	54
Lindenwood Residential – High	High	Housing	High	32
New Howard Beach Residential – Extreme	Extreme	Housing	High	54
New Howard Beach Residential – High	High	Housing	High	32
Old Howard Beach Residential – Extreme	Extreme	Housing	High	54
Old Howard Beach Residential – High	High	Housing	High	32
AirTrain JFK	High	Infrastructure Systems	High	21
Canal Aerator Pump	Extreme	Infrastructure Systems	High	14
ConEd Substation	High	Infrastructure Systems	High	41
DEP Pumping Station	Moderate	Infrastructure Systems	High	27
Foot Bridge	Extreme	Infrastructure Systems	High	27
Gas Station – Extreme	Extreme	Infrastructure Systems	High	54
Gas Station – High	High	Infrastructure Systems	High	42
NYC MTA Power Station	Extreme	Infrastructure Systems	High	27
NYC Transit – A Line	Extreme	Infrastructure Systems	High	41
Charles Memorial Park	Extreme	Natural and Cultural Resources	Medium	41
Gemini Fields	Moderate	Natural and Cultural Resources	Medium	18
Gemini Fields/Cedar Lane Stables	Moderate	Natural and Cultural Resources	Medium	18
Hawtree Park	Extreme	Natural and Cultural Resources	Medium	54
Lower Spring Creek	Extreme	Natural and Cultural Resources	Medium	32
Upper Spring Creek	Extreme	Natural and Cultural Resources	Medium	32
NYC City Streets – Extreme	Extreme	Infrastructure Systems	High	41
NYC City Streets – High	High	Infrastructure Systems	High	32

Endnotes

Foreword

- 1 Five of the 102 localities in the program—Niagara, Herkimer, Oneida, Madison, and Montgomery Counties—are not funded through the CDBG-DR program.
- 2 The following localities' allocations comprise the NYRCR Community's total allocation: New Howard Beach – \$9.3 million; Old Howard Beach – \$9.1 million.

I. Community overview

- 1 U.S. Census Bureau; Census 2010, Summary File 1
- 2 U.S. Census Bureau; Census 2010, Summary File 1
- 3 U.S. Census Bureau; Census 2010, Summary File 1
- 4 U.S. Census Bureau; American Community Survey 2008 – 2012 5-year Estimates
- 5 FEMA Individual Assistance Program
- 6 FEMA Individual Assistance Program
- 7 New York City, "A Stronger, More Resilient New York." p. 314

II. Assessment of risk and needs

- 1 U.S. Census Bureau; American Community Survey 2008 – 2012 5-year Estimates
- 2 A Stronger, More Resilient New York, June 11, 2014
- 3 U.S. Census Bureau; American Community Survey 2008 – 2012 5-year Estimates

IV. Implementation – project profiles

- 1 Bureau of Labor Statistics, Quarterly Census of Employment and Wages 2012.

Glossary

ABFE	Advisory Base Flood Elevation
BRIP	Business Resiliency Investment Program
CBO	Community-based organizations
CDBG-DR	Community Development Block Grant-Disaster Recovery
CDFI	Community Development Financial Institution
CEQR	(New York) City Environmental Quality Review
CRP	Comprehensive Restoration Plan
CRSM	Coastal Storm Risk Management
DASC	Disaster Assistance Service Centers
DCAS	Department of Citywide Administrative Services
FDNY	Fire Department of New York (city)
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GMP	General Management Plan
HER	Hudson Raritan Estuary
HRE-CRP	Hudson-Raritan Estuary Comprehensive Estuary Plan
JFK	John F. Kennedy
NFIP	National Flood Insurance Program
NFWF	National Fish and Wildlife
NPCC	New York City Panel on Climate Change
NPS	U.S. National Park Service
NYC EDC	New York City Economic Development Corporation
NYC OEM	Office of Emergency Management
NYC DEP	New York City Department of Environmental Protection
NYC DOH	New York City Department of Health and Mental Hygiene
NYC DOT	New York City Department of Transportation
NYC DPR	New York City Department of Parks and Recreation
NYC OEM	New York City Office of Emergency Management
NYC SBS	New York City Department of Small Business Services
NYC	New York City
NYPD	New York (City) Police Department
NYRCR	NY Rising Community Reconstruction
NYS DEC	New York State Department of Environmental Conservation
NYS DOS	New York State Department of State
NYS	New York State
SIRR	Special Initiative for Rebuilding and Resiliency
USACE	U.S. Army Corps of Engineers
USDOI	U.S. Department of the Interior
VFD	Volunteer Fire Department
WHBVFD	West Hamilton Beach Volunteer Fire Department
WWTP	Waste Water Treatment Plant

