

## **2.0 INTRODUCTION**

This chapter inventories land use, zoning, and applicable public policies within the study area and discusses the potential environmental impacts that could result from the implementation of one or more proposed initiatives (Proposed Actions) intended to enhance coastal and social resiliency along the Tottenville shoreline of the South Shore of Staten Island. These initiatives include the Living Breakwaters Project (Breakwaters Project) and the Tottenville Shoreline Protection Project (Shoreline Project). Resources were identified within the study area, which is described below and depicted in **Figure 2-1**. This analysis has been prepared in accordance with National Environmental Policy Act (NEPA) and State Environmental Quality Review Act (SEQRA), and in consideration of City Environmental Quality Review (CEQR) guidance.

### **2.0.1 STUDY AREA**

The land use, zoning, and public policy study area (the study area) encompasses the area of direct effect from the Proposed Actions as well as the larger area of indirect effect that would experience storm damage risk reduction with the implementation of the Proposed Actions. The area of indirect effect also includes the area that would benefit most from the enhanced amenities along the Tottenville waterfront. As a major arterial street, Hylan Boulevard forms a natural boundary for this area. The study area boundary also includes the full extent of Conference House Park. The study area is located along approximately two miles of Staten Island's South Shore waterfront from the Arthur Kill shoreline in the west to Richard Avenue in the east, and extending inland to Hylan Boulevard. The study area is approximately 475 acres in size.









## **2.1 PRINCIPAL CONCLUSIONS**

The Proposed Actions would result in the development of new resiliency, educational, and recreational infrastructure in Tottenville, including the following components:

- the construction of an ecologically enhanced breakwater system that would provide coastal risk reduction by reducing wave energy at the shoreline, and reducing or reversing shoreline erosion (under Alternatives 2 and 3);
- the development of either an on-shore Water Hub facility that would be constructed within Conference House Park or a “floating” Water Hub (under Alternatives 2 and 3);
- a one-time addition of new sand for shoreline restoration along approximately 806 feet of shoreline between Manhattan Street and Loretto Streets to build up a particularly narrow, eroded section of the beach (under Alternatives 2 and 3); and
- a series of shoreline risk reduction measures, including an earthen berm, a hybrid dune/revetment system, eco-revetments, and a raised edge (revetment with trail), along with



FOR ILLUSTRATIVE PURPOSES ONLY

-  Proposed Breakwater Features
-  Proposed Shoreline Restoration Area
-  Proposed Shoreline Project Elements
-  Potential Location of Proposed Water Hub (exact location to be determined)
-  Proposed Floating Dock (associated with Water Hub Potential Locations 1 and 2 only)
-  Potential Water Access
-  Study Area
-  0 1,000 FEET

wetland enhancement and planting of native coastal plant species, from approximately Carteret Street to Page Avenue (under Alternatives 2 and 4).

All of these features would constitute compatible uses within Conference House Park and the abutting City street rights-of-way. They would be compliant with local zoning, including special districts, and with all applicable public policies. As a result, the Proposed Actions would not result in any significant impacts to land use, zoning, and public policy in the study area.

Alternative 2, which includes both the Breakwaters Project and Shoreline Project, would reduce risk from coastal erosion and wave action, providing a level of protection to existing land uses in the park and upland residential areas. Likewise, this alternative would be consistent with public policy initiatives to protect the South Shore of Staten Island from coastal erosion and wave action, and would enhance local habitat and ecologies as discussed in federal, State and City plans. This alternative would not result in any adverse changes to land use, zoning or public policies.

Alternative 3, which includes the Breakwaters Project, would affect land use, zoning and public policy in much the same way as its individual components would under Alternative 2, although the positive interplay between these elements and the Shoreline Project would be lost.

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## **2.2 REGULATORY CONTEXT**

The Proposed Actions are located in the Borough of Staten Island in New York City. Land use and zoning within the study area is governed by the City of New York through the New York City Zoning Resolution. Land use refers to the activity that occurs on land and within the structures that occupy it. Uses may include residential, community facility, commercial (including retail), industrial, transportation/utility, vacant land, and parks. New York City's Zoning Resolution controls the use, density, and bulk of development within the City. The Zoning Resolution is divided in two parts: zoning text and zoning maps. The zoning text establishes zoning districts and sets forth the regulations governing land use and development, and the zoning maps show the locations of the zoning districts.

The Proposed Actions are subject to several federal, State, City, and other local plans and policies. Per the 2014 *CEQR Technical Manual* guidelines, public policies are officially adopted and promulgated policies that prescribe intended uses or activities applicable to an area or particular site(s) in the City. Plans and policies discussed in this section may or may not contain objectives and policies related to the environmental effects of the Proposed Actions. The consistency of the Proposed Actions with such plans and policies is examined below in Section E, "Effects Assessment." The following plans and policies are relevant to the Proposed Actions, and are further discussed in the Existing Conditions section below:

- **Federal:** Farmland Protection Policy Act, Hudson-Raritan Estuary Comprehensive Restoration Plan, National Plan of Integrated Airport Systems.
- **New York State:** Coastal Green Infrastructure Research Plan for New York City; Coastal Management Plan; Smart Growth Public Infrastructure Policy Act.
- **New York City:** One New York: The Plan for a Strong and Just City (OneNYC); PlaNYC: A Greener, Greater New York; A Stronger, More Resilient New York; Raise Shorelines

Citywide Study; Vision 2020: New York City Comprehensive Waterfront Plan; and the New York City Local Waterfront Revitalization Program (WRP).

### 2.2.1 METHODOLOGY

As discussed above, the study area for this analysis is defined by the area of direct effect as well as the larger area that would experience storm damage risk reduction with implementation of the Proposed Actions.

The primary source of land use information is geographic information system (GIS) parcel data obtained from the New York City Department of City Planning (NYCDCP). Field surveys and aerial photography were used to verify land uses within the project areas and the study area. Zoning and public policy information was obtained from New York State and New York City. This chapter discusses the existing land use, zoning, and public policies within the study area, and assesses the Proposed Actions' compatibility with existing conditions and the potential for impacts from the Breakwaters Project and the Shoreline Project.

## 2.3 EXISTING CONDITIONS

### 2.3.1 LAND USE

The Proposed Actions would be undertaken in the Tottenville section of Staten Island, along the neighborhood's southern shoreline and just offshore within the waters of Raritan Bay. Tottenville is located at the southwestern tip of Staten Island, and is the southernmost neighborhood in New York City and State. It is bounded by water on three sides, with the Arthur Kill to the west and north and Raritan Bay to the south. The study area is located in the southwestern corner of Tottenville where these waterways meet. Land uses along the shoreline in the study area are characterized by a mix of parkland and residential uses, with some privately owned vacant parcels. Land uses in the project area are depicted in **Figure 2-2**.

The largest single land use in the study area is Conference House Park, a 265-acre park under the jurisdiction of the New York City Department of Parks and Recreation (NYC Parks). The western portion of the park contains numerous amenities and attractions, including grassy and densely wooded areas, four historic architectural resources, a playground, visitors center, walking and biking paths, hiking trails, and the "South Pole" marking the southernmost point of New York State. Extensive natural areas make up the rest of the park, including large tracts of maritime forest, creeks and ponds, bluffs, coastal wetlands, and beaches lining the shore. Events and organized activities offered at Conference House Park include tours, exhibitions, community events, volunteer programs within the park such as tree plantings and cleanups as well as at the historic houses, beach walks, birding talks and walks, kayaking, outdoor drawing workshops, fishing, family activities, outdoor movies, and citizen science programs. NYC Parks estimates a daily average of approximately 200 to 250 weekday visitors (between 7 AM and 7 PM) and approximately 400-500 daily weekend visitors (between 7 AM and 7 PM). There are two primary parking lots at the visitor's center with a 55 space capacity plus 9 handicap spaces. A parking lot with 9 spaces exists at 8 Shore Road/70 Satterlee Street. Two NYC Parks designated non-motorized boat launches are located at the terminus of Hylan Boulevard and at the southern terminus of Page Avenue on the beach. Recreational boating within the Bay is also facilitated by private facilities; the Tottenville Marina (with in-water slips and on-land storage available) on Ellis Street, as well as the Bentley Yacht Club (with in-water mooring only). There are private/public marinas across the Raritan Bay in Perth Amboy with both in-water slips,



Coastal and Social Resiliency Initiatives for Tottenville Shoreline

Existing Land Use  
Figure 2-2

moorings and ramping locations. The closest public boat ramp location is NPS Gateway Recreation Area at Great Kills Park. Conference House Park is not a swimming beach. There are no lifeguards or other necessary facilities/staffing to accommodate swimming.

Inland from Conference House Park, the study area is residential in nature, characterized by single-family detached and attached houses. West of Brighton Street, these residential areas are adjacent to a wooded section of Conference House Park primarily along Billop Avenue and Swinnerton Street; east of Brighton Street, residential areas are developed in closer proximity to the shoreline with beach and vegetated upland between the neighborhood and the waters of Raritan Bay. Since Superstorm Sandy, some homes in this coastal area have been elevated. The blocks between Loretto Street and Sprague Avenue contain several developments consisting of two-family houses and attached single-family houses on small private streets. East of Sprague Avenue to Page Avenue, large vacant or wooded areas are interspersed with tracts of single-family houses including some houses on larger lots.

In addition to Conference House Park, several park uses are present in the eastern portion of the study area. Hybrid Oak Woods Park is located along both sides of Joline Avenue north of Bruno Lane and Tricia Way. This smaller passive park, roughly 10 acres in size, consists of woodlands without any developed park facilities. The Tottenville Pool, another NYC Parks facility, is located north of Hybrid Oak Woods Park along Hylan Boulevard at Joline Avenue. East of Page Avenue, the study area contains extensive wooded lands. Immediately adjacent to Page Avenue, these lands are in the ownership of NYC Parks. Further east, the area includes wooded areas owned by the State of New York, including the Butler Manor Woods—a component of the Mount Loretto Unique Area—under the jurisdiction of the NYS Department of Environmental Conservation (NYSDEC). Butler Manor Woods contains hiking trails. The South Shore Swimming Club, a membership-based pool club, and the South Shore Babe Ruth League, which operates two baseball fields located predominantly on City property, both operate along Hylan Boulevard east of Page Avenue.

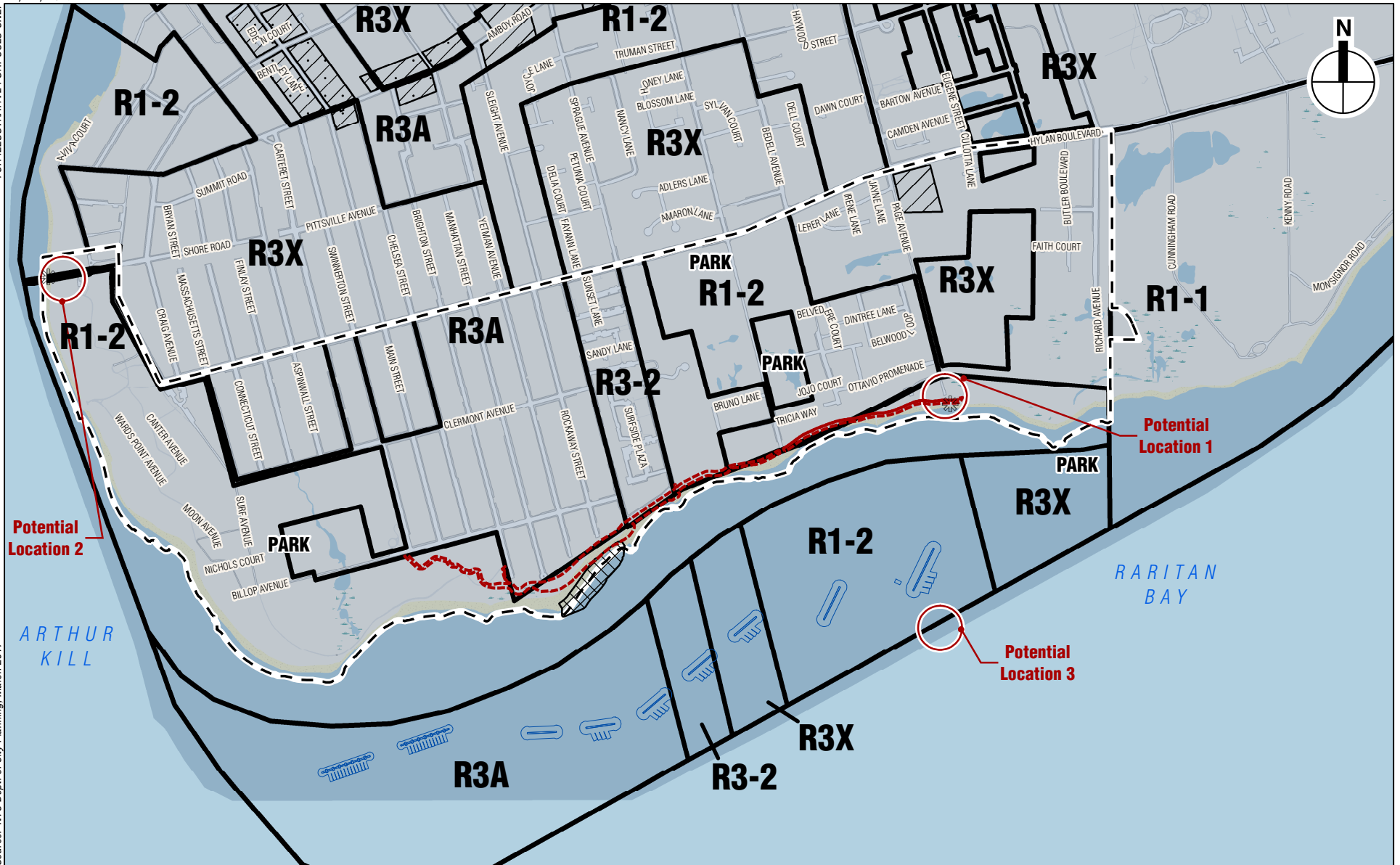
Two community facilities are present in the study area: the Staten Island Early Learning Center, a pre-Kindergarten run by the Volunteers of America social service organization at 10 Joline Lane, and a dentist office at the corner of Sprague Avenue and Hylan Boulevard.

A single transportation/utility use is also present in the study area. This is a BP gas station and associated 7-Eleven mini-mart at 6778 Hylan Boulevard, at the corner of Page Avenue.

### 2.3.2 ZONING

Zoning in the project area reflects the existing land use pattern. The study area is mapped with several low-density residential zoning districts, including R1-1, R1-2, R3-2, R3A, and R3X zones, as shown in **Figure 2-3**. R1 districts are characterized by large single-family detached houses on spacious lots, and are mapped between Sprague and Page Avenues. R3 districts are somewhat denser, permitting single and two-family detached housing on smaller lots, as well as attached houses and small apartment buildings in the case of the R3-2 district. R3A and R3X contextual districts are mapped west of Loretto Street and between Page and Richard Avenues, while an R3-2 district is mapped between Sprague and Joline Avenues.

A C1-1 commercial overlay district is mapped at Hylan Boulevard and Page Avenue, where the gas station and mini-mart are located. Commercial overlay districts permit neighborhood commercial uses that serve nearby residents.



- |                                  |   |                                     |   |
|----------------------------------|---|-------------------------------------|---|
| Zoning Districts                 | Special South Richmond Development District | Proposed Breakwater Features        | Potential Location of Proposed Water Hub (exact location to be determined)          |
| C1-1 Commercial Overlay District | Potential Water Access                      | Proposed Shoreline Restoration Area | Proposed Floating Dock (associated with Water Hub Potential Locations 1 and 2 only) |
| C2-1 Commercial Overlay District |   | Study Area                          |   |
|                                  |   | Proposed Shoreline Project Elements |   |

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*SPECIAL SOUTH RICHMOND DEVELOPMENT DISTRICT*

In addition to these districts, the entire study area is within the mapped bounds of the Special South Richmond Development District (SSRDD), which was adopted in the 1970s to manage growth in southern Staten Island. General goals of the district are to promote balanced and desirable land uses while minimizing impacts to natural resources. Changes in topography are generally limited to two feet and the district seeks to limit clearing of vegetation and impacts on trees, lakes and other natural features. In addition, the SSRDD establishes special height and setback limits for new buildings, and development must be clustered to minimize footprint and preserve natural features. All new development and site alteration proposals are reviewed for consistency with these objectives.

*FLOOD RESILIENCE ZONING TEXT AMENDMENT/SPECIAL REGULATIONS FOR NEIGHBORHOOD RECOVERY*

In 2013, NYCDP adopted a zoning text amendment to enable and encourage flood-resilient building construction throughout designated flood zones. The amendment adjusted zoning to remove conflicts that would have prevented new and existing buildings from complying with new resiliency requirements in the Building Code, which in turn had resulted from higher flood elevations issued by the Federal Emergency Management Agency (FEMA) in the wake of Superstorm Sandy. The Flood Resilience Zoning Text Amendment also permits temporary flood control devices and associated emergency egress systems that are assembled prior to a storm and removed thereafter on the waterfront, and within open spaces.

Building on the Flood Resilience Zoning Text Amendment, in July 2015, NYCDP adopted a zoning text amendment to remove additional zoning barriers which had been hindering recovery in certain waterfront neighborhoods, including Tottenville, which experienced a high concentration of damage from Superstorm Sandy and where large numbers of properties are anticipated to be rebuilt or elevated. The text amendment, which is time-limited, simplifies the process for documenting zoning non-compliance in the affected neighborhoods, removes disincentives to resilient investments in the building stock, and establishes a new zoning envelope for narrow and shallow lots where homes are to be reconstructed to better reflect existing neighborhood context.

### **2.3.3 PUBLIC POLICY**

*FEDERAL PLANS AND POLICIES*

*Farmland Protection Policy Act (7CFR Part 658)*

The project location is not located within an Agricultural District. As shown on Figure 4 in **Appendix A**, an 8.8-acre area designated as prime farmland occurs near the project area between approximately Aspinwall Street and Swinnerton Street. This area is currently parkland as part of Conference House Park and is anticipated to remain as City parkland in the future. While the western terminus of the proposed earthen berm of the Shoreline Project would intersect a small portion of the north-eastern area of prime farmland soils identified in Figure 4, the Proposed Actions would not result in the irreversible conversion of farmland for non-agricultural purposes. Therefore, the Proposed Actions would not violate the Farmland Protection Policy Act.

### *Hudson-Raritan Estuary Comprehensive Restoration Plan*

Raritan Bay supports a diverse community of aquatic biota, but has also been impacted by upland development and discharges that have resulted in degraded water and habitat quality, as well as sediment contamination. A Comprehensive Restoration Plan has been developed for the Hudson-Raritan Estuary (HRE CRP) by the USACE and the Port Authority of New York and New Jersey (PANYNJ) to restore and protect habitat within the Hudson-Raritan Estuary. The Plan was developed in partnership with the NY-NJ Harbor & Estuary Program (HEP) with the contribution and collaboration of the U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), NYSDEC, Hudson River Foundation, NY/NJ Baykeeper, and other federal, State (NY and NJ), and City agencies, as well as non-governmental organizations and academic and research institutions. The Plan identifies 12 Target Ecosystem Characteristics (TECs), which are used to outline strategies for ecological restoration within the Hudson-Raritan Estuary. These TECs include wetlands; habitat for waterbirds; coastal and maritime forests; oyster reefs; eelgrass beds; shorelines and shallows; habitat for fish, crab, and lobsters; tributary connections; enclosed and confined waters; sediment contamination; public access; and acquisition. The HRE CRP specifically identifies restoration opportunities in many of the TEC categories for the study area. The final report was released in June 2016.

### *National Plan of Integrated Airport Systems (24 CFR Part 51 Subpart D)*

Based on guidance provided by the US Department of Housing and Urban Development (HUD) in Fact Sheet #D1, the National Plan of Integrated Airport Systems was reviewed for civilian, commercial service airports within the vicinity of the project site (see Figure 5 in **Appendix A**). The nearest civilian airport is Linden Airport, located 39,347 feet north of the project area and the nearest military airport is located approximately 160,585 feet from the project area. Therefore, the Proposed Actions would not be near an Airport Clear Zone (an area extending 3,000 feet from the end of a civil airport runway) or an Accident Potential Zone (an area extending approximately 15,000 feet from a military airfield runway).

### *NEW YORK STATE PLANS AND POLICIES*

The following New York State plans and policies are applicable to the Proposed Actions.

#### *Coastal Green Infrastructure Research Plan for New York City*

In March 2015, NYSDEC released its *Coastal Green Infrastructure Research Plan for New York City*, which develops an agenda for new research that will help decision-makers as they evaluate future strategies for New York Harbor. Jointly managed with the New York City Mayor's Office of Recovery and Resiliency, the plan is intended to develop research on coastal green infrastructure strategies that could increase resiliency along the Hudson River estuary shoreline and coastal areas of New York City. The research plan examines six coastal green infrastructure strategies—including constructed breakwaters—summarizes the latest scientific understanding of the ecological and risk reduction benefits of these strategies, and describes research needs moving forward. The overall plan is intended to help protect coastal communities, provide habitat to sustain fisheries, and provide opportunities to connect New Yorkers to their local waterfront.

### *Coastal Management Program*

After enactment of the federal Coastal Zone Management Act (CZMA), the New York State Department of State (NYSDOS) developed a Coastal Management Program (CMP) and enacted implementing legislation (Waterfront Revitalization and Coastal Resources Act) in 1981, with the purpose of achieving a balance between economic development and preservation, thus promoting waterfront revitalization and water-dependent uses and protecting open space, scenic areas, and public access to the shoreline, fish, wildlife, and farmland. The program also aims to minimize significant adverse effects to ecological systems, erosion, and flood hazards.

### *Smart Growth Public Infrastructure Policy Act*

Article 6 of the New York State Environmental Conservation Law requires any “State Infrastructure Agency” to consider the consistency of the construction, or reconstruction, of new or expanded public infrastructure with a set of Smart Growth Public Infrastructure Criteria. The law requires that the chief executive officer of a State Infrastructure Agency must provide a written “Smart Growth Impact Statement” attesting that the project, to the extent practicable, meets the Smart Growth Public Infrastructure Criteria. Where a project cannot meet these criteria, or compliance is considered to be impracticable, the Smart Growth Impact Statement shall provide a detailed statement of justification.

### **NEW YORK CITY PLANS AND POLICIES**

The following New York City plans and policies are applicable to the Proposed Actions.

#### *OneNYC/PlaNYC/A Stronger, More Resilient New York*

*One New York: The Plan for a Strong and Just City* (OneNYC) is the City’s comprehensive strategy and policy directive to address long-term challenges related to climate change, an evolving economy, and aging infrastructure and is built on the 2007 *PlaNYC: A Greener, Greater New York* (updated in 2011).

Following Superstorm Sandy and as part of the ongoing PlaNYC effort, the City formed the Special Initiative for Rebuilding and Resiliency (SIRR) to analyze the impacts of the storm on the city’s buildings, infrastructure, and people; assess climate change risks in the medium term (2020s) and long term (2050s); and outline strategies for increasing resiliency citywide. *A Stronger, More Resilient New York*, published in June 2013, was the result of that effort, and contains Community Rebuilding Resiliency Plans for five particularly vulnerable neighborhoods in NYC, one of which is the East and South Shores of Staten Island. Two key priorities identified for this area were developing coastal and shoreline protections, and ensuring public access to the waterfront.

The Community Rebuilding Resiliency Plan for the East and South Shores of Staten Island outlines specific initiatives to address coastal protection, buildings, critical infrastructure and community and economic recovery. With respect to coastal protection, the City’s proposals were based on a multi-faceted analysis which considered the nature and likelihood of coastal hazards, the potential impact of these hazards on the built environment and critical infrastructure, and the likely effectiveness of the proposed measures. Coastal protection initiatives were recommended in the Community Rebuilding Resiliency Plan for the East and South Shores of Staten Island, including along the Tottenville reach. In particular, Coastal Protection Initiative 15 calls for the implementation of a “living shoreline project—likely to consist of oyster reef breakwaters, beach nourishment, and maritime forest enhancements—in areas adjacent to Conference House Park in

Tottenville.” Also included in the Plan are other initiatives proposed for Tottenville, which are in various stages of progress. For example, Coastal Protection Initiative 24 calls for USACE to work with the City to complete its longstanding study for the East and South Shores of Staten Island, Phase 2 of which includes developing a plan for ongoing beach nourishment to restore sand rapidly after extreme weather events.

OneNYC incorporates and expands on all the planning work undertaken in PlanNYC as well as *A Stronger, More Resilient New York*. OneNYC is overseen and implemented by the Mayor’s Office of Sustainability and the Mayor’s Office of Recovery and Resiliency. As a project of City-wide significance, the Proposed Actions will be assessed for consistency with the policies for City objectives on growth, equity, sustainability and resiliency measures as outlined in OneNYC. In particular, Vision 4: Coastal Defense is directly correlated to the Proposed Actions. The following three initiatives comprise Vision 4: Coastal Defense:

- Initiative 1, Strengthen the city’s coastal defenses: Complete the City’s \$3.7 billion coastal protection plan, a program of infrastructure investments, natural area restoration, and design and governance upgrades of which nearly half is funded.
- Initiative 2, Attract new funds for vital coastal protection projects: Continue to identify and secure new sources of funds for infrastructure to reduce coastal flooding risk.
- Initiative 3, Adopt policies to support coastal protection: Align and adopt policies to support the right investments in coastal protection, and ensure those investments are operated and maintained effectively.

Among its many components, Vision 4 describes investments to improve low-lying shorelines across the city, including in the South Shore of Staten Island. The proposed breakwaters and elements of the Proposed Shoreline Project are specifically described in the OneNYC planning document as measures to address this policy.

### *Raise Shorelines Citywide Study*

In 2014, the New York City Economic Development Corporation (NYCEDC) announced its intention to study and identify high risk shorelines citywide that are most vulnerable to sea level rise and erosion, then prioritize those shorelines for future design and construction of resiliency measures. This study analyzed approximately 43 miles of at-risk shoreline across the five boroughs (including the South Shore of Staten Island) with a goal to evaluate localized measures to reduce coastal risk, make recommendations for resiliency investments, and coordinate with other local coastal protection actions. While the Tottenville shoreline was not selected as a priority site for detailed investigation, the study has nevertheless informed elements of the Shoreline Project.

### *Vision 2020: New York City Comprehensive Waterfront Plan*

The Comprehensive Waterfront Plan, originally issued by NYCDP in 1992, presented a long-range vision for the City’s waterfront. In 2011, the Comprehensive Waterfront Plan was updated and reissued under the title Vision 2020. Vision 2020 was prepared in partnership with State and federal agencies, including NYSDEC, the Port Authority of New York and New Jersey and the U.S. Army Corps of Engineers. The plan includes eight overarching goals:

- Goal 1: Expand public access to the waterfront and waterways on public and private property for all New Yorkers and visitors alike.

- Goal 2: Enliven the waterfront with a range of attractive uses integrated with adjacent upland communities.
- Goal 3: Support economic development activity on the working waterfront.
- Goal 4: Improve water quality through measures that benefit natural habitats, support public recreation, and enhance waterfront and upland communities.
- Goal 5: Restore degraded natural waterfront areas, and protect wetlands and shorefront habitats.
- Goal 6: Enhance the public experience of the waterways that surround New York—our Blue Network.
- Goal 7: Improve governmental regulation, coordination, and oversight of the waterfront and waterways.
- Goal 8: Identify and pursue strategies to increase the city’s resilience to climate change and sea level rise.

Additionally, the plan divides the City’s waterfront into 22 “reaches” and establishes specific strategies for each one.

#### *New York City Local Waterfront Revitalization Program*

New York City’s Local Waterfront Revitalization Program (WRP) is the City’s primary tool for guiding the development of the coastal zone and waterfront. The WRP contains 10 major policies, each with several objectives focused on improving public access to the waterfront; reducing damage from flooding and other water-related disasters; protecting water quality, sensitive habitats, such as wetlands, and the aquatic ecosystem; reusing abandoned waterfront structures; and promoting development with appropriate land uses. When a proposed project is located within the coastal zone and requires federal, state or local discretionary action, a determination of the project’s consistency with the policies of the WRP must be made before the project can proceed.

## **2.4 EFFECTS ASSESSMENT**

### **2.4.1 ALTERNATIVE 1—NO ACTION ALTERNATIVE**

The No Action alternative assumes that no new structural risk reduction projects or marine habitat restoration projects will be implemented in the project area. This alternative also assumes that current trends with respect to coastal conditions at Tottenville—i.e., relating to erosion, wave action, ecosystems, and water quality—will continue. Temporary dunes, constructed by NYC Parks as interim protective measures post-Sandy, are currently in place and would continue to exist under the No Action Alternative. The No Action alternative also presumes that existing strategies to educate New Yorkers and the general public on the risks posed by climate change will remain the same in the study area.

#### *LAND USE*

Under the No Action Alternative, it is expected that land use patterns in the project area would remain essentially unchanged. A number of filings have been approved by the NYC Department of Buildings (NYCDOB) for infill housing in the study area; these consist entirely of single-family and two-family housing in portions of the study area that already contain housing.

Additional development of vacant land is also possible, subject to existing zoning, but is not anticipated by the project's build year of 2020. Based on review of databases maintained by NYCDP and NYCDOB, no major developments or development proposals are expected by the 2020 analysis year. The existing Conference House Park pavilion is undergoing renovations as a result of storm damage (to be completed in 2018).

Under the No Action Alternative, the coastal resiliency structures associated with the Proposed Actions would not be in place and vulnerable land uses within the study area (residences, businesses and parkland) would continue to experience adverse effects associated with wave action, erosion and storm events.

### *ZONING*

In the future without the proposed project, zoning would remain unchanged in the project area, as no known changes to existing local zoning are planned at this time.

### *PUBLIC POLICY*

Under the No Action Alternative, the Proposed Actions would not be undertaken and Tottenville would remain vulnerable to erosion and wave action during both storm and non-storm conditions. In this sense, the No Action Alternative is inconsistent with a number of the public policies discussed above, which encourage that positive action be taken to improve coastal resiliency and reduce communities' vulnerability to future storm damage. Under this alternative, there would also be no intervention to create in-water structural habitat, or any other ecological enhancements to in-water and on-shore habitats in the project area, and therefore policy goals relating to ecological improvements to the Staten Island waterfront would not be advanced. No changes to existing public policies are planned at this time, and no known new public policies are proposed by the 2020 analysis year.

#### **2.4.2 ALTERNATIVE 2 (PREFERRED ALTERNATIVE)—THE LAYERED TOTTENVILLE SHORELINE RESILIENCY STRATEGY: LIVING BREAKWATERS AND TOTTENVILLE SHORELINE PROTECTION PROJECT (LAYERED STRATEGY)**

As described in Chapter 1, "Purpose and Need and Alternatives," the Layered Strategy consists of the implementation of two individual projects: the Living Breakwaters Project and the Tottenville Shoreline Protection Project.

The primary component of the Breakwaters Project would be an ecologically enhanced breakwater system that would provide coastal risk reduction by reducing wave energy at the shoreline, and reducing or reversing shoreline erosion. The breakwater system would increase habitat diversity by providing a combination of exposed, intertidal, and subtidal reef habitat, including "reef streets" (pockets of habitat complexity within the structure). Another key project element is a proposed community Water Hub that would provide a physical space for access to the waterfront, orientation, education, information on shoreline resiliency, and community gathering space. The Water Hub would provide space to engage students in waterfront education, citizen's science, oyster restoration and reef building, and cultivating long-term estuary stewardship. Programming would educate residents about the coastal environment, with its risks and benefits, and build awareness, preparedness and stewardship within the community. As described in Chapter 1, "Purpose and Need and Alternatives," there are three potential locations for the proposed Water Hub. Potential Location 1 would be in the vicinity of the

southern terminus of Page Avenue (involving the construction of a new structure). Potential Location 2 would be in the north-western portion of Conference House Park (involving the repurposing of an existing NYC Parks building). Direct water access from shore would be provided near the Water Hub site, including an accessory boat launch. Potential Location 3 would involve a “floating” Water Hub—a vessel operated by a non-profit organization. The vessel would visit the breakwater project area for education and monitoring and would be docked at existing facilities in the City. Potential Locations 2 and 3 would also include wayfinding and interpretive elements along the shoreline within the project area. Lastly, the project would include a one-time addition of new sand for shoreline restoration along approximately 806 feet of shoreline between Manhattan Street and Loretto Street to build up a particularly narrow, eroded section of the beach.

The Shoreline Project would consist of a series of shoreline risk reduction measures, including an earthen berm, a hybrid dune/revetment system, eco-revetments (one section between Brighton Street and Manhattan Street, and one section between Loretto Street and Sprague Avenue), and a raised edge (revetment with trail), along with wetland enhancement, and native coastal plant species, from approximately Carteret Street to Page Avenue. From Carteret Street to Brighton Street, within a wooded area of Conference House Park, the system would include a raised earthen berm that would be set back in the forest, leaving an expansive area of woodland in front of it with expansive waterfront views. The berm would be planted with native vegetation. At Brighton Street, the berm would tie into an eco-revetment, which would tie into an armor core hybrid dune/revetment system at Manhattan Street. At approximately Loretto Street the beach narrows, leaving no space for a hybrid dune/revetment, and thus the proposed dune/revetment system would transition to a stone eco-revetment along Surf Avenue. This section of eco-revetment would be constructed with stepped planters, and potentially stepped seating and ADA accessible overlooks. At approximately Sprague Avenue, the proposed eco-revetment would tie into the raised edge—a stretch of revetment and trail—which would continue to the project’s terminus, near Page Avenue. Running along and adjacent to these elements, the project would provide an interconnected, seamless, and ADA accessible waterfront trail along the shoreline, connecting the Shoreline Project elements to the existing Conference House Park trail system. Finally, habitat enhancements would be included with the project, including wetland improvements (both functional and aesthetic), shoreline plantings, and green infrastructure.

### *LAND USE*

Temporary dunes, constructed by NYC Parks as interim protective measures post-Sandy, are currently in place from approximately Swinnerton Street to Sprague Avenue. These temporary dunes would be replaced with the shoreline elements proposed along this stretch.

All of the interventions in Conference House Park that are described above are compatible with a New York City park and would in fact enhance the park’s ability to serve the neighborhood, and would therefore be consistent with the adjacent residential uses as well. As described above, Conference House Park currently accommodates events and organized activities including tours, exhibitions, community events, volunteer programs within the park such as tree plantings and cleanups as well as at the historic houses, beach walks, birding talks and walks, kayaking, outdoor drawing workshops, fishing, family activities, outdoor movies, and citizen science programs. These activities are expected to continue with the Proposed Actions, and it is not expected that the enhancements within the existing park along the shoreline portion would substantially increase visitation rates. Additionally, as detailed in Chapter 12, “Transportation,” the frequency of Water Hub activities is expected to be sporadic (and spread out among different

days of the week and time of the day) and most events would not draw daily patrons. The Proposed Actions would continue to provide recreational space for the surrounding community and visitors, with improved waterfront access. While kayakers may reach the breakwaters from access points along the shoreline outside the project area, recreational use by swimmers is not likely. Conference House Park would continue to operate as a non-swimming beach under the Proposed Actions. As with existing conditions, there would be no lifeguards or other necessary facilities/staffing to accommodate swimming. In addition, in accordance with NYC Parks rules and regulations,<sup>1</sup> kayakers and canoers accessing Raritan Bay from Conference House Park are prohibited from swimming and scuba diving in Raritan Bay. The nearest swimming beach is Wolfe's Pond Park which is over two miles away by water.

All near-shore underwater lands where breakwaters would be located are owned by the State of New York, and the new breakwater uses would be permitted by NYSDEC and USACE. Recreational boating and fishing would continue within Raritan Bay under the Proposed Actions. While the installation of breakwaters in Raritan Bay could lead to an increase in recreational fishing effort in the project area, particularly associated with structure-oriented reef fish (i.e., black sea bass and tautog), and upper trophic level reef-transient fish (including summer flounder, striped bass, bluefish, scup, and weakfish), these increases are not expected to be substantial. In addition, the breakwaters would be positioned and marked to ensure they will not interfere with any navigation activities. To help boaters navigating in that area the National Oceanic and Atmospheric Administration (NOAA) issues navigation charts that are regularly updated to reflect local conditions. In the project area their Chart number 12332 (Raritan River Bay to New Brunswick) provides water depth insights. It is anticipated that the US Coast Guard will require navigation aids to provide visibility to mariners as is typically done for these structure types. The type and location of the navigation aids will be provided in accordance with federal regulations for the structure's classification.

The Proposed Actions would reduce risk from coastal erosion and wave action, providing a level of protection to existing land uses in the park and upland residential areas. No other changes to land use would be expected to result from Alternative 2. Therefore, this alternative would not result in any adverse effects to land use.

### *ZONING*

The Breakwaters and Shoreline Projects would be built entirely within City parkland, mapped City streets, and near-shore waters, and thus are not zoned. No zoning changes would be required with the Proposed Actions, nor would there be any conflicts with existing zoning district regulations. Therefore, the Proposed Actions would not result in any adverse effects to zoning.

### *PUBLIC POLICY*

Under Alternative 2, there would be no significant adverse effects or conflicts with public policies. Rather, this alternative would be consistent with the initiatives to protect the South Shore of Staten Island from coastal erosion and wave action, and would enhance local habitat

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<sup>1</sup> <https://www.nycgovparks.org/rules/section-2-06>

and ecologies as discussed in federal, State and City plans. A summary of the Layered Strategy's consistency with each policy is provided below.

### *Hudson-Raritan Estuary Comprehensive Restoration Plan*

Alternative 2 would help to achieve a number of goals of the CRP. They would establish structural habitat in Raritan Bay (within the Lower Bay planning region, where such habitat is currently limited, as described in the CRP report) and construct on-shore and near-shore landscape elements along the length of the Shoreline Project, including native plantings, wetland enhancement and dune/revetment plantings. These components of Alternative 2 would contribute to increased habitat diversity and would provide some of the TECs described in the CRP: wetlands; habitat for fish, crabs and lobsters; and shorelines and shallows. The proposed Water Hub elements would also support the public access TEC by bringing students and local residents to the waterfront and engaging them in learning about the ecology of the estuary.

### *Coastal Green Infrastructure Research Plan for New York City*

By building out constructed breakwaters—one of the coastal green infrastructure strategies identified in the report as being the most relevant to coastal areas of New York City—the Breakwaters Project would be consistent with the recommendations of this initiative. Other measures that are part of Alternative 2, native plantings, including wetland enhancements and dune/revetment plantings, were also identified in the report.

### *Coastal Management Program*

Since the entirety of the study area lies within the City's coastal zone (see **Figure 2-4**), a detailed assessment of the project's consistency with the NYSDOS CMP policy is included in **Appendix B**, "Coastal Management Program Assessment." As described in that assessment, Alternative 2 would be fully consistent with the CMP.

### *Smart Growth Public Infrastructure Policy Act*

The Smart Growth Impact Statement for the Proposed Actions is included in **Appendix C**, "Smart Growth Impact Statement." As described in the statement, Alternative 2 would be fully consistent with the Smart Growth Public Infrastructure Policy Act.

### *OneNYC/PlaNYC/A Stronger, More Resilient New York*

Alternative 2 is an important element of OneNYC and its predecessor documents including the Community Rebuilding Resiliency Plan for the East and South Shores of Staten Island, and would contribute to fulfilling the goals of these policies. Each iteration of these planning documents describes a form of the Breakwaters and Shoreline Projects as integral components of a strategy to strengthen the coastal resiliency and natural ecosystems along the Tottenville waterfront. In particular, the Proposed Actions fulfill the goals of OneNYC's Vision 4: Coastal Defense. By increasing resilience to wave action and coastal erosion, the Proposed Actions directly advance the goals of this policy. Additionally, the Water Hub would build social resiliency in this section of Staten Island, furthering another goal of Vision 4. The Proposed Actions would also be supportive of earlier PlaNYC goals to increase the sustainability and resiliency of open space resources by protecting Conference House Park from wave action and coastal erosion. With regard to OneNYC's climate change goals, the proposed project would increase the resiliency of the City's built environment and increase the City's preparedness for future extreme climate events. Overall, the Alternative 2 would be consistent with OneNYC and



- Proposed Breakwater Features
- Proposed Shoreline Restoration Area
- Proposed Shoreline Project Elements
- Potential Location of Proposed Water Hub (exact location to be determined)
- Proposed Floating Dock (associated with Water Hub Potential Locations 1 and 2 only)
- Potential Water Access
- Study Area
- Coastal Zone Boundary

PlaNYC, and supportive of the relevant policies and initiatives contained in these comprehensive planning documents.

### *Vision 2020: New York City Comprehensive Waterfront Plan*

Alternative 2 would help to advance virtually all of the goals of Vision 2020. The Shoreline Project would include shoreline elements with ADA access points, as well as a continuous trail along the shore. The proposed Water Hub would enhance the community's connection to the waterfront and with the proposed educational space promote understanding, awareness and stewardship of the Raritan Bay ecosystem. The proposed Water Hub would also include community spaces (kayak storage) promoting waterfront activities such as kayaking (Goals 1, 2 and 6). The habitat enhancements that are at the heart of Alternative 2 would enhance the diversity, robustness and resilience of local and regional ecosystems (Goal 5). Alternative 2 would also support the resiliency goals expressed in Goal 8 of the plan, as well as in the neighborhood goals for Reach 19: Staten Island South Shore. No element of the Breakwaters or Shoreline Projects would contravene any goals of Vision 2020. Therefore, the Proposed Actions are consistent with this policy.

### *New York City Local Waterfront Revitalization Program*

Because the Proposed Actions are located within the City's coastal zone boundary, a coastal zone consistency analysis is provided in **Appendix B**, "Coastal Management Program Assessment". As described in that assessment, the Proposed Actions would be fully consistent with the WRP.

## **2.4.3 ALTERNATIVE 3—BREAKWATERS WITHOUT SHORELINE PROTECTION SYSTEM**

Alternative 3 would develop the Breakwaters Project components as described in Alternative 2, including the proposed in-water breakwaters, shoreline restoration, Water Hub and accessory boat launch and seasonal floating dock near the breakwaters. None of the Shoreline Project components would be developed under Alternative 3.

Alternative 3 would affect land use, zoning and public policy in much the same way as they would under Alternative 2, although the additional benefits of the Shoreline Project would be lost. Alternative 3 would add features to Conference House Park and its off-shore waters, where they would be compatible uses in the park. Zoning would not be affected. In terms of public policy, Alternative 3 would not be inconsistent with any applicable policies or plans but would be less impactful than Alternative 2 in fulfilling the goals and objectives of the policies enumerated above. The breakwaters system alone would be less effective at protecting the Tottenville shoreline from the effects of wave action and coastal erosion, and therefore would not achieve the same level of resiliency as Alternative 2. In the event of a major coastal storm, land uses in Tottenville would be more vulnerable and could experience higher levels of damage than they would under Alternative 2. Additionally, the ecological diversity of the Tottenville shoreline would be reduced without the proposed hybrid dune/revetments and other habitat elements of the Shoreline Project, which are among the TECs identified by the Hudson-Raritan Estuary CRP.

#### **2.4.4 ALTERNATIVE 4—SHORELINE PROTECTION SYSTEM WITHOUT BREAKWATERS**

Alternative 4 would develop the Shoreline Project components as described in Alternative 2, including the proposed earthen berm, hybrid dune/revetment, eco-revetments and raised edge, wetland enhancement and shoreline plantings. ADA-accessible access points and overlooks would be constructed along the shoreline protection system. None of the Breakwaters Project components would be developed under Alternative 4. Alternative 4 would affect land use, zoning and public policy in much the same way as it would under Alternative 2, although the positive interplay with the proposed breakwaters, Water Hub and associated landscape enhancements would be lost. Alternative 4 would add a shoreline protection system to Conference House Park, where it would be compatible with existing park uses. Zoning would not be affected. In terms of public policy, Alternative 4 would not be inconsistent with any applicable policies or plans but would be less impactful than Alternative 2 in fulfilling the goals and objectives of the policies enumerated above. The shoreline protection system alone would be less protected from wave action and less effective at protecting the Tottenville shoreline from the effects of wave action and coastal erosion, and therefore would not achieve the same level of resiliency as Alternative 2. In the event of a major coastal storm, land uses in Tottenville would be more vulnerable and could experience higher levels of damage than they would under Alternative 2. Additionally, the social resiliency benefits of educational and community programs at the Water Hub would not be realized. The ecological diversity of added in-water structural habitat and other landscape enhancements that are part of the Breakwaters Project would not come to fruition.

#### **2.5 MINIMIZATION AND MITIGATION OF IMPACTS**

The Proposed Actions would not result in significant adverse effects to land use, zoning, or public policies within the project area or study area. Therefore, no mitigation with respect to land use, zoning, or public policies is required. \*