STATE OF NEW YORK

COMMUNITY DEVELOPMENT BLOCK GRANT

DISASTER RECOVERY (CDBG-DR) PROGRAM

SUBSTANTIAL AMENDMENT NO. 16

Approved by HUD August 1, 2017

List of additions to: NEW YORK STATE ACTION PLAN INCORPORATING AMENDMENTS 8-14[1]

In sections: Updated Impact and Unmet Needs Assessment, NY Rising Housing Recovery Programs, NY Rising Infrastructure Program, and Rebuild by Design Projects.

Summary:

Action Plan Amendment 16 (APA 16) will address the following items:

A. *Updated Impact and Unmet Needs Assessment:* Changes made to the State's impact and unmet needs assessments, updating previous analyses provided by New York State.
B. *Housing Optional Relocation Assistance:* Clarification of benefits offered by the State.
C. *Covered Infrastructure Project:* The State is providing information about the Roberto Clemente State Park Shoreline and Park Improvements project, in accordance with covered project requirements, as the project's budget now exceeds $50 million.
D. *Rebuild by Design Project:* Per HUD requirements, a second Action Plan Amendment for the Rebuild by Design (RBD) Living with the Bay project which identifies updates to the project.

Changes to programs currently in the Action Plan are indicated in red text. New items are identified as such in their respective 'Description of changes' sections.

[1] APA15 submitted for HUD approval 5/5/17.

A. Updated Impact and Unmet Needs Assessment

Description of changes: Changes made to the State's impact and unmet needs assessments for Rebuild by Design, updating previous analyses provided by New York State.

From page 43 of the New York State Action Plan:

Rebuild By Design Unmet Needs

As noted in the October 16, 2014, Federal Register Notice, HUD allocated a portion of the funds for each awarded RBD project – Living Breakwaters: Tottenville Pilot and Living with the Bay: Slow Streams. The Notice requires grantees to identify any potential gap or shortfall in the RBD funding and provide a strategy and description of funds anticipated to be generated or secured in leveraging the CDBG-DR allocation for RBD project completion as well as any additional CDBG-DR funds the grantee anticipates dedicating to the RBD project. Based on the estimated budgets provided in the RBD plans, the State identified a total preliminary funding gap of $13.1 million for the Living Breakwaters project on Staten Island. The State is currently undergoing a two pronged approach to review and fill this gap.

First, the State is analyzing the budgets provided by the RBD teams and calculating any additional planning and program delivery required to fully execute the project and meet the requirements set out by HUD. The planning and scoping through the environmental review process will help shape the needs of the project not outlined in the current plan.

Once a firm cost for the project is clear, the State will begin to execute the strategy outlined in this APA to leverage funds to fill the gap left in the budget. As the State moves through the leveraging process, the State will reassess the project as needed to identify areas where funding is secured and where funding gaps still remain. The State will work together with stakeholders and federal partners to ensure the strategies in place lead to successful implementation of the project.

Having passed the 30% design phase, the Living Breakwaters project's total budget is now estimated to cost $75.5 million, resulting in a funding gap of $15.5 million.

The State has identified no unmet need for Living with the Bay. As the Living with the Bay project proceeds through the design phase, the State will monitor the project's budget to reassess unmet needs. The State will undertake the leveraging process outlined in this APA for any unmet needs identified in the future.

As a result, the State includes a $15.5 million dollar gap in its broader estimate of remaining infrastructure needs (Table 28).

TABLE 28: UNMET NEEDS FOR THE STATE'S 2 RBD PROJECTS

RBD Project	Total Project Cost	October 16th 2014 Allocation	Unmet Need
Living with the Bay	$125.0	$125.0	$0
Living Breakwaters	$75.5	$60.0	$15.5
Total	**$200.5**	**$185.0**	**$15.5**

Source: Programmatic Data

B. Housing Optional Relocation Assistance

Description of changes: The change streamlines and simplifies the Optional Relocation Program's assistance for moving and storage expenses, temporary rental assistance, and lot rental assistance.

From page 55 of the New York State Action Plan:

Optional Relocation Program

Eligible Activity: 24 CFR 570.606(d)

National Objective: Low- and Moderate- Income or Urgent Need

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Applicants: Eligible applicants of the NY Rising Homeowner Recovery Program whose manufactured home was damaged during Tropical Storm Lee, Hurricane Irene, and/or Superstorm Sandy.

Program description:

The NY Rising Homeowner Recovery Program replaces damaged manufactured homes with a new manufactured home in a location outside of the 100-year floodplain and provides for program-sponsored construction support. In order to meet this Program objective, many applicants are in need of additional assistance that was not included in previous Action Plan Amendments. As such, applicants to the Program will be eligible for one or more of the following types of relocation assistance:

1. **Relocation Moving Assistance**: Provided for applicants requiring assistance to pay for moving expenses from the damaged property to either a new, reconstructed, or repaired Manufactured Home Unit (MHU), to temporary housing, or both. Moving assistance will be based on the lesser of the actual costs of the move or the moving schedule established by FHWA, the lead agency who sets moving rates to comply with the Uniform Relocation Act (Described in FR44182[2]).
2. **Relocation Housing Payment**: Provided for applicants requiring temporary lodging from the time of demolition or the commencement of rehabilitation of the storm-impacted manufactured home to the time where the Program conducts a successful final inspection of the newly installed or rehabilitated MHU. The relocation housing assistance payment will be based on lodging costs incurred, but not to exceed the maximum GSA Per Diem rates for lodging as described in Federal Travel Regulation and Related Files[3] with rates updated on the GSA website[4].
3. **Lot Rental Assistance:** Provided for applicants whose damaged property is in the 100-year floodplain, but whose new manufactured home will be located elsewhere on a lot outside of the floodplain, lease payments for the new lot from the time that the purchase agreement for the new manufactured home has been signed until the time where the Program conducts a successful final inspection of the newly installed or rehabilitated MHU.

Storage Assistance: Provided for applicants whose personal property must be stored during the period of relocation for applicants relocated from their storm-damaged manufactured home or who required relocation for program-sponsored construction work.

[2] https://www.gpo.gov/fdsys/pkg/FR-2015-07-24/pdf/2015-18159.pdf
[3] https://www.gsa.gov/portal/content/102886?_sm_au_=iVV41qQk1QF7M4J5#FTRAmendmentsFederalRegister
[4] https://www.gsa.gov/portal/content/104877

C. Covered Infrastructure Project

Description of changes: The State of New York is providing a new section about the NY Rising Infrastructure Program's Roberto Clemente State Park Shoreline and Park Improvements project, in accordance with covered project requirements.

From page 92 of the New York State Action Plan:

Covered Infrastructure Project

Activity Name: Roberto Clemente State Park Shoreline and Park Improvements

Eligible Activity Type: Public facilities, reconstruction/rehabilitation of a public park

National Objective: Low- and Moderate-Income

Eligible Activity: 105(a)(2) Public Facilities

Program Description: Roberto Clemente State Park was severely impacted by Superstorm Sandy when a storm surge topped the park's bulkhead and flooded the pool and park buildings. Three feet of water inundated the park's fields and plazas, while 13 inches of water found their way into the main building. The bulkhead and electrical infrastructure were extensively damaged, and the natural shoreline along the park's northern edge suffered severe erosion. As the floodwaters receded, soil under the concrete esplanade was washed away, causing the concrete sidewalk to fail in several places, jeopardizing the esplanade and the bulkhead's structural integrity. The esplanade has been closed since the storm and will not reopen until the bulkhead is replaced.

Due to pre-storm deterioration of the bulkhead, FEMA denied funding for all but approximately $1.5 million of the costs of the project. Similarly, the proposed project was deemed ineligible to receive HMGP funding, even though billions in State and private investment are protected by the bulkhead and shoreline. As a result, the park was determined to have significant unmet recovery need, and to be a suitable candidate for CDBG-DR funding. The park serves a broad and diverse user base across the five boroughs and Westchester and Rockland counties.

In 2014, it was expected that the budget for the project, covered by CDBG-DR grant funds, totaled $46.5 million. An additional $5 million was subsequently identified, associated with the project's North End Enhancement and Resiliency component, resulting in a total project allocation of $51.5 million. This project is now considered a Covered Project because the budget exceeds $50 million.

The proposed project will involve the following six components:

1. Redesign and reconstruction of the bulkhead: Involves the replacement of 2,195 linear feet of existing steel sheet pile bulkhead and reconstruction of the existing esplanade adjacent to the bulkhead. Both the bulkhead and esplanade have been designed to withstand impacts from winds, currents, and surges associated with future storm events.
2. Redesign and repair of the esplanade: The newly installed steel sheet piling will be protected from corrosion through resilient design techniques to extend the life of the bulkhead from 30 to 50 years.
3. Creation of a tidal pool area adjacent to the lower plaza: The structure of the tidal pool will employ a "green infrastructure" design to lessen wave impact and include a rehabilitated bulkhead and embankment leading up to the plaza level. The embankment, being above the low tide line, will be in a lower velocity zone and will be protected by wave attenuators within the tidal pool.
4. Lower Plaza rehabilitation and greening: The existing impervious surface of the plaza will be replaced with plantings and pervious pavers that will collect storm water run-off to allow for a more ecologically sustainable and storm resilient design.
5. North Shoreline Revetment: The shoreline will be stabilized to prevent erosion and be designed to be more accessible to the public.

6. North End Enhancement and Resiliency: Implementation of improvements to the multi-purpose athletic field, construction of a Tee Ball-configured athletic field, construction of a plaza area adjacent to existing baseball field, and upland improvements around new athletic fields including improved sub-grade drainage infrastructure and bio-retention areas.

Additional complementary projects are also taking place at Roberto Clemente State Park in response to the damage caused by Superstorm Sandy. None of these projects received CDBG-DR funds from GOSR, and to avoid any duplication of benefits, GOSR and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) coordinate closely to ensure that all recovery, resiliency and mitigation projects at Roberto Clemente State Park are compliant with relevant regulations.

1. Clean Water/Clean Air State Bonded funds - $790,000: Funds were used to pay for the first round of soft costs that OPRHP expended on a term consultant contract for the design of the bulkhead, esplanade and tidal pool projects.
2. FEMA Public Assistance – $1,500,000: Funding will be used to cover costs associated with the design and construction of part of the esplanade, repair of the boat ramp, and the replacement of 350 linear feet of benches in the park.
3. City of New York – $1,000,000: These funds will be used by OPRHP to pay for costs related to the construction of improvements to the Upper Esplanade.
4. NY Works Funding (FY15-16) – $300,000: These funds will be used to pay for the balance of costs related to the construction of improvements on the Upper Esplanade.
5. Bronx Borough President – $500,000: These funds are for the improvement of the Lower Plaza.
6. Major League Baseball (MLB) Funding – $2,000,000; NY Works Funding (FY15-16) – $500,000; NY Works Funding (FY18-19) – $2,300,000; Harlem RBI – Operations and maintenance: With this assemblage of funds, State Parks will outfit the north end athletic fields and surrounding areas to support the new MLB Youth Academy at Roberto Clemente State Park, which will serve as a central location for Harlem RBI youth programs in the Bronx and Upper Manhattan.

Geographic Eligibility: The project is located within Bronx County, which is one of the most impacted and distressed counties identified in the Disaster Relief Appropriations Act 2013, and in which a minimum of 80% of New York State's CDBG-DR allocation must be expended as per the November 18, 2013 Federal Register Notice. Owned and maintained by the State of New York, Roberto Clemente State Park is a 25-acre urban park serving 1.3 million visitors annually. Located in the Morris Heights neighborhood of the Bronx, the park has 3,700 linear feet of waterfront along the Harlem River. The majority of the shoreline is a hard-edged 2,195 linear foot bulkhead which was constructed in 1971 and serves as the sole coastal defense for the built infrastructure of the Park. A portion of the shoreline is natural and undeveloped. The Harlem River is a Federal navigable waterway and the area of the park has been rated as an "extreme hazard zone" by the NYS Department of State, signifying that the park and its surroundings are at high risk of flooding, erosion, and other factors due to storm events, climate change and sea level rise.

Use of Impact and Unmet Needs Assessment: The damage to, and loss of use of Roberto Clemente, was recognized in the State's post-Sandy assessment of unmet recovery needs. The coastal nature of Roberto Clemente resulted in flooding and erosion caused by storm surges. Additionally, inadequate drainage and filtration capacities compound the effects of flooding, as large volumes of receding water with no easy outlet lead to cracked paved surfaces and uneven playing fields. Repair of Roberto Clemente is consistent with the State's comprehensive risk analysis, as this project aligns with GOSR's strategy to protect and improve vulnerable public infrastructure from future storms.

Following Superstorm Sandy, OPRHP used funds from the State's Clean Water/Clean Air Bond and FEMA Public Assistance to study conditions and design a series of remediations and improvements. The Roberto Clemente State Park Revitalization Plan lays out the damages caused and issues revealed by Sandy's devastation and presents a clear and comprehensive set of recovery and resiliency programs across each section of the park. OPRHP and GOSR worked closely to determine the appropriate modifications to

Roberto Clemente State Park considering the damages it incurred, and coordinated project needs and multiple funding sources to minimize risks from future storms. As a coastal protection feature and a public space in an area desperately in need of both, it was essential to all involved that the park improve both infrastructure and recreational opportunities while including green infrastructure measures wherever possible, prompting the inclusion of the tidal pool and bio-retention improvements.

GOSR's commitment to the project will ensure that, rather than being rebuilt to the same level of protection, Roberto Clemente State Park will be better able to withstand and recover from future flooding and stormwater disasters. Beyond simply allowing for faster and less expensive repairs, this will enable park administrators to create a safer environment and reopen the park more quickly after a disaster – providing benefits to an otherwise underserved community. During normal periods, the project will also improve the parks usability, features, views and visitor experience. The improved flood protection features of the park will enhance the social resilience of the community around the park, before and after any future storm events.

Transparent and Inclusive Decision Process: Since Superstorm Sandy, GOSR and State agencies have engaged the public and elected officials through public notices and comment periods associated with amendments to the New York State Action Plan, meetings of the NY Rising Community Reconstruction Program planning committees, and participation in events and discussions organized by DEC and other entities. Utilizing this three-pronged approach, GOSR enabled an inclusive decision process.

In addition, the full Roberto Clemente State Park Revitalization Plan, including both GOSR-funded and non-GOSR-funded components, was presented to the public at an information meeting on June 19, 2014. Public comments and responses were recorded and posted online. Governor Cuomo made public announcements about the program and updated the public on its status on multiple occasions, including June 6, 2014 and September 23, 2015. The State's widely publicized *NY Parks 2020* plan also includes many of the components ultimately included in the Revitalization Plan. GOSR and OPRHP have also consistently engaged and informed local residents and elected officials through events and public notices at the park. OPRHP and its contractors have also participated in local outreach events to engage MWBE and Section 3 firms.

Long Term Efficacy and Fiscal Sustainability: The project is designed to make the park more resilient to changes to the local environment and Harlem River ecosystem. Should storms and floods become more frequent and pronounced – as predicted by many climate models – the strengthened built shorelines, revitalized natural shoreline, and improved drainage and bio-retention features of the park, will help achieve long term benefits. Taken together, these improvements will reduce the storm surge vulnerability of the park and the neighborhood behind it; prevent catastrophic water damage to surface features and fields, slow and filter runoff into the Harlem River; and allow the park to return to use as a public amenity more quickly following a storm or flood.

To monitor the long-term efficacy and fiscal sustainability of the project, GOSR has executed a memorandum of understanding with OPRHP to ensure that all HUD regulations and requirements, including covered project elements, will be met throughout the life of the project. GOSR will continue to engage in technical assistance and monitoring of Roberto Clemente State Park through the use of GOSR monitoring staff and CDBG-DR grant consultants. This will ensure that ongoing and future work phases are reviewed in turn and with appropriate consideration given to the effects of non-GOSR-funded work at the site. OPRHP is required to document long term operations and maintenance plans for the park, and in selecting specific interventions has taken steps to maximize the use of existing resources and personnel available. By gap-filling important improvements at the park through other funding sources, and with the development of a robust public private partnership, GOSR and OPRHP are taking the proper steps to ensure financial sustainability and long term efficacy.

Environmentally Sustainable and Innovative Investments:

Roberto Clemente is a 25-acre park with 3,700 linear feet of waterfront along the Harlem River. Approximately 2,000 linear feet of the waterfront is bulkheaded and the remainder consists of unstructured revetments and rip rap shoreline. The Roberto Clemente State Park bulkhead provides coastal defense for extensive park infrastructure – the adjacent River Park Towers residential complex that is home to 5,000 residents, two public school buildings serving 650 elementary and middle school students, and a major power transmission line serving the Bronx. As such, it is an essential component to protecting lives and infrastructure from the impacts of severe storms, flooding, wave and tidal action.

Roberto Clemente experienced three feet of flooding during Superstorm Sandy. Following the storm, inspection of the 40-year-old bulkhead revealed severe corrosion of the steel sea wall and loss of backfill beneath the park esplanade. The condition has led to the closing of the esplanade to pedestrians and emergency vehicles that use it to respond to emergencies at the River Park Towers complex or on the Harlem River. Along the Park's shoreline north of the bulkhead, the unstructured revetment also experienced significant erosion, with the shoreline receding closer to the adjacent recreational facilities. In addition, electrical infrastructure and lighting throughout the Park, including in the Park's Lower Plaza and esplanade, were destroyed by the salt water flooding.

The project will enable State Parks to rebuild the bulkhead with a more resilient design and enhance the adjacent esplanade area. The redesigned waterfront will provide enhanced flood protection, storm resilience and green infrastructure. The outdated esplanade will be rehabilitated into a more park-like setting, featuring new plantings and a scenic 9,000-square-foot inter-tidal area to provide natural habitat and absorb heavy rainfall. The funds will also stabilize 1,400 feet of eroded shoreline located directly north of the bulkhead, protecting park facilities including baseball fields and recreational fields. This project will provide for a resilient shoreline and park facilities, and restore tidal wetlands that help mitigate floodwaters. Refurbished north end fields will feature green infrastructure including bio-retention areas for stormwater management. A total of 102 trees, all species indigenous to the region, will be planted at the completion of construction, many of which will replace invasive species removed as part of clearance required for construction and realignment of park features. The tidal pool and enhanced natural shoreline will both provide for growth of the native landscape and the habitat for wildlife. As such, this project aligns with the President's Climate Action Plan.

Regional Coordination Working Group: GOSR will continue to work with the Sandy Regional Infrastructure Resilience Coordination Group (SRIRC) to ensure that this project maximizes the effectiveness of its use of resources and collaboratively recovers from these storms while preparing the region for future resiliency.

Monitoring and Compliance: The Roberto Clemente State Park project will be subject to monitoring and will be required to comply with all necessary rules and regulations, as is the case for other GOSR subrecipients.

D. Rebuild by Design Projects

Description of changes: In accordance with the requirements of the August 15, 2016 *Federal Register* Notice, the State of New York is submitting a second substantial APA that includes a detailed description of the Living with the Bay Rebuild by Design project. Additional APA's for Living with the Bay Rebuild by Design project will be submitted at a later date. Minor edits made to the Living Breakwaters components of the 'Overall Rebuild by Design Requirements' subsection.

From page 94 of the New York State Action Plan:

Rebuild by Design Projects

After Superstorm Sandy's devastating sweep over the northeastern part of the United States, President Obama created the Superstorm Sandy Rebuilding Task Force (the Task Force) with the purpose to redesign the approach to recovery and rebuilding through regional collaboration and emphasis on the growing risks of climate change. The Task Force partnered with HUD to initiate the Rebuild by Design (RBD) competition, which was devised to invite the world's most talented designers and engineers to bring their expertise in flood mitigation and coastal resiliency to Sandy-impacted regions. The six RBD competition finalists were announced on June 2, 2014. Two of the six projects were awarded to New York State to implement.

TABLE 36: NEW YORK STATE AWARDED PROPOSALS

Project	Location	Total Project Cost	CDBG-DR Allocation
Living Breakwaters: Tottenville Pilot	Richmond County	$75,500,000*	$60,000,000
Living with the Bay: Slow Streams	Nassau County	$125,000,000**	$125,000,000

**At 30% design; **In final scoping and preliminary design phase*

The goals of New York State's RBD implementation plan are to make communities in Richmond County (Staten Island) and Nassau County (Long Island) more physically, economically, and socially resilient in the face of intense storm events. Both proposed projects represent innovative, flexible, and scalable interventions that could be replicated in other parts of the State, nation, and globe. Each project must undergo a rigorous environmental review and permitting process, which will include the assessment of potential alternative designs and/or projects.

Monitoring plans for large scale projects such as RBD must be developed in coordination with federal and State permitting agencies, as well as following a rigorous data collection and data review program during design. The monitoring plan strategy for Living Breakwaters: Tottenville Pilot and Living with the Bay: Slow Streams is described in the project section below.

From page 100 of the New York State Action Plan:

Living with the Bay: Slow Streams

National Objective: Urgent Need and Low- and Moderate- Income

Eligible Activity: Rebuild by Design

CDBG-DR Allocation: $125,000,000

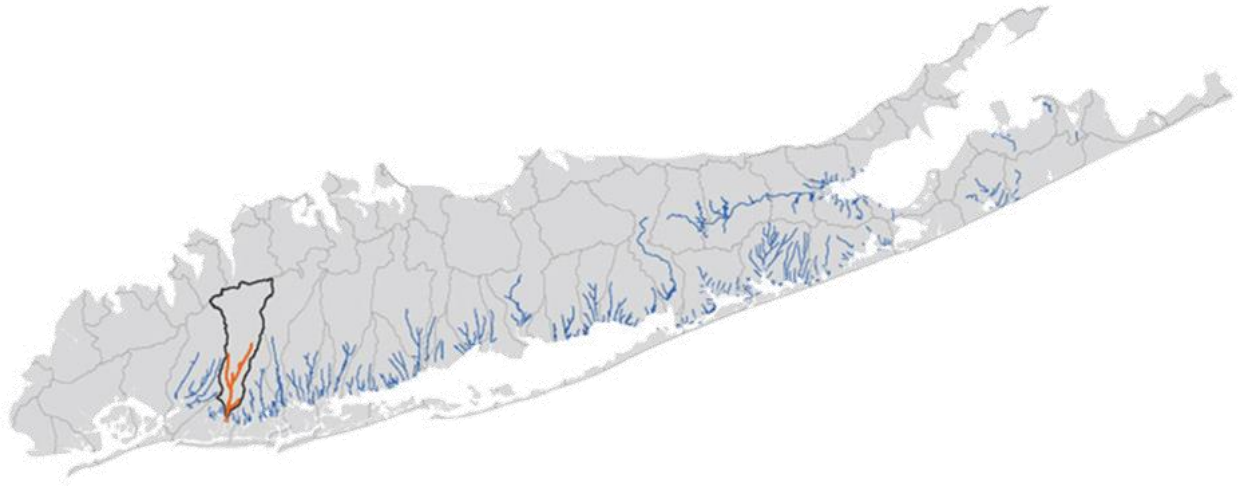
Project Description: Based in Nassau County, Long Island, the $125 million Living with the Bay (LWTB) RBD project aims to increase the resiliency of communities along the Mill River project area and around the South Shore Back Bay.

The project proposes to mitigate damage from tidal storm surge by strategically deploying protective measures such as constructed marshes; manage stormwater in order to mitigate the damages from common rain events; as well as improve the water quality in the Mill River and the bay. As part of LWTB, green and grey infrastructure improvements will be made along the Mill River project area, thereby benefitting the Nassau County communities of Town of Hempstead, the hamlets of Oceanside and Bay Park, the Village of Malverne, Village of Rockville Center, Village of Lynbrook, Village of East Rockaway, and the Village of Hempstead. The project aims to decrease the effects of tidal inundation, increase coastal protection, address stormwater runoff into Mill River and create publicly accessible greenways that connect the South Shore's communities. The core principles from the winning RBD proposal that this project will address are as follows:

- Flood defense,
- Ecological restoration,
- Access and urban quality, and
- Social resiliency.

The LWTB project includes a suite of resiliency interventions for Nassau County communities surrounding the Mill River watershed; an environmentally degraded north-south tributary. As one of the primary watersheds on Long Island, the entire Mill River watershed is comprised of approximately 35 square miles of land area and spans many municipalities within Nassau County. Figure 6 shows the extent of the Mill River watershed across Long Island.

FIGURE 7: MILL RIVER WATERSHED



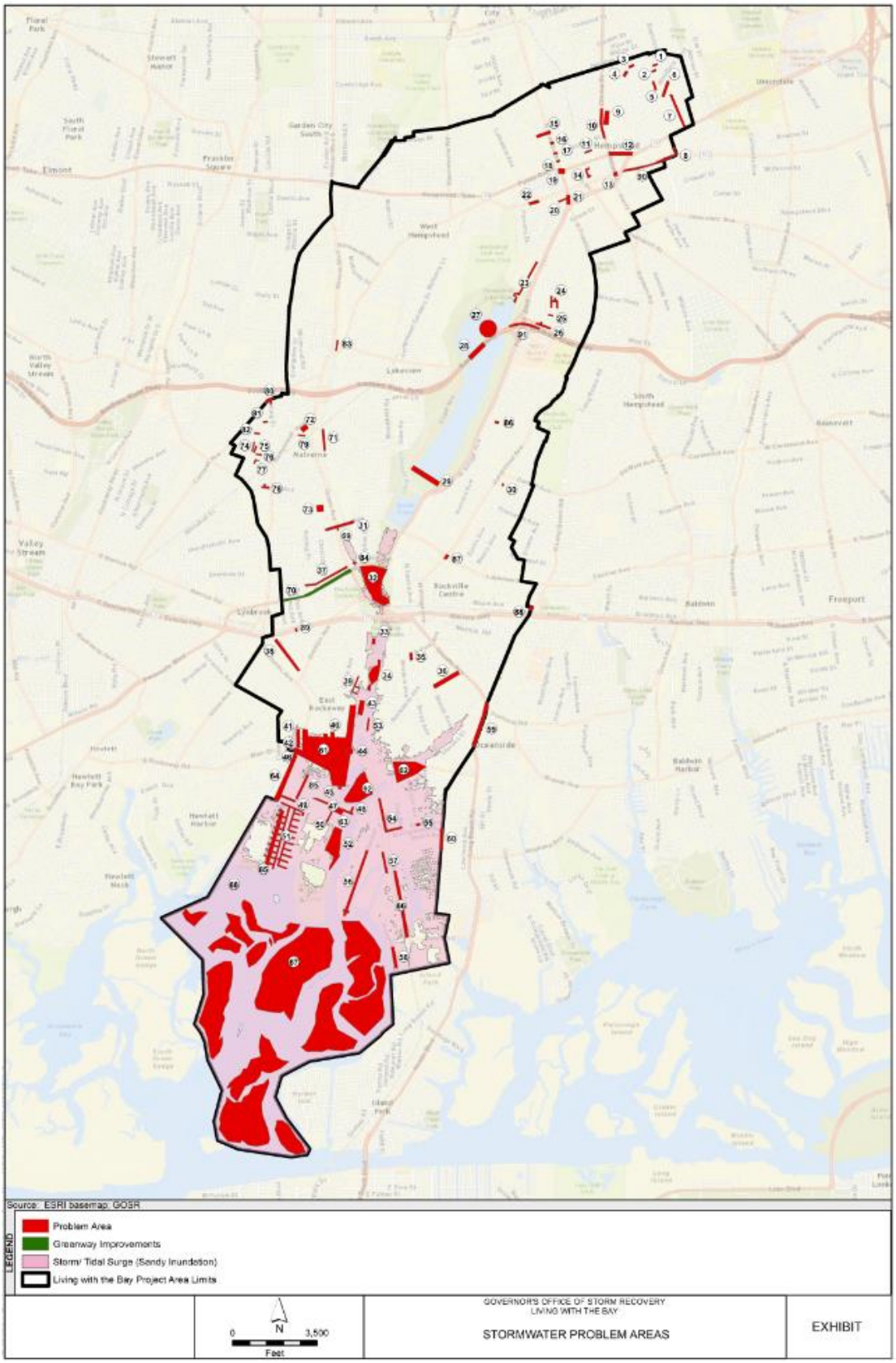
Like all tributaries in the region, the Mill River is a product of the glaciers that formed Long Island. For thousands of years, the Mill River flowed unimpeded into the South Shore Estuary (Back Bay), establishing a vital link between marine and upland habitats. Migratory fish moved into and out of the river, providing an important forage source for countless species and helping to drive the region's coastal ecosystem.

Beginning in Colonial times, the flow of the Mill River was harvested to power gristmills. The original dam at Smith Pond was constructed to power a mill. Later, in the late 19th Century, significant impoundments were established in the Mill River's upper reaches as part of the Brooklyn Water Works project, an elaborate effort to satisfy Brooklyn's rapidly growing water needs. These impoundments became the basis of Hempstead Lake State Park. As communities emerged, stormwater and sewer systems developed with outflow pipes entering the river and roads with rail lines crossing the river.

With increasing populations and development, Mill River communities have been more susceptible to flooding. This became most evident during Superstorm Sandy, when Nassau County was hit with rain and a tidal surge of up to 18 feet. Public and private infrastructure along the river were damaged including more than 7,600 homes, as well as bridges, businesses, parks, roads, schools, and a wastewater treatment facility at the entrance of the bay.

Inland communities in the area regularly experience flooding due to heavy rainfall (such as during Hurricane Irene and other more frequent storm events) exceeding the carrying capacity of the existing stormwater infrastructure. Frequent flooding has been identified by the Town of Hempstead, Village of Malvern Village, the Hempstead Public Housing Authority, and other locations within the project area. As identified in Figure 7, the red areas indicate problem areas and the pink areas show inundation during Superstorm Sandy.

FIGURE 8: LWTB AREAS OF FLOODING



Experience from Sandy and other storms has shown that the project area is primarily susceptible to flooding and property damage due to the following:

- Tidal storm surge during major storm events (as evident from Superstorm Sandy);
- Inundation by surface waters due to poor drainage during storm events;
- Coastal changes associated with erosion; and
- Other coastal changes associated with relative elevation changes (e.g., land/marshland subsidence and/or sea level rise).

The original LWBT proposal intended to address these issues through development of the following core project elements:

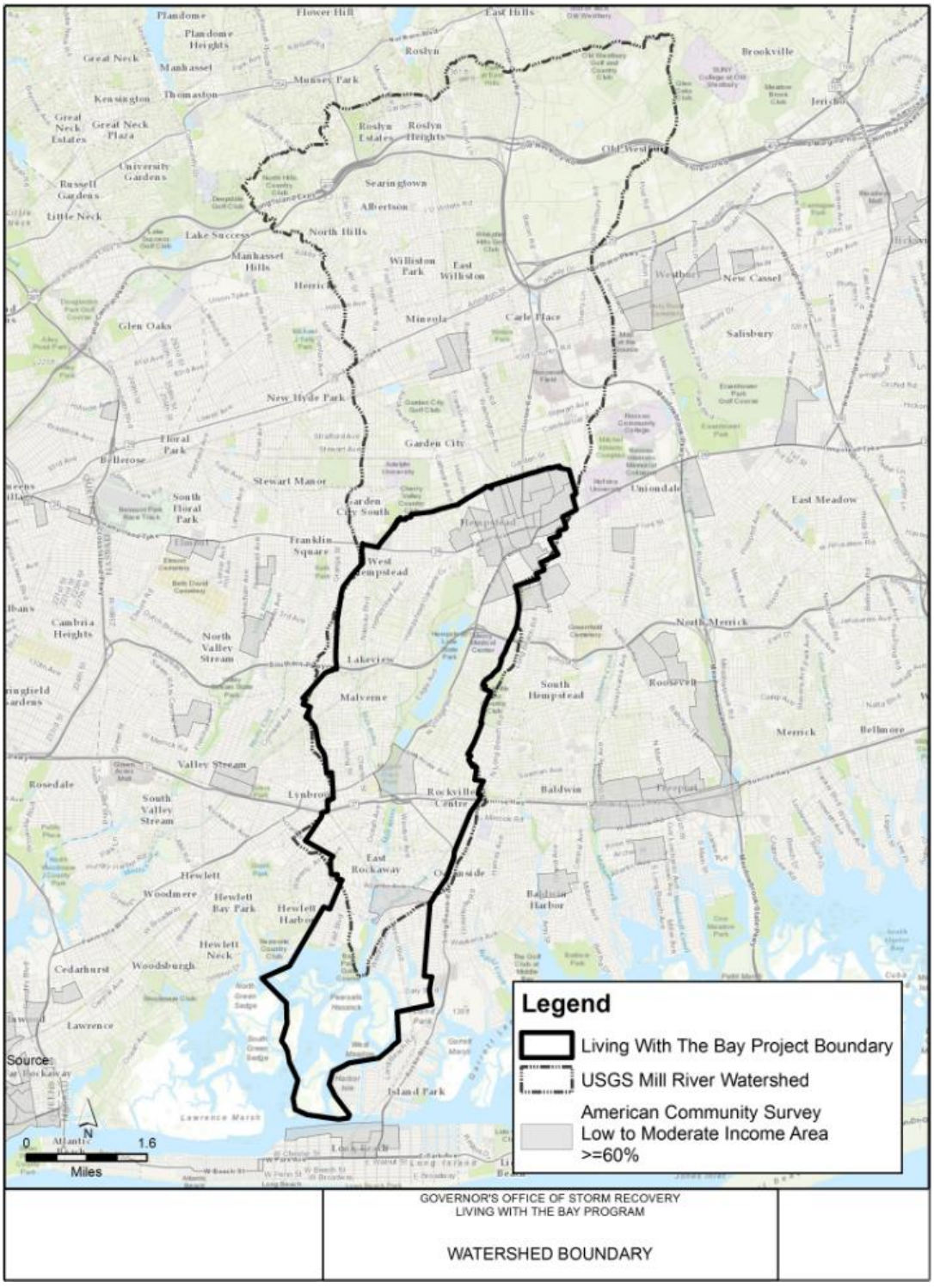
- A sluice gate located downstream to reduce risks from storm surge and to manage the capacity and velocity of waters within the Mill River;
- A blue/green retention park along the western edge of the Mill River intended to increase storage capacity and provide potential water filtration benefits;
- Recommendations for green and grey infrastructure improvements (bioswales, cisterns etc.) in existing public right of ways throughout the Mill River watershed to increase stormwater retention, abate nuisance flooding, and provide water quality improvements from existing stormwater runoff;
- Additional hydraulic capacity at underutilized properties by developing a public park with a retention pond and reed/sand filters; and
- Street redesign to store and filter more stormwater run-off.

Upon GOSR's receipt of the project in November 2014, the State commenced a detailed review of the original LWTB concept to assess its feasibility and potential implementation challenges. The following conclusions were reached during this exercise:

- The new sluice gate had significant implementation obstacles due to the unfunded upland tie-ins necessary to make the structure an effective storm surge barrier. These upland tie-ins would have likely consisted of significant and expansive road raising projects in and throughout the existing communities. In addition to significant funding gaps, the sluice gate and road raisings would offer protection to the communities to the north, but would not prevent and potentially exacerbate surge effects in the communities to the south of the structure. The new grey infrastructure necessary for the sluice gate's effectiveness would have also had significant environmental impacts on the riverine habitat and its surrounding communities, including wide scale construction impacts associated with road raisings. The original design did not incorporate full environmental costs and ownership of land. Based on this analysis, the State decided to evaluate alternative water management strategies, including rehabilitating existing grey infrastructure as opposed to new grey infrastructure, employing wetland buffer restoration as opposed to anthropogenic barriers, and identifying strategies that offer protection along with ecological habitat improvements.
- Projects that increased stormwater capacity and provided social and recreational co-benefits, such as the blue/green water park, were worthy of further study. However, the concept's potential applicability should be expanded to include water capacity and water management projects in the northernmost, upstream reaches of the river and its source waters. This includes several dams, ponds and a reservoir, as well as the largest State public park in the region, Hempstead Lake State Park, which has Long Island's only high hazard dam and the largest publicly accessible forest in southern Nassau County.
- Projects such as bioswales and other green technologies were worthy of further consideration, but should be implemented in accordance with an overall stormwater management plan for the watershed to ensure that the investments in these technologies would be cost-effective, meet uniform performance criteria, and operate in the most coordinated manner feasible.
- Greenways should be included in the project, based upon community input and feasibility.

- The original proposal's geography encompassed the entire Mill River Watershed, as shown in Figure 6, covering more than 35 square miles. Based on further analysis and limited funding, GOSR refined the project area. The refined project area was established based on the watershed of the Mill River, consideration of political boundaries, and consideration of other projects being undertaken in the watershed, to potentially leverage this project, and/or avoid duplication of effort.

FIGURE 9: LWTB PROJECT AREA



Upon conclusion of the State's review, as set forth in this action plan amendment, the project has been amended to include elements that, to the greatest extent practicable and appropriate, comport with the original RBD proposal. The amended project is a combination of new and originally proposed interventions that meet the objectives of the original concepts, and achieve their benefits through feasible and implementable, less impactful and more ecologically beneficial methods.

To assist in achieving original proposal objectives with the most effective methods possible, the State is preparing a Resiliency Strategy for the Mill River project area. The strategy will provide an overview of problems within the project area to inform prioritization of potential solutions. Based on information collected to date, documented flooding problems in the project area include poor to inadequate drainage collection and conveyance capacity, high tailwater conditions deeming the existing stormwater systems inadequate for critical storms, and overtopping surge events such as Superstorm Sandy that inundated more than 3,000 residential properties. Other documented problems include habitat and shoreline degradation and decreased water quality from the effects of untreated urban runoff. The Resiliency Strategy will include proposed projects focused on addressing the problems with the anticipated sea level rise impacts accounted for in the analysis. The Strategy will strategically prioritize project components with specific timeframes and costs for planning, design, permitting, procurement, construction, and project closeout. The strategy will also provide detailed descriptions of final selected projects that address the problems listed above, along with projects that improve the public's access to the waterfront and educate the public on stormwater and environmental management. The outcome of the Resiliency Strategy will be a program of thematically consistent, prioritized, impactful and constructible projects consistent with the goals set forth in the original RBD LWTB project proposal.

LWTB has developed a series of projects to address a variety of flooding sources throughout the project area in a comprehensive, practical and feasible manner. The revised project is organized into seven focus areas, each tied to one of the four LWTB objectives. Working collaboratively with community members, municipal leaders, and not-for-profits, GOSR developed the following LWTB objectives:

1. Preserve quality of life in the community during natural disasters, emergency events, and tidal inundation.
2. Increase community resilience and improve drainage infrastructure to address the impacts of rising sea level and increased frequency and intensity of extreme weather events.
3. Incorporate environmental and water quality improvements within the projects.
4. Create and improve public access to the waterfront – lakes, river and bay.

LWTB Objective Number 1: Preserve quality of life in the communities during natural disasters, emergency events, and tidal inundation.

- **Focus area – Coastal Marshland Restoration**: LWTB will restore, protect and/or enhance marshlands in the Back Bay at the mouth of the Mill River. The project will be designed to slow tidal storm surge velocity and enhance habitat for native species, including birds, fish, and benthic species.

LWTB Objective Number 2, 3 and 4: 2) Increase community resilience and improve drainage infrastructure to address the impacts of rising sea level and increased frequency and intensity of extreme weather events; 3) Incorporate environmental and water quality improvements within the projects; 4) Create and improve public access to the waterfront – lakes, river and bay.

- **Focus area – Hempstead Lake State Park (HLSP) Improvements**: LWTB will address stormwater storage capacity management by rehabilitating and enhancing an existing 100+ year old dam located at HLSP. As an instrument for flood mitigation, the dam (with an operating gatehouse) will provide for reduced and delayed peak flows to downstream water bodies and communities during extreme weather events. This project will have several significant co-benefits, such as reducing the risk posed to downstream communities by dam failure and rehabilitation of

this historic structure. Other improvements at HLSP, including wetland rehabilitation and dam repairs in the Northern Ponds area, will further enhance stormwater flow attenuation, improve water quality in the watershed by removing contaminants in urban run-off and provide enhanced habitat and new, expanded passive recreational opportunities. The HLSP improvements will also include a new facility to be used for education and as a coordination center during emergencies, as well as improved waterfront access at various locations, further improving recreational opportunities in this critical State park.

- **Focus area – Smith Pond Drainage Improvements**: LWTB will improve water quality, enhance recreation, restore the ecological system to promote native aquatic species and expand the hydraulic surge capacity of the pond, by reconfiguring the bottom of the pond. Sedimentation has reduced the hydraulic capacity of the pond to absorb stormwater first-flushes and altered the ecology to favor invasive species. Project elements anticipated include shoreline stabilization, recharge basin, permeable pavement parking lot, a fish ladder, and either rehabilitating or replacing the existing weir. Dredging, wetlands restoration, landscaping (including tree planting) and construction of greenway paths will also be evaluated.
- **Focus area – Stormwater Retrofits**: The State will strategically install green infrastructure including, but not limited to: drywells, bioswales, permeable pavement, tree planting, and select bioretention and infiltration interventions throughout the project area.

LWTB Objective Number 4: Create and improve public access to the waterfront – lakes, river, and bay.

- **Focus area – East Rockaway High School Hardening**: LWTB will install a bulkhead and living shoreline to reduce erosion and flooding in the athletic fields and parking areas. The project will also consider opportunities for stormwater storage, increased public waterfront access, backflow prevention devices and a generator to support the school as an emergency shelter during disasters.
- **Focus area – Greenway Network**: LWTB will create greenways connecting communities with sections of the project area, including north of HLSP, throughout HLSP, south to Smith Pond and East Rockaway High School. The State will evaluate connecting the greenway further south to Nassau County Bay Park.
- **Focus area – Social Resiliency Programs**: LWTB will work with relevant community organizations and/or educational institutions to develop public education programs. These education programs will include environmental and historical education for schools and the public. LWTB will also look to develop job training programs with a focus on green infrastructure.

Each Focus Area will be designed and certified by a New York State Licensed Professional Engineer. The useful life of the interventions was considered to be 50 years for planning and economic benefit evaluations. However, the capital infrastructure is anticipated to remain in use long past this period.

Focus Area: Coastal Marshland Restoration

A 2016 risk-based comprehensive modeling effort conducted by Lloyds of London/Nature Conservancy evaluated the effects of marsh systems on upland damage during Superstorm Sandy. The report estimated that coastal areas with large marsh systems contributed to a 10% average reduction in property damage within the associated census tracts, with damage reduction benefits in certain areas reaching as high as 29%.

Superstorm Sandy's storm surge rose through the Back Bay and into the mouth of Mill River, flooding over 2,500 acres and 4,000 parcels in the LWTB project area. Nearly 3,300 parcels (80% of the total parcels) were residential properties. Based on research in the marsh areas of the project area, there has been significant loss of salt marsh in the Back Bay that hindered the marsh's ability to attenuate wave action.[5] Human-related impacts, such as upland urbanization and increased boat use have resulted in marsh loss

[5] James Browne, *Impacts on Spartina alterniflora: Factors Affecting Salt Marsh Edge Loss*, 2011, http://search.proquest.com/openview/895393557e4f7d28eb1877da0a30dadb/1.pdf?pq-origsite=gscholar&cbl=18750&diss=y

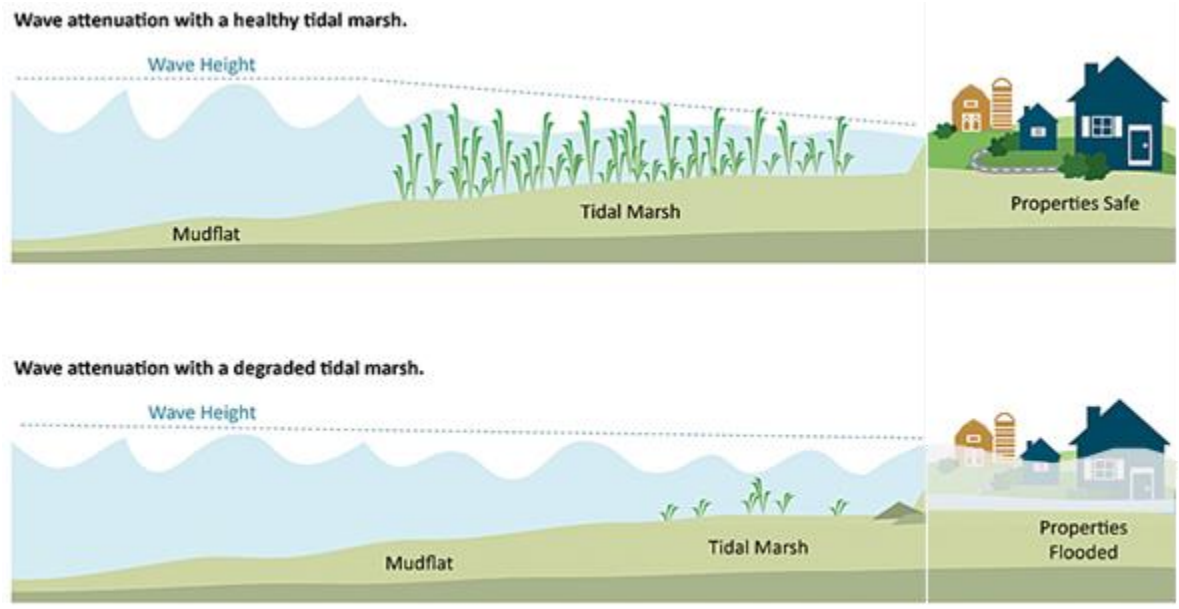
since 1966; although several natural factors can also be correlated with marsh loss within the project area. Environmental conditions such as wind fetch, coastal storm impacts, and tidal flows have all played a role in marsh loss.

Existing marshes in the project area are facing two significant problems that must be addressed if the marshes are to maintain their storm protection capabilities and current natural function:

- Chronic erosion losses at the marsh fringes due to waves and boat wakes.
- Degradation and loss of marsh areas due to the effects of sea level rise.

Reducing the erosion of the marsh fringes and increasing the long-term stability of multiple marsh environments, are key RBD LWTB principals. Restoring the marsh will provide additional wave attenuation, while at the same time resulting in the co-benefit of habitat restoration.

FIGURE 10: DIFFERENCE IN WAVE ATTENUATION WITH AND WITHOUT TIDAL MARSH



Source: Esri ArcNews, "GIS Helps Integrate Coastal Hazard Risk and Sea Level Rise," 2014

Rock sills are a common living shoreline technique for protection of fragile marsh edges. They dampen wave energy that would otherwise erode the unstable marsh fringe area. The sills can be built with an edge to allow the use of dredged material to fill the marsh areas to higher elevations. Planting a diversity of vegetation helps the newly filled areas transition into high marsh habitat; offering improved resilience to changing environmental conditions and future extreme storm events.

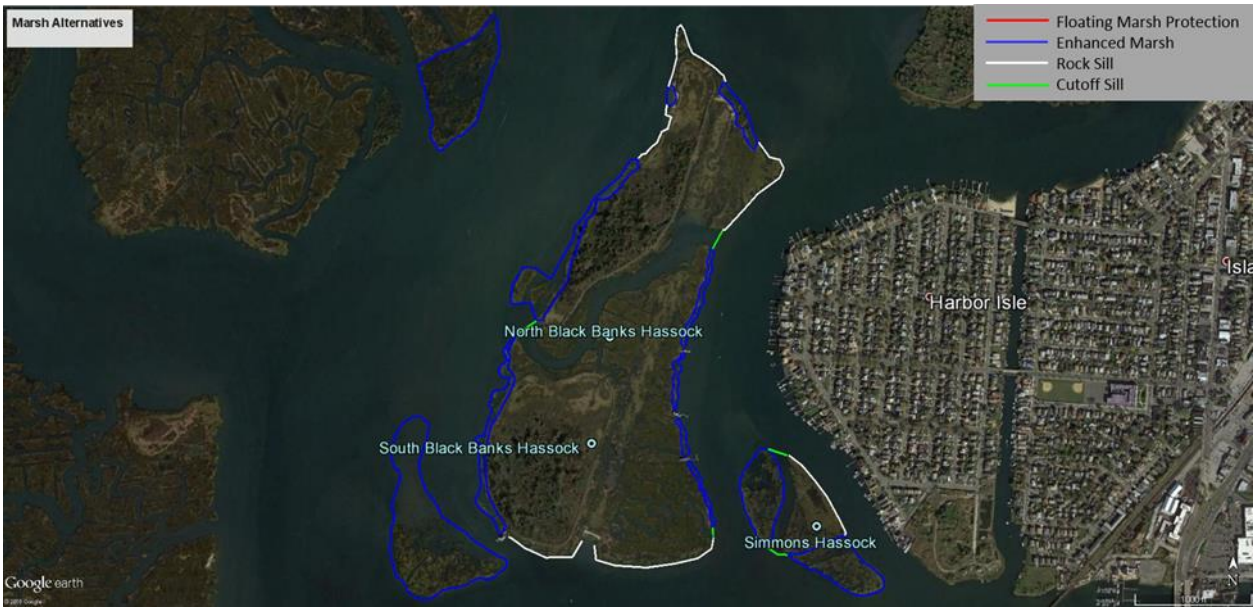
Floating marsh islands are another technique to protect eroding marsh edges. Floating islands are designed to mimic the natural floating marsh systems found in Louisiana and other coastal locations. Marsh plants begin to grow on mats of floating reeds to form a tightly bound mass of vegetation that is not rooted in the bottom of the water body. Artificial floating islands are constructed of durable, recycled plastics and are vegetated with native plant materials. The floating island modules are bound together and the system is anchored immediately offshore of the marsh edge. They dampen wave energy that would otherwise erode the unstable marsh fringe area. This allows the marsh system to maintain its present level of storm surge and wave attenuation.

Fifteen existing areas (with a total area of 26.9 acres) will be preserved by using rock sill with the floating marsh islands. The marshland in these areas will also be enhanced by raising many of the marshlands. Major feeder channels, open water and ponds will be avoided to reduce the impact area and to maintain hydrologic connection for marsh sustainability. There are some open water areas that may be filled with a

preliminary estimate of the post-improvement marsh being approximately 70% tidal flats and 30% open water. At the preliminary conceptual design phase, there are seven areas proposed for the rock sill alternative, totaling 5,572 linear feet (LF) and a total of five areas are proposed for the floating marsh alternative, totaling 6,858 LF.

FIGURE 11: NORTHERN MARSH IMPROVEMENT AREAS

FIGURE 12: SOUTHERN MARSH IMPROVEMENT AREAS



Currently, the estimated budget for this focus area is approximately $15 million. As part of the Resiliency Strategy, described previously, GOSR will identify solutions to advance to full design and construction. Coastal Marshland Restoration is expected to reach 100% design in the second quarter of 2019 with construction expected to take place from the third quarter of 2019 to the third quarter of 2022.

Focus Area: Hempstead Lake State Park Improvements

As the Mill River watershed is an interconnected system, the LWTB project recognizes that both upstream and coastal interventions were required to address two of the largest vulnerabilities faced by surrounding communities during Superstorm Sandy: coastal surge and stormwater flooding. The interventions proposed within HLSP not only address stormwater flooding concerns, but also look to increase capacity and efficiency of the northern end of the system, while simultaneously introducing recreational and educational opportunities for citizens to learn about and connect with their natural environment.

Interventions within HLSP are organized into four sections:

1. Dams, Gatehouse and Bridges
2. Northwest (NW) and Northeast (NE) Ponds
3. Environmental Education and Resiliency Center
4. Greenways, Gateways and Waterfront Access.

Currently, the estimated budget for this focus area is approximately $35 million. The HLSP improvements are expected to reach 100% design in the third quarter of 2017 with construction expected take to take place from the fourth quarter of 2017 through the second quarter of 2019. As a stakeholder and a subrecipient of disaster recovery funds from GOSR, the NYS Office of Parks, Recreation and Historic Preservation (State Parks) is responsible for funding the long-term operation and maintenance of the overall HLSP improvements.

Dams, Gatehouse and Bridges

This section focuses on improvements to the Mill River dams located within HLSP and enhances the function of the dams as a key instrument for flood mitigation. This work also includes design of pedestrian bridges that are part of the adjacent shared-use path system that increase access and connectivity throughout the park.

The NW Pond and dam were constructed in the 1960's around the same time as a large (96" diameter) drainage pipeline was installed through Hempstead to discharge stormwater runoff from the surrounding community into the NW Pond. The dam provided attenuation of peak stormwater flows from the 96" pipe, allowed sediments to settle out of the runoff, and also prevented floatables from reaching downstream into Hempstead Lake. As a result of the dam being breached in 2012, flow through the NW Pond is uncontrolled bringing sediment and floatables into Hempstead Lake.

Modeling has indicated that constructing a new dam, with an appropriate spillway elevation, at the NW Pond will lessen the impacts to the larger Hempstead Lake Dam during a major storm event. A new NW Pond dam will maintain more water within the pond limits, encouraging the growth of wetlands which in turn will provide filtering and enhanced water quality. The dam will help attenuate peak flows from the upstream drainage collection systems allowing for better control of flows in the overall watershed, and flood mitigation. By reestablishing the depth in the pond area, the dam will allow sediment to be filtered out before reaching the downstream waters (especially after the "first flush"), thus enhancing and improving water quality downstream.

Once the NW Pond Dam is in place, flows can be directed downstream of the dam through an open channel and culvert under the Southern State Parkway and into Hempstead Lake. A timber pedestrian bridge will be provided to carry a shared use path that encircles Hempstead Lake over this channel. Installation of the bridge will allow removal of existing twin 60" diameter pipes that currently limit flow through the channel (and also create the potential for an unplanned impoundment if blocked), while providing for uninterrupted access to the pedestrian pathway. Modeling has indicated that the removal of the twin pipes would enhance the flow between the NW Pond and Hempstead Lake, which is an important aspect of the project goals. The bridges will be designed to accommodate emergency vehicles, thereby improving emergency access and response times, maintenance vehicles, pedestrians, and horses.

The Hempstead Lake Dam, gatehouse and pipe arch were constructed in 1873. The dam's outlet-controls (currently not functional) are housed in the historic gatehouse structure, that directs water flows through an

attached brick pipe arch that extends from the dam into South Pond. HLSP will replace all five of the sluice gates at the dam and provide new gate controls in the gatehouse. An operating plan will be developed to actively manage water flow in small and large storms events. In all, installation of new outlet gates, inspection catwalk and water level monitoring equipment at the dam gatehouse will allow for control of flows through the Park, over the dam, and into the lower reaches of the watershed. Flow-control is key to flood protection and dam safety, as well as maintenance of lake levels for recreational and ecological purposes. In particular, the ability to draw down lake levels prior to the onset of an extreme precipitation event, may reduce peak flows downstream, and will enhance dam safety. As a part of this project, and in accordance with NYSDEC dam safety requirements, trees and vegetation will be removed from the dam to ensure the dams integrity and to allow for proper, ongoing inspections. In addition, vandalized stonework at the historic inlet gatehouse at South Pond will be restored to ensure the integrity of the structure and historical accuracy.

The Dam work proposed throughout HLSP is being progressed in accordance with the overall LWTB project to help improve flood management, water quality, dam safety and ecological conditions throughout the Mill River watershed. This project will enhance public safety and resiliency, provide connections to the adjacent communities, encourage usage of the natural facilities in the Park, and provide environmental education and interpretation opportunities. These can be seen in Figure 11.

Northwest and Northeast Ponds

The NW and NE Ponds, known as the "North Ponds," are located in the northern portion of HLSP and are fed by the Mill River, groundwater, and from multiple stormwater drainage systems. The ponds are separated from Hempstead Lake by the Southern State Parkway. Improvements to the NW and NE Ponds (in addition to the dam replacement described above) include dredging to increase storage capacity, wetland creation and restoration, and installation of a culvert and floatables catcher. Currently, the North Ponds area is extremely underutilized, owing to degraded environmental conditions, extreme litter accumulation, and dying wetlands.

Over time the watershed for the ponds has become urbanized, increasing run-off volume and pollutant load. Flow into the ponds carries pollutants from urban run-off. There are significant floatables deposits, sediment loads and oil residue apparent near many of the outfalls. Water sampling confirms this pollutant load, particularly during the first flush at the onset of a rain event. The high run-off sediment load has filled the creek channel and the high velocity of the runoff entering the Mill River channel has resulted in significant erosion of the channel that is deposited into the ponds and surrounding area. This project seeks to mitigate the pollutant levels that enter the ponds and utilize new and restored wetlands to filter other pollutants from the runoff, which in turn will improve the water quality entering Hempstead Lake and downstream into the bay. By installing a floatables catcher at the Northeast corner of the Northeast pond, floatable deposits within the Ponds and downstream Hempstead Lake will be significantly reduced. The improved wetlands will also provide enhanced passive recreational opportunities, including bird watching, as native plantings are expected to restore populations of local and migratory bird species.

Overall, the NW and NE Ponds environmental and stormwater mitigation improvements will result in improving stormwater management, improved water quality, reduced erosion through stabilization of the channel within the Park, creation and restoration of diverse habitats and ecosystems and enhanced social connectivity with a continuous greenway extending to the surrounding neighborhoods.

FIGURE 13: CURRENT CONDITIONS AT THE NORTHEAST POND, HLSP

Environmental Education and Resiliency Center

The Environmental Education and Resiliency Center (The Center) at HLSP will be a new and unique hands-on learning center about storm resiliency and environmental management, and will provide educational opportunities and an emergency coordination center for the immediate communities to aid with disaster response. The facility will provide an outreach and educational opportunity for the local community, as well as nearby user groups and school districts that frequent the park.

The Center is being designed to act as a "coordination center" during times of emergency for the following purposes:

- "Command Post" for local disaster response coordination either for agency staff or other agencies such as the NYS Park Police and the Nassau County Police Department. The existing parking area (Field 1) is also utilized by Public Service Electric and Gas (PSE&G) for emergency response staging of equipment in advance of severe weather events. The Center will provide a location for PSE&G staff to coordinate equipment staging, enhancing their emergency response to restore critical utilities and thereby help to promote safety and economic resiliency in the community and region.
- The Center may also serve as an information center if needed, for local residents after an emergency. Parking is available at Field 2 or access via the greenway that provides connection points to the surrounding neighborhoods and communities, some which are predominately low to moderate income. The building will include an emergency generator to provide resiliency and continued functionality during power outages.
- Monitoring station for water levels in HLSP ponds and lakes to inform water management decisions during storm events.

The Center is also being designed to include space to provide for additional partnerships with environmental education, non-profit organizations, educational institutions, community organizations, such as the Nassau County Law Enforcement Explorer Program (Explorer Program), that will use the Center for training space to promote and deliver their programs within the park. The Explorer Program is a volunteer program that provides an opportunity for at risk and low to moderate income young adults to receive basic law enforcement training and to learn about career opportunities within law enforcement. In addition to training and education, volunteers participate in community service events throughout the year to encourage volunteerism and build stronger communities. The space provided to the Explorer Program will serve as a center for local community outreach by the police, educating and positively engaging young people through mentoring and education; further strengthening the connection to the community, giving youth an opportunity for a sense of place and ownership to the park and surrounding community.

Additionally, the Center will also serve a central focal point and core for the park with connections to the greenway, providing educational and community spaces connected to an overlook deck with views of Hempstead Lake and a location where park information can be distributed explaining climate change impacts, community resiliency processes, environmental preservation, and other items of local relevance. The Center will also provide essential facilities to help with building partnerships with local school districts to utilize the education space and wet lab for hands-on learning and activities; engaging young minds through activities that reflect the local surroundings and foster stewardship. The Center will be focused primarily around the importance of environmental education and stewardship, providing a connection between the community and the environment, while also providing a resource, specifically during extreme weather conditions. There will also be information about the Mill River system's local wildlife and the history of the area.

The Center will be constructed to reduce environmental impacts through an approach that focuses on lower operating costs through environmentally conscious building design. The building will be used to educate users about sustainable building practices and construction. The building will be designed with the following key features:

- Robust and sustainable exterior envelope optimized to suit local climate demands.
- Awareness of solar impacts (i.e. siting) and control (i.e. glazing) to reduce heating and cooling loads.
- LED lighting with occupancy sensing and daylight harvesting to reduce electrical usage.
- Photovoltaic roof panels to offset electricity energy usage.
- High-efficiency, low/no water plumbing fixtures.

Greenway, Gateways and Waterfront Access

Access improvements, including greenways, gateways and new waterfront infrastructure, will increase the community's connection to Mill River, an important component of the winning RBD LWTB project concept. Connections to surrounding communities and in particular, Hempstead High School students, and other surrounding neighborhoods will draw visitors to the lake and river, with the enhanced, direct, and ADA compliant access this project provides to the water.

Greenways and trails will provide a physical connection linking the ecological network and the communities along the Mill River project area. The greenway provides a unique opportunity to connect the public and provide them with the opportunity to walk the river and learn along the way about the river system through educational signage.

On a daily basis, the trails and greenway will be open to the public for recreational use (walking, jogging, biking, horseback riding, bird watching, etc.) providing connection points to the surrounding neighborhoods and an economical way for people to exercise, increasing the health and well-being of its users, with attention to developing physical environmental connections to nearby underserved communities. The trails

and greenway will also provide access to the ponds and lake for other types of recreation such as fishing and kayaking.

Improvements to an existing parking area, utilizing green infrastructure, will be implemented to provide local and regional patrons with improved access to the park to enjoy the Mill River project area. In addition, this centralized parking lot is in close proximity to local mass transit.

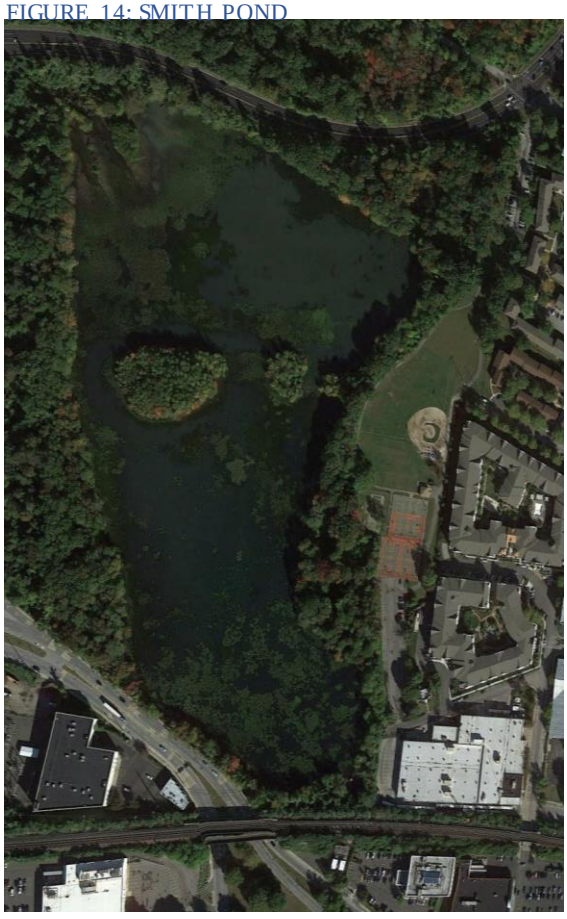
The improvement and creation of gateways into the park will provide new direct, pedestrian access from the adjoining neighborhoods, a significant portion of which are low to moderate income communities. These gateways will also provide a sense of security within the park, by opening views and providing additional access points for emergency vehicles.

The park waterfront enhancements and improvements will include new amenities such as trails along the waterfront; a new crossing at Schodack Brook Bridge to allow users to traverse the entire park from north to south; potential piers/kayak launch area, ADA compliant docks for fishing; educational piers; birdwatching; and open views to enjoy the scenic waterfront.

Focus Area - Smith Pond Drainage Improvements

Smith Pond, shown in Figure 12, is a 22-acre freshwater pond located in the center of the LWTB project area just north of the Sunrise Highway in the Village of Rockville Centre. The pond is associated with Morgan Days Park and is managed by the Village of Rockville Centre. The Pond is the confluence point of the two primary drainage branches (Pines Brook and Mill River) conveying water from the north end of the Mill River watershed — one on the north eastern side coming from HLSP, and the other on the north western side originating north in the Garden City area.

FIGURE 14: SMITH POND



The Pond receives both the flow (water quantity) and the nutrient loads (water quality) for the entire watershed. Smith Pond is also a unique location as the connecting water body between the upper freshwater system and the lower tidal and salt water system. The Pond's location provides an advantageous opportunity to incorporate RBD and LWTB concepts of ecological restoration, access and urban quality and social resiliency in the Mill River corridor.

The proposed improvements under consideration at Smith Pond are dredging, habitat restoration, storm attenuation, and improving public access. A dredging management plan will be prepared evaluating the opportunity to increase water depths to greater than eight feet. This could supplement storm runoff attenuation capacity by increasing pond volume, while improving environmental conditions. Currently, shallow water depths in the Pond, combined with high nutrient loads from upstream runoff, contribute to invasive plant over growth and dominance in the Pond. Dredging will remove invasives, and deeper water should improve conditions such that invasives could be controlled or eliminated. It appears that dredging of as little as 33,000 cubic yards of pond bottom at average dredge depths of 12-24-inches, could result in significant environmental improvement. Part of the dredging plan will include opportunities for improving pond bottom habitat for fish so that with the inclusion of a fish

ladder at the Pond weir, the fish will have appropriate habitat in the Pond. One of many benefits of this project will be the ability to monitor this work as an example of a successful scalable strategy that could be replicated elsewhere in other highly developed watersheds.

Currently, the estimated budget for this focus area is approximately $22.6 million. The Smith Pond Drainage Improvements are expected to reach 100% design in the first quarter of 2018 with construction expected take place from the second quarter of 2019 to the third quarter of 2022.

Focus Area - Stormwater Retrofits

A critical piece of the LWTB project is addressing flood mitigation. For the project area, this includes finding solutions to chronic drainage problems in the community that continue to worsen as a result of more frequent critical storm events and tidal surge, and the problems experienced during and after Superstorm Sandy. The approach to address this is through a variety of retrofits incorporating stormwater best management practices (BMPs); which complements an underlying theme of the LWTB concept – that the project components can be duplicated elsewhere in the project area and on Long Island.

The LWTB design identified the desirability of green infrastructure retrofit projects which will improve stormwater collection and conveyance to mitigate flooding and incorporate water quality improvement components. Some of the project types which are being developed in the Resiliency Strategy (noted above) include:

Parcel-Based Green Infrastructure. Green infrastructure typically incorporates multiple practices utilizing the natural features of the site in conjunction with the goal of the project. Multiple BMPs can be incorporated into a site to complement and enhance the current land use while also providing volume reduction and water quality treatment. Green infrastructure practices are those methods that provide control and/or treatment of stormwater runoff on or near locations where the runoff initiates. Typical parcel based practices include approaches such as vegetated infiltration basins, stormwater wetlands, and subsurface practices as shown in Figures 13 and 14. Publicly owned open space parcels will be evaluated throughout the watershed to identify potential opportunities to incorporate green infrastructure practices to reduce flooding in areas with limited or no drainage infrastructure.

As shown in Figure 7 (map 'problem area' number 9), the Hempstead Housing Authority (HHA) is located in a low-lying area affected by 10-year flood events. The proposed interventions for the HHA includes mitigating stormwater flow, and elevations by creating a stormwater storage/recharge basin.

FIGURE 15: TYPICAL SURFACE INFILTRATION BASINS

FIGURE 16: STORMWATER WETLAND IN A PARK

Green Streets. Green streets are a dense network of distributed BMPs concentrated on a public right-of-way. Green streets are often referred to as BMPs, but actually employ multiple distributed BMPs in a linear (rather than parcel-based) fashion. The green street BMP configuration strategy implements BMPs within the street right-of-way with designs that reduce runoff volume and improve water quality of the runoff both from the street and adjacent parcels. Green Street features can include vegetated curb extensions incorporating bioretention, sidewalk planters, bump outs at intersections incorporating bioretention, permeable paving, and suspended pavement systems. Green streets can be implemented throughout residential areas to reduce localized flooding in places where there are micro depressions and little or no drainage infrastructure.

The most common approaches include bioretention areas located between the edge of the pavement and the edge of the right-of-way, and permeable pavement installed in the parking lanes. Permeable pavement in Long Island is less desirable due to the use of sand to treat roadways and the limitation of small municipalities to expand maintenance activities. An alternative option for integrating water quantity and water quality improvements is to integrate storage and treatment under the sidewalk using a suspended pavement system. Suspended pavement uses structural frames to support the weight generated by sidewalks and roadways while providing open void space for runoff storage and treatment underneath. The runoff is treated as it passes beneath the pavement and through an engineered soil media before exiting through

infiltration or an underdrain. Suspended pavement systems allow for the integration of BMPs with little to no disturbance to the surface, and serve as an improved BMP over more traditional dry wells located throughout the project area.

The benefits of green streets will be evaluated using a multi-step process to (1) evaluate the typical green street configuration (2) quantify potential unit load reductions and (3) apply the unit load reductions to streets throughout the watersheds based on expected opportunity. The storage and treatment capacity of the green street can be significantly increased by utilizing available storage under the full width of the right of way. Substantial flood mitigation combined with water quality improvement may be possible. Figure 15 shows some of the potential components of a green street or right-of-way system, including suspended sidewalk and bioretention. Figure 16 shows a typical green street cross section.

FIGURE 17: SUSPENDED SIDEWALK SYSTEM (LEFT) AND BIORETENTION IN THE RIGHT-OF-WAY (RIGHT)

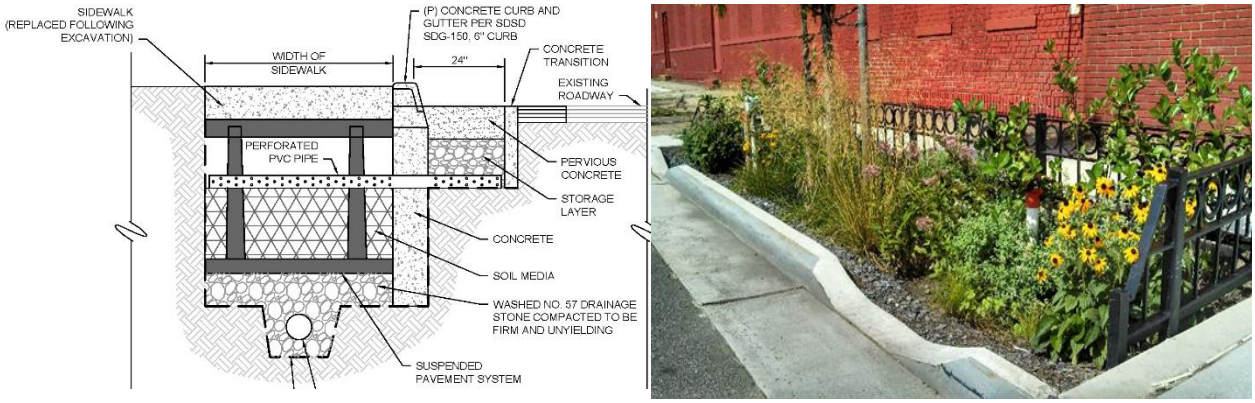
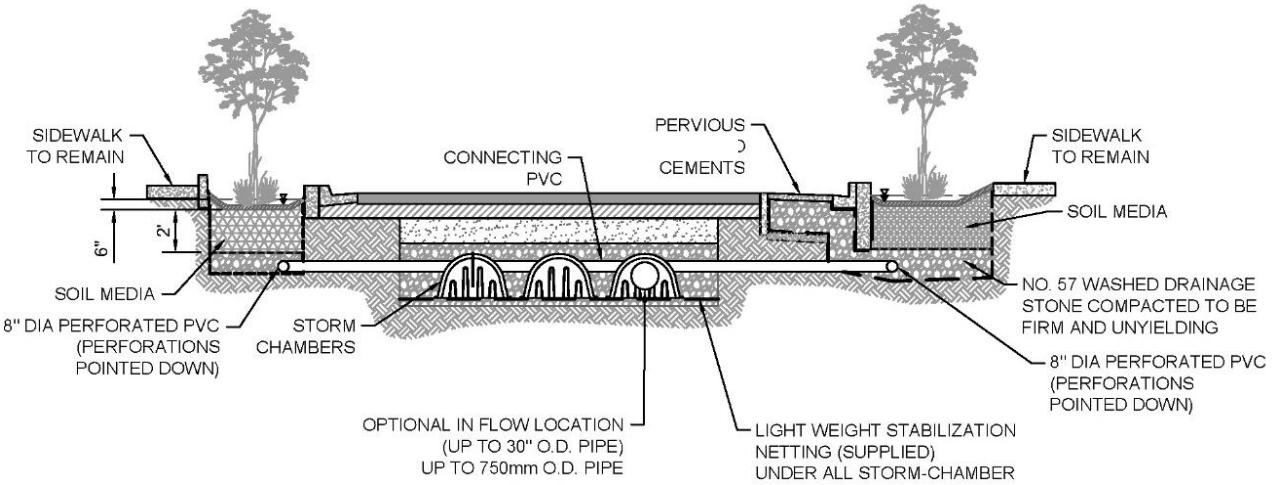


FIGURE 18: TYPICAL GREEN STREET CROSS SECTION



Green-Gray Infrastructure. In some cases, traditional structural or "gray" infrastructure in the form of additional inlets and stormwater pipe will be required to provide the necessary flood mitigation. At locations where this will occur, the design team will incorporate "green" infrastructure elements that will provide more ecological and environmental benefits where practical. Exfiltration beds and/or structures could be utilized to retain and treat the runoff rather than sending the collected water immediately downhill. In addition, minor design elements, such as stormwater structures with sumps (two- to three-foot-deep bottoms) can help collect sediment prior to being discharged to downstream surface waters.

FIGURE 19: TYPICAL GREEN-GRAY INFRASTRUCTURE CONSTRUCTION

Currently, the estimated buget for this focus area is approximately $3.9 million. The Stormwater Retrofit projects are expected to reach 100% design in the fourth quarter of 2018 with construction expected to take place from the second quarter of 2019 to the third quarter of 2022.

Focus Area – East Rockaway High School Hardening

The East Rockaway High School is situated along the west bank of the Mill River, just north of Pearl Street, in Nassau County (see Figure 18). Superstorm Sandy caused heavy rains and storm surge resulting in flood waters flooding the School's northern and eastern property and entering the School's buildings and facilities. The boiler room, auditorium and gymnasium wings, teacher parking lot, and sports fields received the most pronounced damage. The building's floor crawl space typically has flooding associated with normal tidal cycles due to porous soil conditions, however the high level of water from Sandy caused scour below the pile caps and left pools of sewage & fuel oil polluted water. Lack of sufficient backwater valves also created water infiltration of the sanitary outfalls.

FIGURE 20: EAST ROCKAWAY HIGH SCHOOL

The School's buildings and grounds were repaired after Sandy and a recently approved FEMA project is intended to mitigate the flooding of the School's buildings. The teacher parking lot routinely floods at an approximate 1-year storm event frequency and, along with the sport fields, remains vulnerable to frequent tidal flooding and shoreline erosion. The bleachers and two story storage and press box at the sports field are on the verge of falling into the Mill River due to ongoing shoreline erosion.

The presence of the continuous stretch of publicly owned land along the western bank of the river at the School and to the north and east of the School offers a range of opportunities to implement several RBD LWTB goals – protect and increase the resiliency of a critical community asset from flood damage and create and improve waterfront access for the public. Potential resiliency interventions for protection

and social resiliency include linear flood risk mitigation and shoreline stabilization with design considerations to alleviate the tailwater and surge flooding occurring in the teacher parking lot and sports field. Living shoreline elements with stormwater outlet treatment systems to improve water quality in the area and improve connectivity for the public to the waterfront are also being incorporated.

As noted, the School's sports field bleachers are located at the river bank. Due to ongoing erosion of the bank, the structural stability of these stands is being compromised. The design proposal provides an integrated solution that stabilizes the river bank, raises its flood protection level, and enhances the conditions for the grandstand. The design incorporates the current 100-year FEMA flood map and calls for an elevation of 9 feet.

The goal for this area is to determine the feasibility of design options that help reduce the School's vulnerability to flooding and stabilize its eroding shoreline. The designed interventions also have the opportunity to facilitate a continuous north-south route along the water for pedestrians and cyclists in the form of the Blue-Green Park, and contribute to improving the quality and operations of the School and its sports fields by enhancing the connection between the School and the river.

Currently, the estimated budget for this focus are is approximately $4.6 million. The East Rockaway High School Hardening project is expected to reach 100% design in the first quarter of 2018 with construction expected take place from the second quarter of 2019 to the third quarter of 2022.

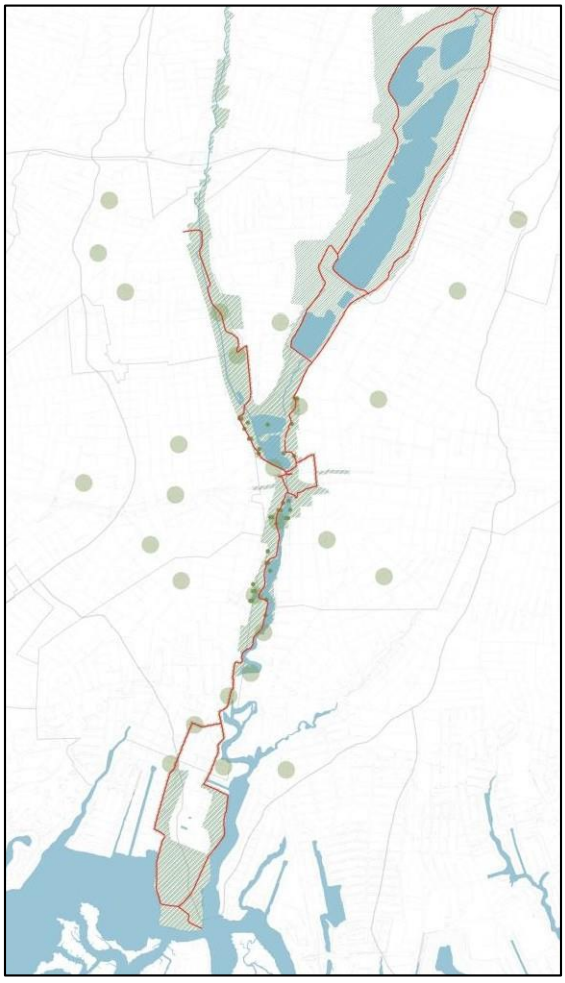
Focus Area – Greenway Network

The HLSP improvements, East Rockaway High School Hardening and Coastal Marshland Restoration projects each have greenway components within them. The focus of the Greenway Network project is to provide waterfront access in other sections of the LWTB project area and connect the greenways together in a continuous system.

Continuous safe pedestrian pathways from residential areas to the waterfront in the LWTB project area are rare and if they exist, they are fragmented with little connectivity for any significant lengths. The winning RBD LWTB project proposal noted that the overall scale and existing land use of the area makes it ideal for biking, walking, and boating, but existing routes toward or along the river and bay are ad-hoc and discontinuous, and the adjacent neighborhoods' access to the river is poor. Combining this fact with the potential degradation of stormwater management and environmental habitat has created a concern for the sustainable resilience of the community.

The RBD LWTB design called for the landscapes along Mill River to be interconnected into a strong "blue green" framework in order to improve public accessibility and visibility of the Mill River as a means to increase safety, and enhance the ecological and landscape value of this historic water course. It will also increase recreational opportunities for the densely populated communities serving as a long-term positive benefit to the residents. The concept for the Greenway Network is shown in Figure 19.

FIGURE 21: GREENWAY NETWORK CONCEPT



The development of the Greenway Network is intended to be a strong feature for the suburban layout along and adjacent to the Mill River, thus transforming it into an attractive public amenity. The intent is to take the currently disconnected recreational and open resources in the LWTB project area, as well as schools, and link them into a coherent system of pedestrian and bike paths, resulting in the creation of a new greenway. Another goal of the Greenway Network is to adopt and develop new sites along the Mill River that are presently underutilized and/or not accessible, and make these sites productive towards the LWTB objectives.

The proposed design of the multi-use path will, where practical, typically include 10 feet wide permeable pavement with water storage and infiltration under the path. As a linear element and where space permits, the paths will serve as interceptors of surface stormwater runoff through parallel bioswales.

Currently, the estimated budget for this focus area is approximately $25 million. The Greenway Network project is expected to reach 100% design in the second quarter of 2019 with construction expected take place from the third quarter 2019 to the third quarter of 2022.

Focus Area - Social Resiliency Programs

The overall purpose of the Social Resiliency focus area is to strengthen the social infrastructure of communities within the LWTB project area through social service programs that align with the goals of the LWTB project. GOSR intends to support the selected organization(s) in the planning and administration of the Social Resiliency Program through these objectives:

1. Provide Environmental Stewardship opportunities to (pre)K-12 students, higher education students, and other members of the community through:
    - Education about resiliency topics relevant to the LWTB project area, possible options including but not limited to: stormwater interventions included in the LWTB design; environmental awareness; wildlife conservation and ecology; watershed history; STEM/STEAM education and teacher training; on-site and hands-on education and teacher training; affordable housing; economic impacts of natural disasters; etc.
    - Environmental Education and Resiliency Center (as discussed previously).
    - Community service that complements the educational resiliency topics; and
    - Monitoring, research, and data collection that allows students to engage in research projects pertaining to LWTB and monitors long-term effects of the interventions.
2. Develop Workforce Training vocational curriculum for high school students, high school graduates, and/or unemployed/under-employed residents seeking to gain skills in trades engaged in resiliency work.

An example of a natural partner in this focus area is the Seatuck Environmental Association, which is planning its "Day in the Life of the Mill River" 2017 program for school students on Long Island. Participation is expected to grow in the second year of the program by targeting participation from schools in the Hempstead, East Rockaway, Rockville Centre and Oceanside districts. Starting in the spring, Seatuck also plans to commence a series of public presentations, field trips and nature programs to introduce adults and families to the history, habitats and wildlife of the Mill River. LWTB has engaged Seatuck as an implementation partner able to help achieve the project's social resiliency objectives.

Currently, the estimated budget for this focus area is approximately $2 million. It is anticipated that a Notice of Available Funds (NOFA) will be issued in June 2017 to solicit program proposals and costs for an organization to develop and perform the community education and training. It is anticipated that the Social Resilience programs will be developed and rolled out by second quarter of 2018.

Benefit Cost Analysis

A BCA for the LWTB project was prepared following the HUD BCA Guidance provided in a HUD Guidance Notice (CPD-16-06). The analysis was completed using generally accepted economic and financial principles for BCA as articulated in OMB Circular A-94.

The BCA encompasses the project area as defined by the LWTB project area boundary. The following LWTB focus areas (see project descriptions above) are included in the BCA: Hempstead Lake State Park; East Rockaway High School Hardening; Smith Pond Drainage Improvements; Coastal Marshland Restoration; and Greenway Network. The costs for the Stormwater Retrofits will be included in an update of the BCA, once the costs are refined.

The combined cumulative net present value of activities associated with the five focus areas is $285 million and the combined Benefit Cost Ratio is 3.4. These measures of project merit demonstrate that the project is viable and would add value to the community, the environment, and the economy. Using a 7% discount rate, and a 50-year planning evaluation horizon, the project will generate significant net benefits to communities within the Mill River Watershed, as well as other beneficiaries from Nassau County and the region, including those who use the improved Hempstead Lake State Park and the new Greenway Network.

According to the BCA, the combined lifecycle costs to build and operate the proposed Project's assets for the LWTB project (amounting to $117.1 million in constant 2017 present value dollars) would generate the following quantified benefits:

Total benefits of $402.2 million, of which:

- Total Resiliency Values are $225.9 million
- Total Environmental Values are $42.1 million
- Total Social Values are $72.4 million, and
- Economic Revitalization Benefits are $61.8 million.

The BCA demonstrates that the LWTB project will generate substantial net benefits (i.e., the benefits exceed the costs of the LWTB project over its useful life). The benefits to the host community and region will be substantial and justify the costs of implementation and operations. The assets (i.e., physical improvements to Hempstead Lake State Park, East Rockaway High School, Smith Pond, Coastal Restoration and the Greenway Network) created or improved by the project enhancements will create large resiliency values, social values, environmental values and economic revitalization benefits.

The project components evaluated are at different stages of development and the costs are subject to change as the designs progress and priorities are established. However, they are still expected to have a large positive benefit. The largest group of benefits consists of resiliency values relate to flood risk protection provided by the project's assets. The BCA demonstrates and quantifies the reduction of flood risk associated with this project.

While costs and benefits were monetized for five of the six project focus areas, the Stormwater Retrofits focus area was evaluated separately on a qualitative basis while the project is being designed. One significant benefit of stormwater BMPs is the flood mitigation that they provide. Stormwater retrofits provide flood mitigation through two notable methods. First, stormwater retrofits reduce or slow the amount of stormwater entering the stormwater drainage system. By doing so, the load on the drainage system is decreased and the frequency and severity of stormwater backups are mitigated. Second, stormwater BMPs filter out sediments and other material that may otherwise clog the stormwater drainage system. Fouling in the stormwater drainage system reduces its capacity and increases the severity and frequency of stormwater backups. By reducing the opportunity of fouling and blockages, stormwater retrofits not only mitigate stormwater backups, but also reduce flooding damage and reduce the need for maintenance on the stormwater drainage system.

The benefits from flood mitigation by stormwater retrofits can be quantified by modeling the change in severity and frequency of stormwater flooding. Then, benefits of the flood mitigation can be monetized by analyzing the assets that will experience the reduced flooding. Assets can realize the benefits of flood mitigation in several ways.

In addition, stormwater retrofits reduce the amount of sediments entering the stormwater drainage system and downstream water bodies. For example, the sump pumps implemented as part of the LWTB project would collect sediments prior to being discharged to downstream surface waters. Reducing the sediments in surface waters would reduce the clogging of the water and mitigate bank erosion, and flooding. Reducing sediments will also mitigate the deterioration of the storage capacity of reservoirs, destroying of wetland areas, and degradation of water quality. Furthermore, sediments in surface waters cover spawning areas, smother eggs, aquatic insects, and oxygen producing plants. Sediments will increase the turbidity, or suspended sediments, which increases water temperature, reduces light penetration and plant growth, and affects the ability of fish to locate and capture prey. Thus, reducing sediments in surface waters would protect the aquatic habitat of species in those waters.

On top of the benefits described above, stormwater retrofits can increase the property value of parcels that are positively affected by the implementations. The Ontario Ministry of Environment found that property values can increase by 5% due to reduced downstream flooding and by 15% due to an improvement in water quality. These benefits will not only increase the value of assets of property owners in the LWTB project area, but will increase the attractiveness of properties in the area for incoming home or business owners.

The LWTB project BCA can be found on the GOSR website: https://stormrecovery.ny.gov/.

Maintenance and Operations

Based on the BCA for LWTB, the present value of the operating and maintenance costs is estimated to be approximately $17.4 million (with a basis of 2017-2067; constant 2017 dollars and a 7% discount rate). Through final design, GOSR will develop robust maintenance and operation plans along with budgets, working collaboratively with appropriate State, city and federal agencies, as well as non-profit organizations. GOSR certifies sub-recipients will be required through agreements to adequately fund the long-term operation and maintenance of the RBD project from reasonably anticipated revenue, recognizing that operation and maintenance costs must be provided from sources other than CDBG and CDBG–DR funds.

Budget

The overall budget proposal submitted to the RBD competition for the LWTB project was $177,366,078. Based upon the current design, the estimated project cost is $125,000,000. With a CDBG-DR allocation of $125,000,000, the State does not currently anticipate unmet funding needs. Should the situation change, the State will explore additional funding options to fill any unmet needs and analyze the budget further to implement a reduced scale project which still meets the project objectives. State Parks is targeting over $1 million in funds for upgrading infrastructure, public facility and environmental habitat management enhancements at the HLSP site. Additionally, the environmental review process will help shape the potential implementation requirements of the project not currently identified in the preliminary design phase. Any budget changes will be reflected in future Action Plan Amendments when the project components are fully designed.

TABLE 39: LIVING WITH THE BAY BUDGET

Breakdown	Cost
Planning	$1,750,000
Pre Development	$8,750,000
Construction - Hempstead Lake State Park	$35,024,370
Construction - Smith Pond Drainage Improvements	$22,571,456
Construction - Stormwater Retrofits	$3,863,886

Construction - East Rockaway High School Hardening	$4,642,415
Construction - Coastal Marsh Restoration	$14,991,416
Construction - Greenway Network	$25,156,457
Social Resilience Program	$2,000,000
Program Delivery	$6,250,000
Total Allocated Budget	**$125,000,000**

Timeline

The State is in the preliminary design phases of the LWTB project components described above. Set forth below is an overarching proposed timeline for the LWTB project. The State is committed to ensuring the timely expenditure of federal funds for the project, and is committed to designing the project so that it achieves the desired goals of the specific RBD disaster related purposes and support investments in resilient recovery. However, the State recognizes that changes in the project design may occur, depending on the design stages, permit issuance and environmental review requirements. Any timeline changes will be reflected in future Action Plan Amendments when the project is fully designed.

TABLE 40: LIVING WITH THE BAY PROPOSED SCHEDULE

	Start	Finish
Living with the Bay		
Study, Research Planning: This Phase will outline all additional studies, research and planning needed prior to the design and engineering phase. As necessary, this phase will be incorporated into the Environmental Review and Permitting stage as well as the Engineering Phase.	Quarter 1 2014	Quarter 2 2017
Preliminary Environmental Scope Development: This phase will be an additional step for the LWTB project. The complexity of the project as currently envisioned, as well as the size of the potential study area, will require careful consideration prior to formally commencing the Environmental Review and Permitting Stage. At the same time, given the need for an expedient schedule, this preliminary phase will allow certain environmental tasks to be performed in anticipation of the formal review. Concurrent with the study, research and planning phase, the State will conduct preliminary environmental scoping activities. This additional planning and scope development is essential to planning a cogent and implementable project to meet the objectives of Rebuild by Design.	Quarter 4 2014	Quarter 2 2018
Environmental Review and Permitting: This Phase will include scoping for, and preparation of, an environmental review consistent with the National Environmental Policy Act (NEPA), as well as the submittal of permits applications to the appropriate governmental agencies. This Phase will include significant opportunities for public review and comment, as well as intergovernmental consultation. Additionally, as required by State and federal law, the environmental review will evaluate alternatives to the proposed project. This timeline is meant to represent an overview of the expected Environmental Review Process for all aspects of the LWTB project. It should be noted that the environmental review and permitting timeline is dependent on the permitting requirements of agencies with jurisdiction, including the United States Army Corps of Engineers, NOAA-NMFS, USFWS and the New York State Department of Environmental Conservation.[6]	Quarter 1 2017	Quarter 4 2019
Design and Engineering: This phase will include all design and engineering work required for LWTB culminating with complete construction specs. Depending on the progress and outcome of the Environmental Review and Permitting process, this process will be able to run concurrently for some components of the project. This phase will include any and all necessary procurement and contracting as appropriate.	Quarter 1 2017	Quarter 4 2018

[6] GOSR is currently evaluating different potential environmental review frameworks that could potentially reduce the timeframe for environmental review for some or all project components, while other may require more lengthy studies. GOSR will ensure that its environmental review framework is informed by consultation with governmental stakeholders and the public.

Site Development: This Phase will include all necessary elements for site development from the Design and Engineering Phase that will prepare for the construction phase of the LWTB project. GOSR will evaluate a potential phased site development schedule for different project components (e.g., upland components and in-water components).	Quarter 3 2017	Quarter 1 2020
Construction: This Phase will include all elements of construction related to the LWTB project outlined in the Design and Engineering Phase. For the LWTB project, the timeline is extended to reflect that the nature of the project will only allow for construction in specific building seasons. GOSR will evaluate a potential phase construction schedule for different project components (e.g., upland components and in-water components).	Quarter 4 2017	Quarter 3 2022
Closeout: This phase will include the closeout of the entire project, including but not limited to: final site visits and review, release of final contingency payments and all applicable CBDG-DR construction closeout requirements.	Quarter 2 2019	Quarter 3 2022

From page 105 of the New York State Action Plan:

Overall Rebuild by Design Requirements

Implementation Partnerships

GOSR currently plans to serve as the grantee agency responsible for the implementation of both RBD projects. GOSR is responsible for the implementation of the entire CDBG-DR portfolio for New York State and has taken the necessary steps to build capacity since its inception in June 2013. Two program areas within GOSR have specific skills to address the RBD projects. The New York Rising Community Reconstruction (NYRCR) Program, an award winning community-based resiliency planning and implementation effort comprised of citizen planning committees throughout the Sandy-impacted region has worked in close collaboration with both winning RBD teams in the State of New York throughout project concept development. In addition to engaging with citizen groups, NYRCR Program has working relationships with local and county governments that will be vital to the success of these RBD projects.

The second program is the GOSR Infrastructure Program. GOSR is currently undertaking numerous, large scale infrastructure projects and has demonstrated the capacity to manage these projects in a timely, cost effective manner. Engaging with federal, State, local, and private entities in other CDBG-DR projects, GOSR has demonstrated an ability to work collaboratively with other entities as needed to execute successful resilient recovery projects. It is prepared to leverage institutional knowledge and spearhead RBD project implementation. Both Programs are committed to developing innovative financing strategies that streamline recovery at the local level while maximizing available CDBG-DR funds.

The State maintains up to date certifications of proficient controls, processes, and procedures to ensure that the grantee has established adequate and proficient financial controls; procurement processes; procedures to prevent any duplication of benefits as defined by Section 312 of the Stafford Act; procedures to ensure timely expenditure of funds; procedures to maintain comprehensive websites regarding all disaster recovery activities assisted with these funds; and procedures to detect fraud, waste, and abuse of funds.

Further, each RBD project is subject to complex federal and State environmental review and permitting requirements, which will include the assessment of alternatives. For both projects, GOSR intends to serve as the lead agency for the environmental reviews and, as the projects are shaped through this process, will consult closely with interested governmental and non-governmental stakeholders. The State understands that the partnership and coordination of partners throughout the life of each RBD project is crucial for its success. Throughout the planning and environmental process the State has engaged with numerous entities in the public and private sector.

Additionally, GOSR has an established environmental review bureau, and has procured two experienced environmental review firms to undertake environmental review consistent with the NEPA process and permitting process. GOSR has engaged in rigorous efforts to coordinate with federal, state, and local agencies concerning both projects.

As the State moves towards the implementation phases of the RBD projects, the State will continue to assess the needs of each project and how private sector partners can be engaged to fill any project gaps. The State intends to explore options with local advocacy groups, educational institutions, for profit agencies and not for profit agencies as appropriate for each RBD project.

The nature of the projects also indicate that the State anticipates possible engagement with federal agencies such as HUD, the Army Corps of Engineers, the U.S. Department of the Interior, the U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, U.S. National Park Service, and other partners as needed for the design and execution of each project. Within the State, there are numerous agencies that will also play specific roles in the implementation of these projects, such as New York State Department of Environmental Conservation, Department of State, Department of Education, State Historic Preservation Office, State Parks and others to be identified as the State works through the planning and environmental phase. The State intends to facilitate its coordination and consultation efforts through the Sandy Regional Infrastructure Coordination Group (SRIRC) convened by HUD and FEMA. Each RBD project will also require careful consultation with local governments and necessitate long-term agreements between the State and other relevant entities before construction starts to ensure proper operation and maintenance of the projects.

Living Breakwaters

For Living Breakwaters, GOSR has engaged in multiple meetings and consultations with the SRIRC, HUD, USACE, EPA, NOAA/NMFs, DEC, DOS, State Park's State Historic Preservation Office, and the New York City Department of Parks and Recreation (NYCDPR) throughout the 30% design phase. GOSR has circulated a lead agency letter, and USACE, EPA, and NOAA/NMFs, among others, have agreed to serve as cooperating agencies.

For Living Breakwaters, the State performed outreach to the City of New York and relevant agencies, including the Office of Recovery and Resiliency, NYCDPR, the Department of Environmental Protection, the Department of City Planning, as well as the Office of the Borough President. In 2016, GOSR entered into sub-recipient agreements with the New York Harbor Foundation and New York/New Jersey Baykeeper. Both non-profit organizations are being provided funding to assist in Living Breakwaters project design, social resiliency planning, and ecological restoration.

Additionally, GOSR has already been engaged with NYCDPR as a potential partner on certain elements of the Living Breakwaters project, and view them as a critical involved agency for purposes of the overall EIS. In July 2015, GOSR entered into a memorandum of understanding[7] with NYCDPR outlining processes and procedures for coordinating between the City and State as design of the Living Breakwaters project progresses. GOSR is reviewing the project using the strictest environmental standards, as demonstrated by the fact that GOSR intends to utilize the City's Environmental Quality Review Technical Manual – the blueprint for conducting environmental review in New York City – in its analytical chapters, while according with the State Environmental Quality Review Act and the NEPA, even though State agencies are not typically required to use the City's Manual. GOSR also engaged with New York City agencies during development of its preliminary draft scope, and received detailed comments from NYCDPR, Department of Environmental Protection, NYC Landmarks, Department of City Planning, and the Mayor's Office of Sustainability.

Living with the Bay

With respect to LWTB, GOSR has engaged in consultations with the SRIRC, USACE, NOAA/MFS, DEC, State Parks, U.S. Fish and Wildlife Service (USFWS), as well as Nassau County, the Town of Hempstead, Village of Malverne, Village of East Rockaway, Village of Rockville Centre and Village of Lynbrook (local governments) during its planning phase. GOSR provided a presentation on its LWTB planning efforts to

[7] https://stormrecovery.ny.gov/sites/default/files/crp/community/documents/MOU-Tottenville%20Dune.pdf

the SRIRC Long Island Technical Coordination Team in May 2015. GOSR has held regular progress meetings with these stakeholders as well as HUD, the Technical Advisory Committee (TAC) and the Citizens' Advisory Committee (CAC). Among other activities, local governments will be involved in the environmental review process, evaluation of implementing partners, and establishment of long-term agreements between the State and relevant entities to ensure proper operation and maintenance of projects prior to construction. Currently, GOSR has entered into agreements with State Parks, Seatuck and Rockville Centre as described below. As all focus areas proceed through design, GOSR will develop a comprehensive implementation plan to identify partners with the appropriate capacity, experience and ability to work collaboratively to implement all interventions.

In November 2014, GOSR entered into a Memorandum of Understanding (MOU) with State Parks to perform improvements (unrelated to LWTB) to Robert Moses and Roberto Clemente State Parks. Amendment 1 to the MOU approved additional funds for studies to develop the LWTB project, including:

- Surveying lakes and ponds,
- Assessing groundwater depths and flows,
- Sampling and testing sediments for disposal,
- Investigating subsurface soils at the dam,
- Developing a stream gauge with telemetry based reporting of stream levels and flows, and
- Performing topographic surveys.

Amendment 2 to the MOU authorized State Parks to replace and repair all the equipment in the existing dams and equipment at the existing gatehouse, improve the NW Pond, improve the NE Pond, design and build a new Environmental Education and Resiliency Center, design and build an ADA accessible greenway, and design and build waterfront improvements. As of March 2017, State Parks has performed environmental and engineering studies to develop a scope and has completed a 30% design of the improvements. State Parks has a demonstrated history of working with GOSR, the operational authority and ability to collaborate with other agencies and units of government, and beneficial experience that will assist in the successful implementation of key components of the LWTB project, such as the proposed improvements to Hempstead Lake State Park.

Seatuck has entered into a sub-recipient agreement with GOSR to: 1) consult on migratory fish and other ecological restoration, 2) conduct biological surveys of fish and bird populations, and 3) conduct environmental education related to the river's natural history. Seatuck staff participated in numerous strategy meetings and site visits throughout 2015 and 2016. These meetings, which involved NYSDEC, State Parks, USFWS and a host of various consultants, focused on opportunities for reconnecting the river to the bay, improving habitat and advancing migratory fish restoration. The LWTB project will benefit from the expertise of this partner, aiding the implementation of project components, particularly with regard to the project's social resiliency objectives.

GOSR entered into a sub-recipient agreement with the Village of Rockville Centre on November 1, 2015 in anticipation of the Village leading implementation of Smith Pond. GOSR will coordinate its efforts with this valuable local partner as the project develops.

Leveraging of Funds

The State is committed to the successful implementation of both RBD projects using the allocations provided and understands the need to identify and secure additional funding outside of the CDBG-DR allocation as needed. This includes not only identifying funds to address the unmet needs identified in the awarded phases of the project, but identifying innovative funding mechanisms to pay for the long-term operation and maintenance costs of these projects. The State will look at funding opportunities such as federal, State or private grants, and collaboration with not for profit and academic institutions focused on similar resiliency actions, as well as financing opportunities, which can be leveraged alongside CDBG-DR for investment.

TABLE 41: LEVERAGING OF FUNDS – RBD UNMET NEED

Project	Location	Total Project Cost	CDBG-DR Allocation	RBD Unmet Need
Living Breakwaters	Richmond County	75,500,000*	$60,000,000	$15,500,000
Living with the Bay	Nassau County	$125,000,000**	$125,000,000	$0

**At 30% design; **In preliminary design phase*

The process to identify funding and financing opportunities for Living Breakwaters and LWTB started with a high-level review of both projects as a whole and the respective component phases. By taking this approach, the State can elucidate a variety of layered funding and financing opportunities. Many of the grant opportunities identified are both competitive and ongoing, based upon State and federal budget appropriations.

An important initial step will involve finalizing the entities implementing each component of each RBD project and evaluating if they can provide financial support and oversight, long term operations, and maintenance capacity for the project. There are some unique financing opportunities such as public-private partnerships, but this may entail a repayment to the private partner for their work. All options should be further based upon the ability and willingness of the entity implementing the project to entertain these options.

The State will utilize the following iterative approach as the process for assessing the need for and securing additional funding for each RBD project:

1. Prioritize Living Breakwaters and LWTB project components. Isolate components of both projects and identify the following items:
    a. Initial budget, including start-up and capital costs, ongoing operations, and maintenance;
    b. Identify entities/partners to implement, operate, and maintain the project post-completion; and,
    c. Develop time horizon for initial capital costs and ongoing operations and maintenance.
    d. Assess potential funding gaps or opportunities for scope enhancement
2. Organize sources of funding and financing based upon the initial assessment:
    a. Identify sources of funding from entities/partners implementing and operating the projects and agencies or organizations with aligned principles and/or missions to that of the RBD projects or project components;
    b. Prioritize funding opportunities based upon grant funding application dates and probability of success;
        i. Develop a layering strategy for each project component as needed;
    c. Identify if financing structures would be applicable to any components of both projects;
        i. Identify ability and willingness of local municipal partners to issue debt or take on long-term liabilities involving project finance;
    d. Engage not for profit, academic, corporate, and philanthropic partners with draft program framework for funding.
3. Continually update and monitor federal, State, and local grant opportunities.

The approach outlined above is achieving success for the Living Breakwaters project. The New York City Regional Economic Development Council awarded the New York Harbor Foundation a $250,000 grant to bring oysters and their reef habitat back to the New York Harbor. This is anticipated to further the development of oyster restoration activities related to the Living Breakwaters project. Partnering with non-profit organizations and academic institutions will be key in identifying and applying for additional funds for each RBD project.

While LWTB currently has no identified unmet need, GOSR and implementing partners are and will continue to identify opportunities for funding to expand investment within the LWTB project area, identify complementary projects and/or fill potential future funding gaps.

In order to help leverage funds to enhance and expand LWTB, State Parks is considering pursuing a project (with funding through the Environmental Protection Fund) to develop an Invasive Species Management Plan to enhance the long-term sustainability of projects funded through CDBG-DR. Also, Parks is planning infrastructure upgrades and public facility enhancements at Hempstead Lake State Park with New York Works infrastructure funding. The amount of funding has yet to be determined. Projects would include upgrading the Park's primary electrical feed to one that is more energy efficient and rehabilitating comfort stations to support increased visitation in the future.

GOSR has had initial discussions with US EPA, NOAA and USACE regarding possible grants for coastal and wetland restoration. NOAA closed the grant applications for coastal restoration on March 15, 2017 for FY17 and funding for FY18 or 19 remains uncertain. The planning of the coastal restoration is not ready to submit for funding before the March 15, 2017 deadline. EPA grants are available for wetland program expenses (i.e. wetland oversight programs rather than wetland/marshland creation). An EPA Region 2 RFP for wetlands will be released in 2017 and then again in FY19. GOSR will continue to monitor the availability of leverage funding from these sources to augment LWTB project components.

As part of the resiliency improvements at East Rockaway High School, the playing fields will be elevated to eliminate frequent flooding that is currently experienced. Consideration will be given to installing an artificial turf to improve drainage. Potential grants will be pursued via the US Soccer Foundation and National Football League Foundation for the artificial turf, which would allow better drainage (to avoid flooding), greater field utilization and lower maintenance costs.

GOSR certifies that, for each RBD project, the preliminary design considers the appropriate code, or industrial design standard and construction standards, and that the final design will adhere to all relevant codes and statutes when it is complete. GOSR will have a registered professional engineer, or other design professionals, certify that the final design met the appropriate codes prior to the obligation of funds by the grantee for construction.

Citizen Participation Plan for Rebuild by Design

Public participation was instrumental in the development of each RBD project, as evidenced by the high level of community engagement undertaken by both design teams. This Citizen Participation Plan (CPP) advances policies and procedures that will engage a large and diverse group of stakeholders. Possible outreach strategies are described in the environmental review section as well as below. A primary outreach strategy used to implement RBD projects was the formation of a CAC for each RBD project. When feasible, further opportunities for public input will be aligned with public participation in the environmental review process to ensure that the public has the ability to learn about the projects and also submit comments and concerns that will inform the assessment of potential environmental impacts and project alternatives.

The CPP reflects guidance specified by HUD in the Federal Register (FR–5696–N–11).

The State will ensure that any Units of General Local Government or sub-recipients receiving funds for RBD projects will have a CPP that meets the HUD CDBG-DR regulations and takes into consideration the waivers and alternatives made available under CDBG-DR funding.

Public Outreach for Rebuild by Design

To keep the public informed throughout the RBD project scoping, environmental review, design, and construction phases, the State will undertake public outreach both through in person meetings, through social and print media, and through the GOSR website. Modifications have been made to GOSR's website to include project pages dedicated to the State's RBD projects. Each RBD project page has a subpage with project status updates and materials that are relevant to the project. Outreach may also be in-person

meetings, solicitation of verbal and written comments, outreach events, online and traditional media, and through a CAC as appropriate throughout project design and implementation. Documents related to each project will also be made available locally, such as at libraries and local government offices.

Outreach to Vulnerable Populations for Rebuild by Design

The State continues to undertake specific measures to solicit input from low- and moderate- income households and households headed by non-English speaking persons. To do this, key meetings throughout the projects' development are advertised in various languages. Translators, as well as sign language interpreters, will be present as needed. Notice of meetings will be posted in common areas of public housing and public buildings near the project site, and on the GOSR website. Meetings will be held in handicap accessible locations, and in locations served by public transportation. Scheduling meetings will take into consideration non-traditional work schedules. A local public library or publicly accessible public building in or around the project site will be designated as a document repository for all materials relating to the RBD project. Materials presented at meetings will be posted online for public viewing in a timely manner. To further ensure that RBD information is accessible to all residents, all public program materials will be available in the four languages—English, Spanish, Chinese and Russian.

Citizens' Advisory Committee for Rebuild by Design

The State is firmly committed to continuing to maintain community engagement for both RBD projects. The State has developed CACs to complement the public outreach described above. Each CAC serves an advisory role, meeting and receiving updates on the project as it progresses from conceptual development through environmental review into design and eventually through construction and completion. The CACs engage the wider community at key points in the project development and environmental review process. All CAC meetings are open and advertised to the public.

The CAC will continue to solicit public input through various methods, including as appropriate, toll-free phone lines, mobile recording and listening booths, social media, and other online tools, in addition to more traditional means such as giving presentations at governmental facilities, senior housing sites, public housing sites, local community centers, schools and universities. To the greatest extent possible, the CAC and its public engagement events are coordinated with the citizen participation required for the environmental review and could extend into the building phases of the project. Additionally, technical staff and consultants from GOSR and other local, State, and federal agencies could make presentations and answer questions from community members in order to explain the highly technical components of each RBD project.

Forming a CAC is consistent with the model developed in the State's NYRCR Program, which was led by a community-based committee made up of local leaders and community residents. It is also consistent with New York State's two RBD projects. The proposal for Living Breakwaters states that water hubs will be designed through community design charrettes. The Living Breakwaters CAC has been one of the entities providing input at these charrettes. As of March 2017, the LWTB CAC has met four times and consists of 21 representatives from communities across Long Island.

Environmental Review for Rebuild by Design

The State plans to engage in robust and open public engagement throughout the environmental review process to ensure that the projects comply with State and federal environmental requirements and consider sound environmental practices. The State will undertake the required environmental review process in accordance with the NEPA for each RBD project, which includes multiple opportunities for public review and comment. First, the State intends to hold public meetings on the draft scope for the process. These public meetings will abide by the notice and scheduling requirements set forth in 24 CFR 58.56 and 58.59. The State will accept both written and oral comments from the public on the draft scope, and the State will consider these comments when preparing the final scope of the projects. The purpose of these scoping public meetings is to allow community members and community organizations, the scientific and academic

community along with the public as a whole, to raise issues and concerns to be evaluated in the environmental review process. This will ensure that the review is substantively robust, as well as responsive to any community issues with the projects. Once the environmental review process is completed the State will ensure that the community stays engaged in the process by soliciting, considering, and responding to public comments. The State is conducting a second round of public meetings and comment period following the completion of the Draft EIS. The State will also hold public meetings and comments with the RBD project-specific APA. As it prepares the final EIS, the State will consider and respond to the public comments.

On April 1, 2015, GOSR published the *Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY* EIS Draft Scope of Work[8] for the Living Breakwaters project. Oral and written comments were received during the public scoping session held on April 30, 2015, by GOSR serving under the auspices of the New York State Homes and Community Renewal's Housing Trust Fund Corporation, and in accordance with HUD regulations at 24 CFR Part 58. GOSR accepted written comments to the EIS Draft Scope of Work through the public comment period which ended June 15, 2015. The EIS Final Scope of Work for the *Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY* was published on April 2, 2016.[9]

On March 24, 2017, GOSR published the Draft Environmental Impact Statement (DEIS) for the Living Breakwaters project. On March 31, the State submitted its Joint Permit Application to the USACE and DEC for the project's major environmental permits. The timing of these actions reflects the fact that environmental permitting typically requires a project to have reached at least 30% design, and the permitting process runs concurrently with the NEPA process, as the permitting process relies on information within the DEIS. The USACE and DEC's review of the permits will run, at minimum, concurrently with the public comment period and agency consultation for the DEIS. As with any permitting process, it is expected that the USACE and DEC will have questions and comments on the Living Breakwaters project. GOSR will promptly provide any additional information on the permit application if so requested by the USACE or DEC. With the application currently submitted to regulatory agencies, it is anticipated that the USACE and DEC will issue the permits for the Living Breakwaters project in accordance with the schedule at Table 38.

The LWTB project is in the preliminary design phase, therefore, the project has not completed the environmental review or permitting processes. Based on the available information pertaining to the potential projects that will be completed through LWTB, GOSR does not anticipate a need to complete an EIS for the LWTB Project. Rather, GOSR intends to complete Environmental Assessments and to issue Findings of No Significant Impact for multiple projects and groups of projects. Environmental permitting and Environmental Assessments will be performed as each LWTB focus area enters the 30% design stage (as described above) and is expected to occur according to the schedule at Table 40.

[8] https://stormrecovery.ny.gov/sites/default/files/uploads/coastal_and_social_resiliency_initiatives_-_tottenville_draft_scope.pdf

[9] https://stormrecovery.ny.gov/sites/default/files/uploads/Coastal%20and%20Social%20Resiliency%20Initiatives%20-%20Tottenville%20FINAL%20SCOPE%20and%20RTC_1.pdf

Public Comments

The Governor's Office of Storm Recovery (GOSR) posted Action Plan Amendment 16 (APA 16) for public comment on April 24, 2017. At that time, GOSR began accepting comments on the website www.stormrecovery.ny.gov, as well as through the mail. Public hearings were also held in Bronx County on May 15, 2017 and Nassau County on May 17, 2017. The comment period officially ended at 5 pm on May 24, 2017.

The legal notices of these hearings and the comment period were published in AMNY and Newsday as well as in three local non-English newspapers, Impacto (Spanish), Russian Bazaar (Russian) and Epoc Times (Simplified Chinese).

This Amendment was made accessible to persons with disabilities upon request (by telephone or in writing). Translations of APA 16 were available in Simplified Chinese, Russian and Spanish, the three most commonly used languages in the storm affected areas of New York State based on an analysis of Census data for households with members five years or older with limited English proficiency.

GOSR received 2 letters and 7 submissions via www.stormrecovery.ny.gov with comments related to APA 16. Commenters may have submitted more than one comment as part of their submission. Comments are summarized and GOSR's responses are set out below.

NY Rising Homeowner Recovery Program

Comment

One commenter requested that GOSR consider health consequences related to carbon monoxide related to a boiler installed after flooding at their building address in New York City.

Response

As indicated in the New York State Action Plan Incorporating Amendments 8-13 and subsequent amendments including APA16, the NY Rising Housing Recovery Program provides assistance to disaster-declared counties outside of New York City for Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. New York City received its own allocation of CDBG-DR funding and has developed housing recovery programs. New York City residents who seek disaster-related relief for his or her dwelling may contact 311.

Rebuild by Design Living With The Bay Project

Comment

The State received a letter from the Nassau Hiking and Outdoor Club, Inc. regarding the Rebuild By Design Living With The Bay (LWTB) project. The Club is advocating for limited tree removal in Hempstead Lake State Park and the preservation of existing open space.

Response

New York State Office of Parks, Recreation & Historic Preservation (State Parks) is coordinating work on the LWTB project's improvements to Hempstead Lake State Park (HLSP), and will respond directly to the commenter with additional detail. Excerpts of that response are presented below.

The LWTB project complements and enhances our collective environmental stewardship goals, strategically focusing on increasing the resiliency of communities along the Mill River. The project will reduce stormwater inundation and pollution, while increasing public accessibility, through greenways that connect the South Shore's communities. The LWTB environmental investments minimize environmental impacts, while maximizing storm resiliency both locally and for downstream communities. The

investments in green and grey infrastructure improvements along the Mill River corridor will directly benefit the communities of Hempstead, Malverne, Rockville Center, Lynbrook, East Rockaway, Oceanside, and Bay Park.

The HLSP improvements are a key component in the strategy to manage stormwater flooding, while incorporating numerous co-benefits such as water quality improvements, ecological restoration and aquifer recharge, community and social resiliency, education, and enhanced quality of life in an urban setting. The LWTB project in HLSP prioritizes environmental and habitat preservation while simultaneously increasing opportunities for bird viewing throughout the park. Additionally, improving water quality in the watershed, by removing contaminants in urban run-off, will provide enhanced habitat and new, expanded community access to waterways and open space.

LWTB will address stormwater storage capacity management by rehabilitating and enhancing the existing 100-year-old dam. As an instrument for flood mitigation, the dam and gatehouse will provide critical water flow controls which can reduce and delay peak flows to downstream waterbodies and communities during extreme weather events. While, trees will be removed from the dams at Hempstead Lake and South Pond to comply with NYS DEC dam safety guidelines, State Parks remains open to ideas about how and where to plant trees.

Many of the trails at Hempstead Lake State Park will be improved during this project. Existing trails will be restructured to meet the current needs of the park, which includes hiking, walking, and biking. These trails will be constructed using a stone material, widening of trails is limited to a few sections of the park, and State Parks will minimize tree removal by winding the trails around existing trees. Additionally, much of the vegetation that will be removed are invasive species, which impacts the growth of native vegetation. After the trail work is complete, native species will be planted to increase wildlife habitat.

Comment

The State received a comment from one of the members of the LWTB Citizens Advisory Committee, expressing opposition to the use of concrete or asphalt in new construction within the park and advocated instead for the rehabilitation of existing structures.

Response

The LWTB project compliments and enhances our collective environmental stewardship goals, strategically focusing on increasing the resiliency of communities along the Mill River. The project will reduce stormwater inundation, pollution and increase public accessibility with greenways that connect the South Shore's communities. The focus of the LWTB environmental investments are to minimize environmental impacts while maximizing storm resiliency both locally and for downstream communities. The investments in green and grey infrastructure improvements along the Mill River corridor will directly benefit the communities within the Town of Hempstead including Village of Hempstead, of West Hempstead, Malverne, Rockville Center, Lynbrook, East Rockaway, Oceanside, and Bay Park.

LWTB will address stormwater storage capacity management by rehabilitating and enhancing the existing 100 year old dam at Hempstead Lake State Park. The Stormwater Retrofit projects will install green infrastructure including, but not limited to: drywells, bioswales, permeable pavement, tree planting, and select bioretention and infiltration interventions throughout the project area. Smith Pond Drainage Improvements project which will improve water quality, enhance recreation, restore the ecological system to promote native aquatic species, shoreline stabilization, permeable pavement parking lot, wetlands restoration, landscaping (including tree planting) and construction of greenway paths will also be evaluated. These are just some of the many examples outlined in APA 16 that will enhance the project area of Mill River through green infrastructure. The focus of LWTB is to manage stormwater flooding, while incorporating numerous co-benefits such as water quality improvements, ecological restoration and aquifer recharge, community and social resiliency, education, and enhanced quality of life in an urban

setting. Improving water quality in the project area, by removing contaminants in urban run-off through green and grey infrastructure, will provide enhanced habitat and new, expand community access to waterways and open space.

The LWTB design identified the desirability of green infrastructure retrofit projects which will improve stormwater collection and conveyance to mitigate flooding and incorporate water quality improvement components. Some of the project types which are being developed in the Resiliency Strategy referenced in the APA 16 include: Parcel-Based Green Infrastructure, Green Streets and Green-Gray Infrastructure. The Hempstead Housing Authority (HHA) is located in a low-lying area affected by 10-year flood events and is considered a parcal-based green infrastructure project. The proposed interventions for the HHA include mitigating stormwater flow, and elevations by creating a stormwater storage/recharge basin.

The environmental education and resiliency center currently proposed in Hempstead Lake State park is planned to be constructed in an already developed (landscaped) area of the park directly adjacent to parking Field 1. This multi-use facility will not only provide an opportunity to expand the park's environmental interpretative programming, but will also serve as the control center for the gatehouse and as an emergency operation center for emergencies and natural disasters. The Center will also be equipped with an emergency generator to provide electricity for operation of the gates, instruments and controls and emergency response when the electric grid in the area is out-of-service (as is common during storms). Rehabilitation of existing structures in the park has been considered, but is not feasible since they are wood framed structures on-slab and would not be suitable for the project needs.

State Parks' environmental education team will be collaborating with various community environmental education partners on this initiative, and State Parks looks forward to working with local community organizations and other partners to enhance the programming at the site. The educational portion of the project will highlight the Mill River watershed system and provide climate resiliency education. Offering this programming at the park will provide the public, students and families from low to moderate income communities with a "sense of place" and an understanding of the natural environment, while providing immediate and direct access to nature. This, combined with State Parks' "Connect Kids" transportation grant program and "Every Kid in a Park" program will ensure expanded access to our future conservationists.

LWTB's goal is not only to mitigate flooding, enhance natural resources, and propose green infrastructure solutions, but to develop projects that will can be replicated across similar watersheds throughout Long Island and even the Country. With assistance from the community and surrounding municipalities, State Parks will ensure that all of the LWTB goals and objectives are met.

Comment

The State received three comments regarding the inclusion and location of the Education Center in Hempstead Lake State Park, advocating for preservation of the natural views and trees.

Response

As global climate change increasingly impacts people around the world, education is an impactful way to increase the ability of a community to prepare for, react and respond to extreme weather events. Understanding this need, two of the Rebuild by Design competition objectives are Social Resiliency and Access and Urban Quality, which requires RBD projects to include interventions to strengthen, educate and connect communities to their natural environment. The Education Center will serve as a flexible space for community, emergency response, and educational planned uses including but not limited to:

- Monitoring and operation of the Hempstead Lake gates.

- Utilized as a coordination space for local agencies or utilities during disaster response. The building will include a full building load emergency generator (estimated to be 100 KW) to provide as a resource to the community during power outages.
- A command post to repair and restore critical infrastructure as soon as possible to promote economic resiliency in the community and region. The existing parking area (field 1) is currently utilized by PSEG during emergency response.
- Information center for residents after a storm event to provide direction for access to community services.
- Nassau County Law Enforcement Explorers training and program space. This volunteer program provides an opportunity for young adults to receive basic law enforcement training and to learn about career opportunities within law enforcement. In addition to training and education, volunteers participate in community service events throughout the year to encourage volunteerism and build stronger communities.
- Education space and wet lab for hands-on learning and activities, engaging young minds through activities that reflect their local surroundings and fosters stewardship. The education space will be focused primarily on the importance of parks and wetlands, specifically during extreme weather conditions.
- Informational space about Mill River Corridor system, local wildlife, and history of the area.
- Informational space to educate users about sustainable buildings and construction.
- Serve as a central focal point of activity for the park to provide park information, provide connections to the greenway and an overlook deck with views of Hempstead Lake

The Environmental Education and Resiliency Center currently proposed in Hempstead Lake State park is planned to be constructed in an already developed (landscaped) area of the park directly adjacent to parking Field 1. The Education Center has been preliminarily sited to reduce impacts on existing trees and will be designed to reduce environmental demands, both in initial cost and lifecycle cost in a responsible fashion. Program staff will continue to engage with the community to refine the Center as it proceeds through the design process.

Every element of LWTB proposed for construction will undergo an environmental review pursuant to the National Environmental Policy Act (NEPA) as well as the New York State Environmental Quality Review Act (NYSEQRA) to assess and mitigate any potential environmental impacts. There will be multiple opportunities for the public to review and comment on the environmental review documentation prepared for LWTB.

Comment

The State received two comments asking about the timing of the Environmental Assessments (EA) and the public availability of an Environmental Impact Study (EIS) to ensure the opportunity for public comment and the benefit of the projects.

Response

GOSR does not anticipate a need to complete an Environmental Impact Statement (EIS) for LWTB. Rather, GOSR intends to complete environmental assessments (EAs) and issue Findings of No Significant Impacts for multiple projects and groups of projects, pursuant to the U.S. Department of Housing and Urban Development's NEPA implementing regulations at 24 C.F.R. Part 58. According to the NEPA environmental review process, the completion of EAs will inform the responsible entity, here GOSR, whether an EIS is necessary.

GOSR will aggregate and evaluate as a single project all individual activities that are related on a geographical or functional basis or are logical parts of a composite of contemplated actions. The scope of each environmental review will include the following: **connected actions** (automatically trigger other actions, cannot or will not proceed unless other actions are taken previously or simultaneously, are interdependent parts of a larger action); **cumulative actions** (actions which when viewed with other proposed actions have cumulatively significant impacts); and/or **similar actions** (actions that have similarities that provide a basis for evaluating their environmental consequences together). All individual environmental reviews will reference RBD and LWTB, and each review will incorporate an environmental analysis framework that will consider all other improvements proposed with the LWTB Program assessing any potential for cumulative effects.

To date as of the close of the APA 16 comment period (May 24, 2017), New York State Parks has provided 60% Designs for improvements at Hempstead Lake Park that propose improvements for dams, ponds, a greenway, and a new education center, as well as wetland restoration activities. The proposed activities at Hempstead Lake State Park have independent utility—the activities function as stand-alone improvements without triggering or relying on other activities—and warrant a specific environmental review. GOSR has aggregated all activities proposed within Hempstead Lake State Park into a single environmental review. On May 19, 2017, GOSR initiated a coordinated environmental review of the Hempstead Lake State Park activities pursuant to 6 N.Y.C.R.R. Part 617 by circulating a lead agency letter with a NYSEQRA Full Environmental Assessment Form to establish GOSR's responsibility as Lead Agency. A NEPA EA is underway and GOSR will hold a public hearing on the EA for additional public engagement and in addition to the public notice and comment requirements of 24 C.F.R. Parts 55 and 58 and Section 106 of the National Historic Preservation Act of 1966. It is anticipated that the public hearing for the Hempstead Lake Park activities will occur in June 2017.

Comment

The LWTB Citizens Advisory Committee (CAC) submitted a comment encouraging a holistic approach with additional time to complete prioritization (currently underway) and subsequent modeling. The CAC also stated concern the segmentation of the project may lead to concerns during the environmental review and delay the implementation of the project.

Response

The Living with the Bay project described in APA16 is a snapshot of the project design at the time of posting for public comment. As discussed in APA16, the design is continuing to evolve with the help of the CAC and Technical Advisory Committee (TAC). Since publication of APA16, more detailed project summaries for proposed projects have been provided to the TAC and CAC, so they can be prioritized to reduce flood risks and maximize environmental co-benefits. Additionally, new projects proposed by the CAC (after publication of APA16) are being developed and assessed. The TAC and CAC will continue to have opportunity to provide input to the project throughout the project implementation.

Now that preliminary project scopes have developed, modeling of flooding will be expanded through the project area to help optimize improvements and eliminate pinch points (i.e., transferring flooding from one area to another). Modeling will assess stormwater flooding, tidal surge and sea level rise. This will tie the specific projects together in a holistic manner to assess the level of protection conveyed by the entire project.

For the environmental review, and as required and allowed by NEPA, GOSR will aggregate and evaluate as a single project all individual activities that are related on a geographical or functional basis or are logical parts of a composite of contemplated actions. The scope of each environmental review will include the following: connected actions (automatically trigger other actions, cannot or will not proceed unless other actions are taken previously or simultaneously, are interdependent parts of a larger action);

cumulative actions (actions which when viewed with other proposed actions have cumulatively significant impacts); and/or similar actions (actions that have similarities that provide a basis for evaluating their environmental consequences together). All individual environmental reviews will reference RBD and LWTB, and each review will incorporate an environmental analysis framework that will consider all other improvements proposed with the LWTB Program assessing any potential for cumulative effects. The environmental review process GOSR is conducting for LWTB will not produce any segmentation issues under NEPA. Please see the State's response above to get further detail on the status of the EA for the proposed activities at Hempstead Lake State Park.