A. INTRODUCTION

This chapter describes the floodplains, wetlands, existing terrestrial and aquatic flora and fauna, threatened or endangered species, and water quality within the Project Site and surrounding area, and assesses whether implementation of the Proposed Project would result in significant adverse impacts on natural resources. The purpose of this chapter is to:

- Describe the regulatory programs that protect floodplains, wetlands, wildlife, threatened or endangered species, aquatic resources, or other natural resources;
- Describe the current condition of the floodplains and natural resources within and near the Project Site;
- Assess future conditions without the Proposed Action;
- Assess the potential impacts of the Proposed Action; and
- Develop measures, as necessary, to mitigate and/or reduce any potential significant adverse effects to water quality and natural resources.

The 1996 *Gateway Estates Final Environmental Impact Statement* (1996 FEIS) presented the results of intensive surveys conducted to characterize floodplains, wetlands, and terrestrial and aquatic flora and fauna within and near the Fresh Creek Urban Renewal Area (FCURA). The 1996 FEIS determined that implementation of the 1996 Plan would result in significant adverse impacts on natural resources from the removal of wetlands and high quality grasslands[1] within the FCURA, about 35 acres (63 percent) of which were located within the portion developed as Gateway Center, Spring Creek Park, and the area south of Seaview Avenue (see Appendix C, "Natural Resources," Figure C-1). Approximately 21 acres of the high quality grasslands were located within the FCURA north of the area developed as Gateway Center. With the exception of one small area of poor quality grasslands located within the Gateway Center portion of the FCURA (approximately 0.8 acres), all of the poor quality grassland identified in the 1996 FEIS (approximately 35 acres) were located within the portion of the FCURA north of Gateway Center. To mitigate the removal of 3.3 acres of wetlands within the FCURA, the 1996 FEIS identified the creation of an equal area of high-quality wetlands north of the Shore Parkway and west of the new Erskine Street interchange. The 1996 FEIS also indicated that new high-quality

[1] Page II.L-7 of the 1996 FEIS describes the high quality grasslands as follows: "Approximately 56 acres of the site is of high quality. In these areas are grassland plant species exhibiting higher diversity including little bluestem (*Andropogon scoparis)* and American beach grass (*Ammophila brevigulata)*. These areas provide potentially suitable habitat for grassland bird species. However, the high-quality grasslands at the site are divided into more than 70 parcels ranging from 0.2 to 5.6 acres. Because of this separation into small pockets, the total qualitative and inherent viability of the habitat is less than that of a contiguous parcel of the same grasses."Figure II.L-3 of the 1996 FEIS illustrates the distribution of high and low quality grasslands within the FCURA.

grasslands would be restored on an approximately 73-acre island ("White Island," located in Gerritsen Creek) to mitigate the elimination of 56 acres of high-quality grasslands within the FCURA.

To date, certain portions of the 1996 Plan have been implemented, including the shopping center and its parking lot, 9.7 acres of parkland; and certain streets and infrastructure, including the Erskine Street interchange on the Shore Parkway. A total of 378 residential units are under construction or are in advanced planning. With respect to natural resources, the mitigation commitments of the 1996 FEIS have been implemented in part, including stormwater best management practices (BMPs) and the construction of approximately 3.5 acres of freshwater wetlands within the FCURA; and the City of New York is proceeding on completing the White Island grassland restoration project. The New York City Department of Parks and Recreation (DPR), Natural Resources Group, has identified the restoration activities required and the anticipated schedule for developing a native grassland community on the island.

The Proposed Project would facilitate the construction of a mixed-use development and would allow for an expansion of the existing retail center and local retail uses within undeveloped portions of the FCURA (the Project Site). The approximately 127-acre Project Site is largely vacant and covered with low vegetation and sand areas. Wetland areas are present along its western boundary in Hendrix Creek, a tributary to Jamaica Bay. Implementation of the Proposed Project would involve the following:

- Implementation of sediment and erosion control measures during construction;
- Removal of debris and existing vegetation from the Project Site, followed by other site preparation work (i.e., grading);
- Construction of new storm sewers meeting New York City Department of Environmental Protection (NYCDEP) design standards and BMPs in compliance with New York State Department of Environmental Conservation's (NYSDEC's) technical standard for the design of water quality controls (post-construction stormwater control practices) presented in the 2003 New York State Stormwater Management Design Manual;
- Construction of new residential units; retail, community and public facilities; streets, and utilities;
- Development of the remaining 36.5 acres of public open space, including three interior parks and completion of the perimeter park; and
- Development of additional landscaped areas adjacent to commercial uses, community and public facilities, and residences, and along new and existing streets.

The analysis concludes that implementation of the Proposed Project would not result in significant adverse impacts on natural resources and water quality.

B. METHODOLOGY

REGULATORY CONTEXT

Activities associated with the discharge of stormwater within the New York State Coastal Zone, within the floodplain, and/or that have the potential to affect surface waters, wetlands, or species of special concern require compliance with federal and state legislation and regulatory programs.

FEDERAL

Clean Water Act (33 USC §§ 1251 to 1387)

The Clean Water Act (CWA), also known as the Federal Water Pollution Control Act, is intended to restore and maintain the chemical, physical, and biological integrity of U.S. waters. It regulates point sources of water pollution (i.e., discharges of municipal sewage, industrial wastewater, stormwater; and, the discharge of dredged or fill material into navigable waters and other waters of the U.S.) and non-point source pollution (i.e., runoff from streets, agricultural fields, construction sites and mining that enter waterbodies, from other than the end of a pipe).

Coastal Zone Management Act of 1972 (16 USC §§ 1451 to 1465)

The Coastal Zone Management Act of 1972 established a voluntary participation program to encourage coastal states to develop programs to manage development within coastal areas to reduce conflicts between development and protection of resources within the coastal area. Federal permits issued in New York must be accompanied by a Coastal Zone Consistency Determination that evaluates consistency with New York's federally approved coastal zone management program.

Endangered Species Act of 1973 (16 USC §§ 1531 to 1544)

The Endangered Species Act of 1973 recognizes that endangered species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value. The Act prohibits the importation, exportation, taking, possession, and other activities involving illegally taken species covered under the Act, and interstate or foreign commercial activities. The Act also provides for the protection of critical habitats on which endangered or threatened species depend for survival.

Fish and Wildlife Coordination Act (PL 85-624; 16 USC 661-667d)

The Fish and Wildlife Coordination Act entrusts the Secretary of the Interior with providing assistance to, and cooperation with, federal, state and public or private agencies and organizations to ensure that wildlife conservation receives equal consideration and coordination with other water-resource development programs. These programs can include the control (such as a diversion), modification (such as channel deepening), or impoundment (dam) of a body of water.

NEW YORK STATE

Protection of Waters, Article 15, Title 5, New York State Environmental Conservation Law (ECL), Implementing Regulations 6 NYCRR Part 608.

NYSDEC is responsible for administering Protection of Waters regulations to prevent undesirable activities on surface waters (streams, lakes, and ponds). The Protection of Waters Permit Program regulates five different categories of activities: disturbance of stream beds or banks of a protected stream or other watercourse; construction, reconstruction, or repair of dams and other impoundment structures; construction, reconstruction, or expansion of docking and mooring facilities; excavation or placement of fill in navigable waters and their adjacent and contiguous wetlands; and, Water Quality Certification for placing fill or other activities that result in a discharge to waters of the United States in accordance with Section 401 of the CWA.

State Pollutant Discharge Elimination System (SPDES) (N.Y. ECL Article 3, Title 3; Article 15; Article 17, Titles 3, 5, 7, and 8; Article 21; Article 70, Title 1; Article 71, Title 19; Implementing Regulations 6 NYCRR Articles 2 and 3)

Title 8 of Article 17, ECL, Water Pollution Control, authorized the creation of the State Pollutant Discharge Elimination System (SPDES) to regulate discharges to the State's waters. Activities requiring a SPDES permit include point source discharges of wastewater into surface or ground waters of the State, including the intake and discharge of water for cooling purposes, constructing or operating a disposal system, discharge of stormwater, and construction activities that disturb one acre or more.

Waterfront Revitalization of Coastal Areas and Inland Waterways Act (Sections 910-921, Executive Law, Implementing Regulations 6 NYCRR Part 600 et seq.)

Under the Waterfront Revitalization of Coastal Areas and Inland Waterways Act, the New York State Department of State (NYSDOS) is responsible for administering the Coastal Management Program (CMP). The Act also authorizes the State to encourage local governments to adopt Local Waterfront Revitalization Programs (LWRPs) that incorporate the State's policies. New York City has a LWRP administered by the New York City Department of City Planning (DCP). Chapter 12, "Waterfront Revitalization Program," describes the Proposed Project's consistency with the City's LWRP.

Tidal Wetlands Act, Article 25, ECL, Implementing Regulations 6 NYCRR Part 661.

Tidal wetlands regulations apply anywhere tidal inundation occurs on a daily, monthly, or intermittent basis. Tidal wetlands occur along the salt-water shore, bays, inlets, canals, and estuaries of Long Island, New York City, and Westchester County; and the tidal waters of the Hudson River up to the state line. NYSDEC administers the tidal wetlands regulatory program and the mapping of the state's tidal wetlands. A permit is required for almost any activity that would alter wetlands or the adjacent areas (up to 150 feet inland within New York City).

Floodplain Management Criteria for State Projects (6 NYCRR 502)

Under 6 NYCRR 502, state agencies must ensure that the use of state lands, and the siting, construction, administration, and disposition of state-owned and state-financed projects involving any change to improved or unimproved real estate are conducted in ways that would minimize flood hazards and losses. Projects must consider alternative sites on which the project could be located outside the 100-year floodplain. Projects to be located within the floodplain are to be designed and constructed to minimize flood damage within the 100-year floodplain and include adequate drainage to reduce exposure to flood hazards. All public utilities and facilities are to be located and constructed to minimize or eliminate flood damage. The regulations specify that for nonresidential structures, the lowest floor should be elevated or flood-proofed to no less than one foot above the base flood level so that below this elevation the structure, together with associated utility and sanitary facilities, is watertight, with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. No project may be undertaken unless the cumulative effect of the proposed project and existing developments would not cause material flood damage to existing development.

Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern (ECL, Sections 11-0535[1]-[2], 11-0536[2], [4], Implementing Regulations 6 NYCRR Part 182)

The Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern Regulations prohibit the taking, import, transport, possession or selling of any endangered or threatened species of fish or wildlife, or any hide, or other part of these species as listed in 6 NYCRR §182.6.

IMPACT ASSESSMENT

This section presents the methodology used to describe natural resources and water quality within the study area under existing and future conditions, and to assess potential impacts to these resources from implementation of the Proposed Project.

STUDY AREA

For terrestrial resources and floodplains, the study area is the Project Site, with the western boundary, including the eastern shoreline of Hendrix Creek. An exception was made for the identification of threatened or endangered species, which were evaluated for a distance of ½ mile from the Project Site. Because stormwater generated within the Project Site will discharge to Hendrix Creek and Spring Creek Basin (see Chapter 13, "Infrastructure,") the study area for wetlands includes Hendrix Creek, the Spring Creek Basin (which collectively refers to Spring Creek, Ralph Creek, and Old Mill Creek), and tidal wetlands associated with these water bodies. Similarly, the study area for aquatic resources includes Hendrix Creek, Spring Creek Basin, and Jamaica Bay.

EXISTING AND FUTURE CONDITIONS

Existing conditions for floodplain, water quality, and natural resources within the study area were summarized from the sources listed below.

- Existing information from governmental and non-governmental agencies were referenced to such as: NYCDEP Harbor Water Quality Survey (2004); Federal Emergency Management Agency (FEMA); NYCDEP Jamaica Bay Watershed Protection Plan, the U.S. Fish and Wildlife Service (USFWS) and the NYNHP.
- On-site field observations: The primary objectives of the field observations were to: (1) qualitatively characterize dominant plant species/communities and wildlife populations within the Project Site and the study area, and (2) note the presence of threatened or endangered species and communities identified by NYSDEC's New York Natural Heritage Program (NYNHP) as having the potential to occur within the Project Site. I

  The purpose of the 2007 field observations was to provide a qualitative description of current flora and fauna at the Project Site, in order to generally describe existing site conditions. The field observations were conducted using the following approach:

  - Qualitative observations of the Project Site to capture seasonal variation in the plant communities and wildlife activity on the Project Site were conducted on May, July and September 2007. These three periods were selected to facilitate identification of flora during three seasonal flowering periods, and to observe varied activity patterns for wildlife (i.e., presence of breeding and migratory birds, pulses of small mammals and reptiles during post-breeding dispersal, etc.).

- Using a plotless reconnaissance technique (e.g., a simplified relevé method; American Society for Testing and Materials (ASTM) Standard E1923-19 "Standard Guide for Sampling Terrestrial and Wetlands Vegetation," 1998), the entire Project Site and selected locations within the study area were traversed by a two-person field team during each visit between the hours of 7AM and 5PM. Any flora encountered during site visits in each habitat type observed was recorded. Due to past and ongoing alterations of the Project Site (i.e., previous use as a sanitary landfill followed by deposition of sandy dredged material (see Section C, "Existing Conditions"), the Project Site was classified under the Terrestrial Cultural community category following Edinger et al. (2002). However, because the vegetation communities observed in 2007 did not appear to fit any of the terrestrial communities described under the Terrestrial Cultural category, broad habitat classifications following Edinger et al. (2002) were developed, based on field observations of dominant cover types.
- Qualitative wildlife observations were recorded on each site visit. Field researchers walked through the entire Project Site , and recorded any fauna observed. Bird species were identified by visual observation and vocalization. Mammals were identified on the basis of visual observation, tracks, and scat. Reptiles, amphibians, and insects were identified by visual observation.

Future conditions without the Proposed Action (No Build) were assessed by determining:

- Potential effects on floodplain and natural resources from the completion of elements of the 1996 Plan (see Tables 1-1, 1-2, and 1-3 in Chapter 1, "Project Description), that would be implemented within the approximately 127-acre Project Site (i.e., the currently undeveloped portions of the FCURA), absent the Proposed Action. As presented in Chapter 1, "Project Description," the 1996 Plan would be partially built in 2011 (i.e., 378 residential units), and fully built in 2013 (i.e., 2,007 additional residential units (total of 2,385), 15,000 square feet (sf) of retail space, 10,000 sf of office space, an elementary and intermediate school, 4,000 sf of day care, 30,000 sf of community facility, and 35.5 acres of open space). This assessment considered:
  - The existing floodplain, water quality, and natural resources within the Project Site and the study area;
  - Potential impacts to aquatic resources from stormwater discharge during construction;
  - Temporary impacts to terrestrial resources on and near the Project Site during construction;
  - Potential long-term impacts to water quality and aquatic biota resulting from stormwater discharges and discharges to the municipal sanitary sewer system; and
  - Potential long-term effects on floodplain, wetlands, and terrestrial resources from the operation of the No Build condition in 2011 and 2013.
- Potential effects of proposed or ongoing improvements near the Project Site (e.g., ongoing habitat restoration activities at the Fountain Avenue and Pennsylvania Avenue landfills).

As identified in the 1996 FEIS, new grasslands will be created on White Island to mitigate impacts to 56 acres of grassland resources that will be eliminated by the 1996 Plan. The City is responsible for carrying out this mitigation effort and is working on meeting this obligation. As discussed in Chapter 1, "Project Description," preliminary restoration work began with an initial herbicide application to extensive areas of common reed in September 2007. The present

restoration schedule includes clearing/grubbing of woody vegetation and common reed that is expected to be completed in July 2008. Additional clearing and herbicide application would occur as needed in 2009, during the design phase. The design will address stabilization along the edges of the island which currently has sand bags in place to prevent garbage from migrating into the surrounding creeks. The design will also include capping of the island with sand and planting with grassland species. Construction is anticipated to begin in late-Spring 2009 (Michael Feller, DPR [DPR] – Natural Resources Group, personal communication, 18 April 2008). On the basis of this restoration schedule, the assessment of future conditions without the Proposed Action assumed that the White Island mitigation project would be in progress, with some restored grassland habitat available on the island in the 2011 build year, and additional restored grassland habitat in the 2013 build year. The development of the grassland system would be completed after the 2013 build year and would be followed by management of the grassland system by DPR.

ASSESSMENT OF PROBABLE IMPACTS FROM THE PROPOSED ACTION

Probable impacts to floodplains and natural resources from the Proposed Action in the 2011 (i.e., construction of 1,027 housing units, including the 378 units currently under construction or in advanced planning stage; a 630,000 sf shopping center; and 68,000 square feet of local retail space), and 2013 Build years (i.e., construction of an additional 1,358 residential units (total of 2,385 dwelling units for full build out), a public school for intermediate and high school grade levels school, a day care, 30,000 square feet of community facility, and 36.5 acres of additional open space areas) in comparison to the No Build condition (i.e., development of the 1996 Plan within the Project Site in 2011 (partial) and 2013 (full) as described previously). In 2011, compared to the 1996 Plan, the Proposed Project would result in 649 additional dwelling units, a 630,000-square-foot shopping center, and 68,000 of local retail. In 2013, the difference between the 1996 Plan and the Proposed Project would be the addition of the 630,000 sf of shopping center, 53,000 sf of additional local retail, one acre of additional open space, intermediate and high school seats rather than the elementary and intermediate school seats included in the 1996 Plan, street layout, and site plan. The assessment of probable impacts from the Proposed Project considered the following:

- The existing floodplain, and natural resources within the study area and adjacent areas;
- The results of the assessment of the 2011 and 2013 No Build conditions;
- Potential effects to aquatic resources from the discharge of stormwater during construction of the Proposed Project;
- Temporary impacts to terrestrial resources associated with construction of the components of the Proposed Project;
- Potential operational effects to water quality and aquatic biota resulting from stormwater discharges and discharges to the municipal sanitary sewer system; and
- Potential long-term impacts to natural resources and water quality from operation of the Proposed Project, including new open space and landscaped areas.

C. EXISTING CONDITIONS

SITE HISTORY

Prior to 1900, the FCURA was predominantly a tidal wetland largely composed of salt marsh and estuarine creeks connected with the Jamaica Bay ecosystem (USCGS map 1899). From the 1930s to 1950, it was used as municipal landfill. When municipal landfill operations ceased, the area was marked by illegal dumping, fires, and occasional flooding. Approximately 3.6 million cubic yards of clean sand dredged from the bay was deposited on the FCURA following its designation as an urban renewal area in 1967.

In 1972, the Brooklyn Developmental Center was constructed on the eastern portion of the FCURA. The Thomas Jefferson High School Athletic Fields were developed within the northern portion of the FCURA prior to 1993. In 2002, the existing Gateway Center and its associated parking lot were opened, and 9.7 acres of the perimeter park were completed. In 2005 and 2006, Nehemiah began construction of new housing units adjacent to the Thomas Jefferson High School Athletic Fields. In total, approximately 100 acres of the FCURA have been developed.

The Project Site comprises the vacant portions of the FCURA and the housing that is under construction or nearly complete. The natural areas present within the Project Site are partly vegetated and are covered with hydraulic fill consisting primarily of sand. The Project Site has been heavily impacted by the passage of motorized vehicles, which has created a network of sandy pathways and pits that surround small patches of vegetation. The following describes the existing natural resources within the study area for floodplains, wetlands, and terrestrial and aquatic resources.

FLOODPLAINS

Figure 10-1 shows the 100-year and 500-year floodplain boundaries for the study area. FEMA has identified the 100-year floodplain elevation at approximately 7.5 feet North American Vertical Datum 88 (NAVD 88) and the 500-year floodplain at approximately 11.0 feet NAVD 88. The entire Project Site is outside the 100-year floodplain. The only portion of the Project Site in the 500-year floodplain is the southeast corner near the Shore Parkway. Within the study area, the approximately 3.5-acre freshwater wetland, created as mitigation for the 1996 Plan, is located north of the Shore Parkway between Hendrix, Spring, and Old Mill Creeks and is within the 500-year floodplain.

WETLANDS

PROJECT SITE

There is one tidal wetland that exists within the Project Site—Hendrix Creek. Hendrix Creek is bounded by the 26th Ward Water Pollution Control Plant (WPCP), the former Pennsylvania Avenue Landfill, the FCURA, and the former Fountain Avenue Landfill. The USFWS National Wetlands Inventory (NWI) (see Figure 10-2) classifies Hendrix Creek as estuarine subtidal wetlands with an unconsolidated bottom with a small section of temporarily flooded palustrine emergent wetlands on the western side of the creek. Subtidal estuarine wetlands are continuously submerged with low energy and variable salinity, influenced and often enclosed by land. Unconsolidated bottoms have at least 25 percent cover of particles smaller than 6 or 7 centimeters (cm) and less than 30 percent vegetative cover.

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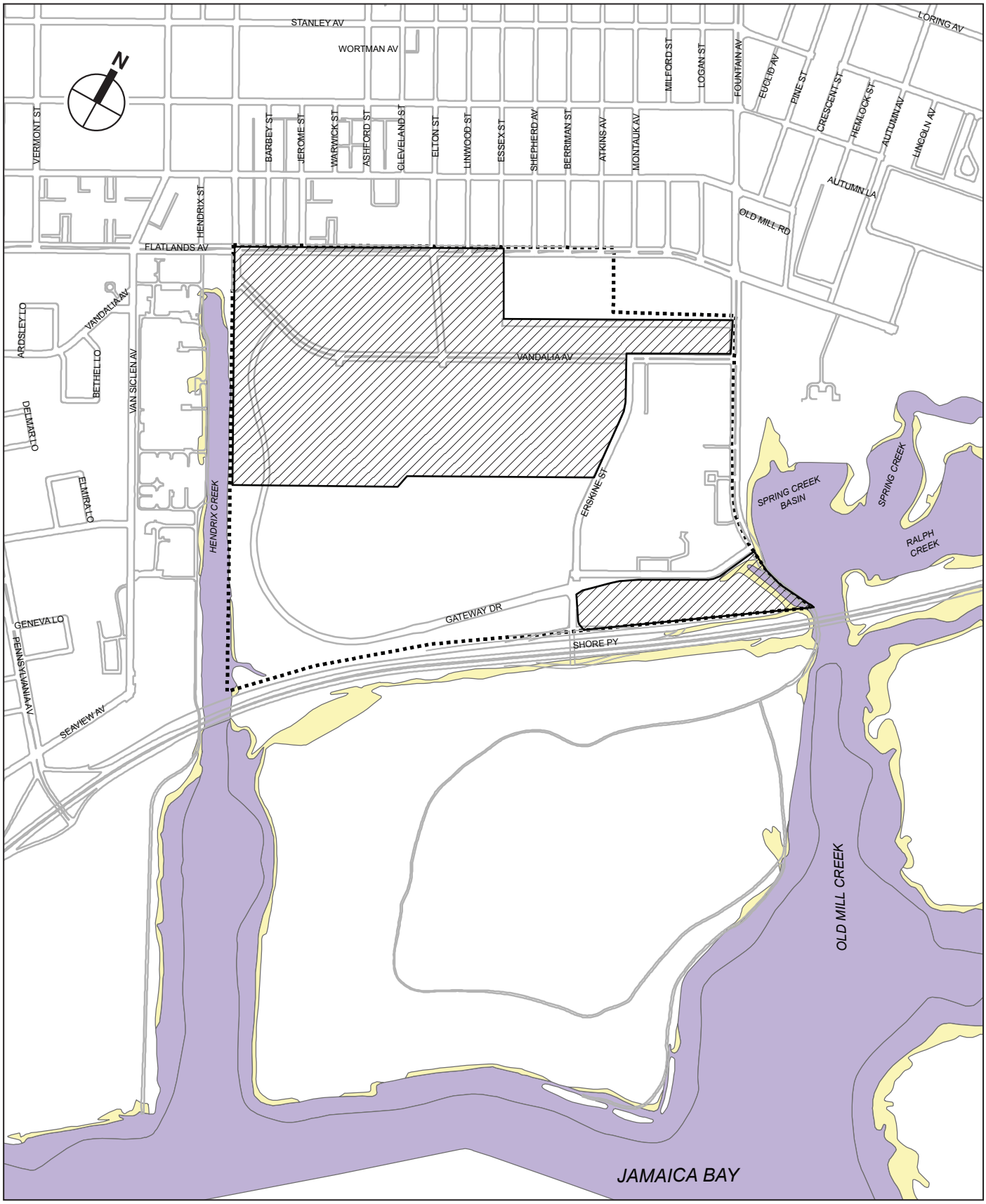

GATEWAY ESTATES II

Floodplains
Figure 10-1

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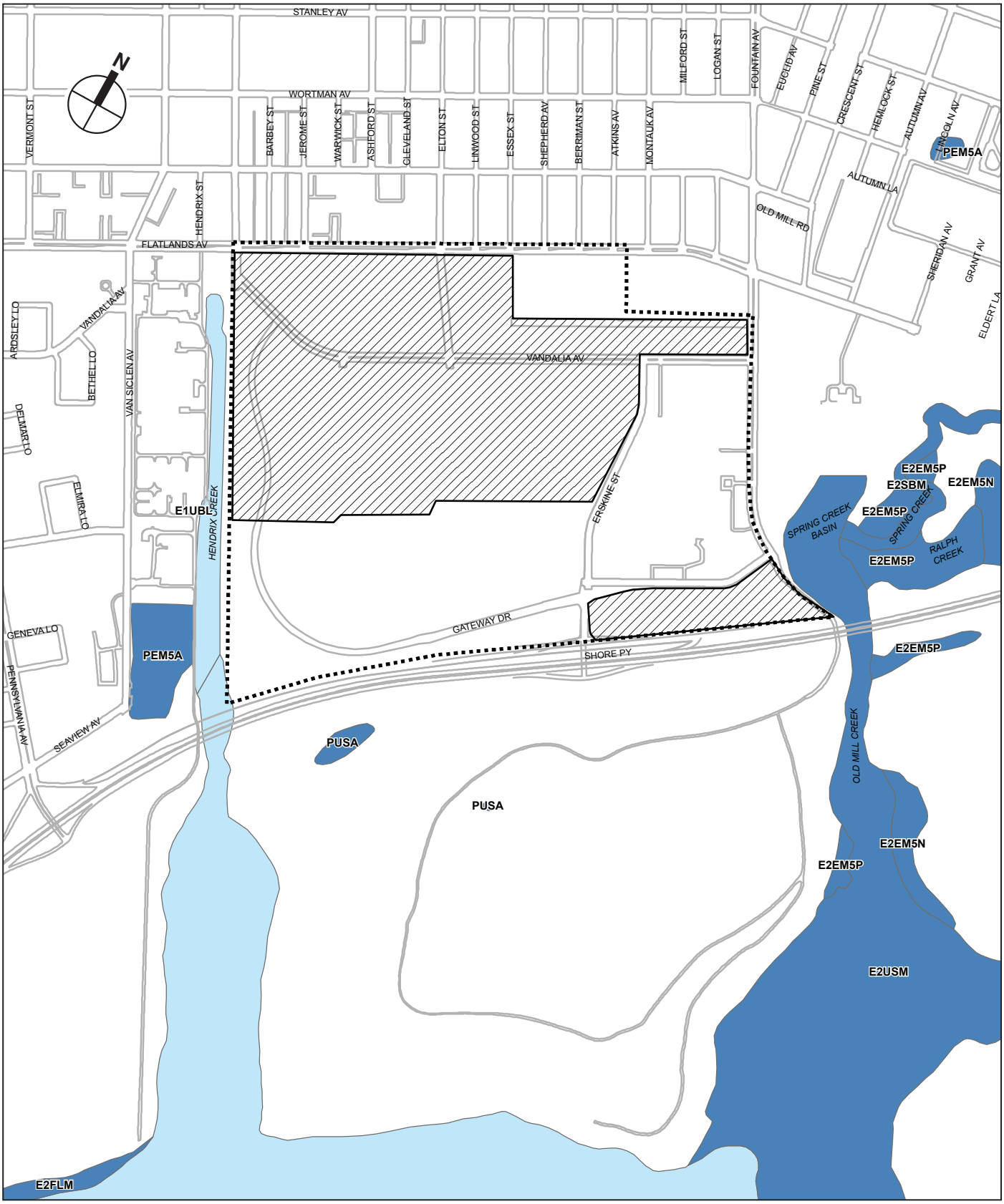

Project Site

Fresh Creek Urban Renewal Area Boundary

NWI Wetlands

0 600 1200 FEET

SCALE

GATEWAY ESTATES II

NWI Wetlands

Figure 10-2

Water depths within Hendrix Creek at mean high water range are between 2 and 5 feet and would be less than 6 feet at mean low water and, therefore, these areas meet NYSDEC's definition for littoral zone (LZ) tidal wetlands (see Figure 10-3). The New York State Tidal Wetland Regulations (6 NYCRR Part 661.4) define LZ as:

> The tidal wetlands zone designated LZ on an inventory map, that includes all lands under tidal waters which are not included in any other category except as otherwise determined in a specific case as provided in section 661.16. Provided there shall be no littoral zone under waters deeper than six feet at mean low water…

At low tide, an unvegetated mudflat is partially exposed along the eastern edge of the creek, which quickly transitions to a steep slope covered heavily with common reed and other introduced herbaceous plant species. The relatively steep slopes surrounding Hendrix Creek limit the development of vegetated tidal wetlands.

The Project Site contains no NYSDEC-mapped freshwater wetlands. During field surveys in July and September, two areas of non-jurisdictional palustrine open water were noted on the southwest corner of the Project Site (Figure 10-4). These shallow depressions, totaling less than 0.1 acres, held water throughout the season and were found to contain both facultative and obligate wetland plants (i.e., *Carex flava, Salix interior, Polygonum pennsylvanicum, Cyperus eragrostis*) and bird species that feed predominantly in wetlands (i.e., least sandpiper). The hydrologic source for these small freshwater wetland fragments was not apparent during the site surveys, although the depressions in which they exist may have been created during construction of the existing Gateway Center.

STUDY AREA

There are no NYSDEC-mapped freshwater wetlands located in areas adjacent to the Project Site. USFWS National Wetlands Inventory (NWI) data indicate the presence of several small areas of temporarily flooded palustrine wetlands with unconsolidated shores (PUSA) within the retail center and parking lot developed during Phase I construction. Because these areas are within the portion of the FCURA that has been developed, specifically the retail center and parking lot; they are not pictured in Figure 10-2.

An approximately 3.5-acre freshwater wetland was created as mitigation for the 1996 Plan north of the Shore Parkway and south of Gateway Drive. Presently, the wetland contains areas of open water colonized by duckweed (*Lemna* spp.), areas of broad-leaved cattail marsh (*Typha latifolia*), and numerous wetland plant species, including sweet pepperbush (*Clethra alnifolia*), swamp rose mallow (*Hibiscus palustris*), and soft rush (*Juncus effusus*). This wetland receives stormwater from the series of stormwater swales located adjacent to Gateway Drive that provide detention for stormwater runoff originating from the existing Gateway Center. This created wetland discharges to Hendrix Creek through a weir.

There are tidal wetlands adjacent to the Project Site, in both Spring Creek Basin and Jamaica Bay, as described in the following sections.

Spring Creek Basin Tidal Wetlands

To the east of the Project Site is a tidal system consisting of several waterways—Spring, Ralph, and Old Mill Creeks, and associated tidal wetlands (see Figures 10-2 and 10-3). The Spring and Ralph Creek tidal wetlands form the northeast portion of this system. The confluence of Spring

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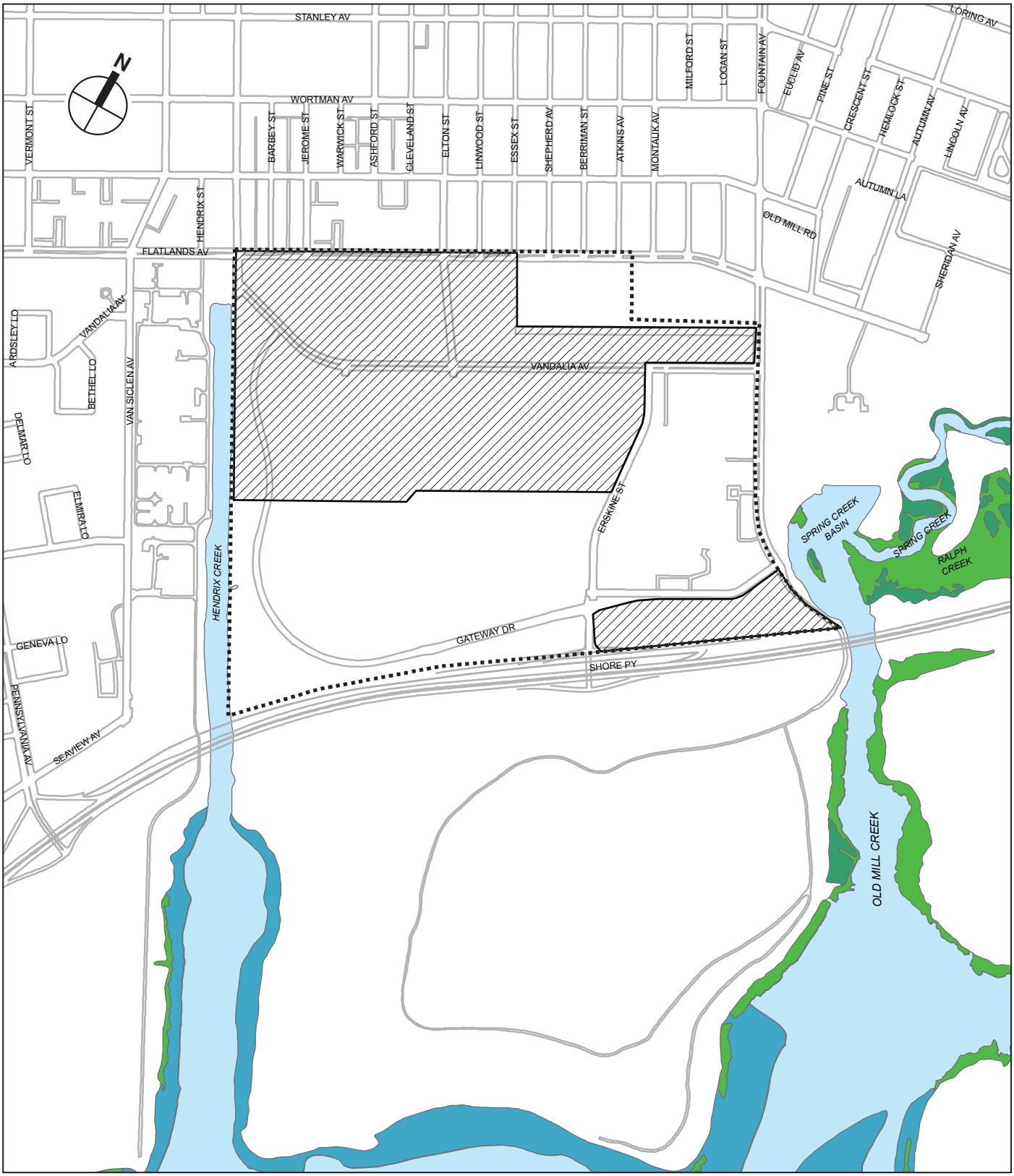


Project Site

Fresh Creek Urban Renewal Area Boundary

NYS DEC Tidal Wetlands

Coastal Shoals, Bars and Mudflats

High Marsh

Intertidal Marsh

Littoral Zone

0 600 1200 FEET

SCALE

GATEWAY ESTATES II

DEC Wetlands

Figure 10-3

0 500 1000 FEET

SCALE

Project Site

Fresh Creek Urban Renewal Area

Housing Units Under Construction

Open Water

Roads (paved + unpaved)

Urban Vacant Lot

Woodlot

Grassland

Scrub-Shrub

Bare Sand

GATEWAY ESTATES II

General Habitat Communities

Figure 10-4

and Ralph Creeks, south of the Spring Creek Auxiliary WPCP, is called Spring Creek Basin. Old Mill Creek then flows south from the Basin to Jamaica Bay.

NWI classifies Spring and Ralph Creeks as an estuarine intertidal wetland with an irregularly exposed streambed. Spring Creek Basin and Old Mill Creek are classified as estuarine intertidal wetland with an unconsolidated shore and irregularly exposed bottom. Areas of emergent estuarine wetlands that are irregularly and regularly flooded are identified as occurring along Spring and Old Mill Creeks (Figure 10-2). Freshwater areas represent temporarily flooded sections of the Fountain Avenue landfill that receive runoff from adjacent slopes.

NYSDEC designates the open water portions of Spring, Ralph, and Old Mill Creeks and Spring Creek Basin as LZ tidal wetlands, bounded by areas of high and intertidal marsh (Figure 10-3). Included within the tidal wetland areas is a 150-acre parcel of the Gateway National Recreation Area (GNRA), which is owned by the National Park Service (NPS). Located along the eastern shore of Old Mill Creek, the GNRA parcel contains extensive salt meadow, intertidal marsh, sand beach, mudflat, and open water habitats. The perimeter of Fountain Avenue on the west bank of the creek has fragments of intertidal marsh, sand beach, and mudflat.

Jamaica Bay Tidal Wetlands

The wetland areas associated with Hendrix Creek and the Spring Creek Basin are tributaries to the Jamaica Bay ecosystem. The 10,000-acre bay is located in the boroughs of Brooklyn and Queens and is a diverse ecosystem, containing open water, coastal shoals, bars, mudflats, intertidal marsh, and upland habitats (Hartig et al. 2002). Both freshwater wetlands (i.e., natural and created freshwater ponds) and intertidal wetlands (i.e., high and low Spartina marshes) are the dominant habitats in the area. Freshwater inputs are mainly limited to stormwater and WPCP outfalls along the bay's northern shore and the Rockaway Peninsula.

Jamaica Bay's extensive salt marshes form the largest remaining salt marsh system in New York City, and one of the largest coastal marshes in New York State (NYCDEP 2007a), but there has been a well-documented decline in salt marsh acreage since 1900, both along the perimeter of the bay and on marsh islands. In 1907, the bay had over 16,000 acres of salt marsh (Englebright 1975), but between 1900 and 1970, dredging, filling, and draining along the edge of the bay reduced salt marsh acreage to approximately 4,000 acres (Black 1981; NYCDEP 2007a). Since 1970, the continuing decline in salt marsh has been attributed to several factors, including reduced sediment input, channel dredging, boat traffic, and sea-level rise. The rate of loss in both area and biomass has been particularly dramatic in the bay's marsh islands, where a 50 percent loss was observed between 1924 and 1999. The rate seems to be increasing in recent decades, with islands losing 0.4 percent of total salt marsh acreage per year from 1924 to 1974, 1.4 percent per year from 1974 to 1994, and 3.0 percent per year from 1994 to 1999 (Hartig et al. 2002).

Due to its exceptional ecological value and concern over its disappearing marshes, Jamaica Bay is listed as a Critical Environmental Area by NYSDEC and as a Significant Coastal Fish and Wildlife Habitat by NYSDOS. Jamaica Bay is also the site of several extensive salt marsh restoration projects lead by the U.S. Army Corps of Engineers (USACOE) and NPS.

TERRESTRIAL RESOURCES

PROJECT SITE

Plant Communities

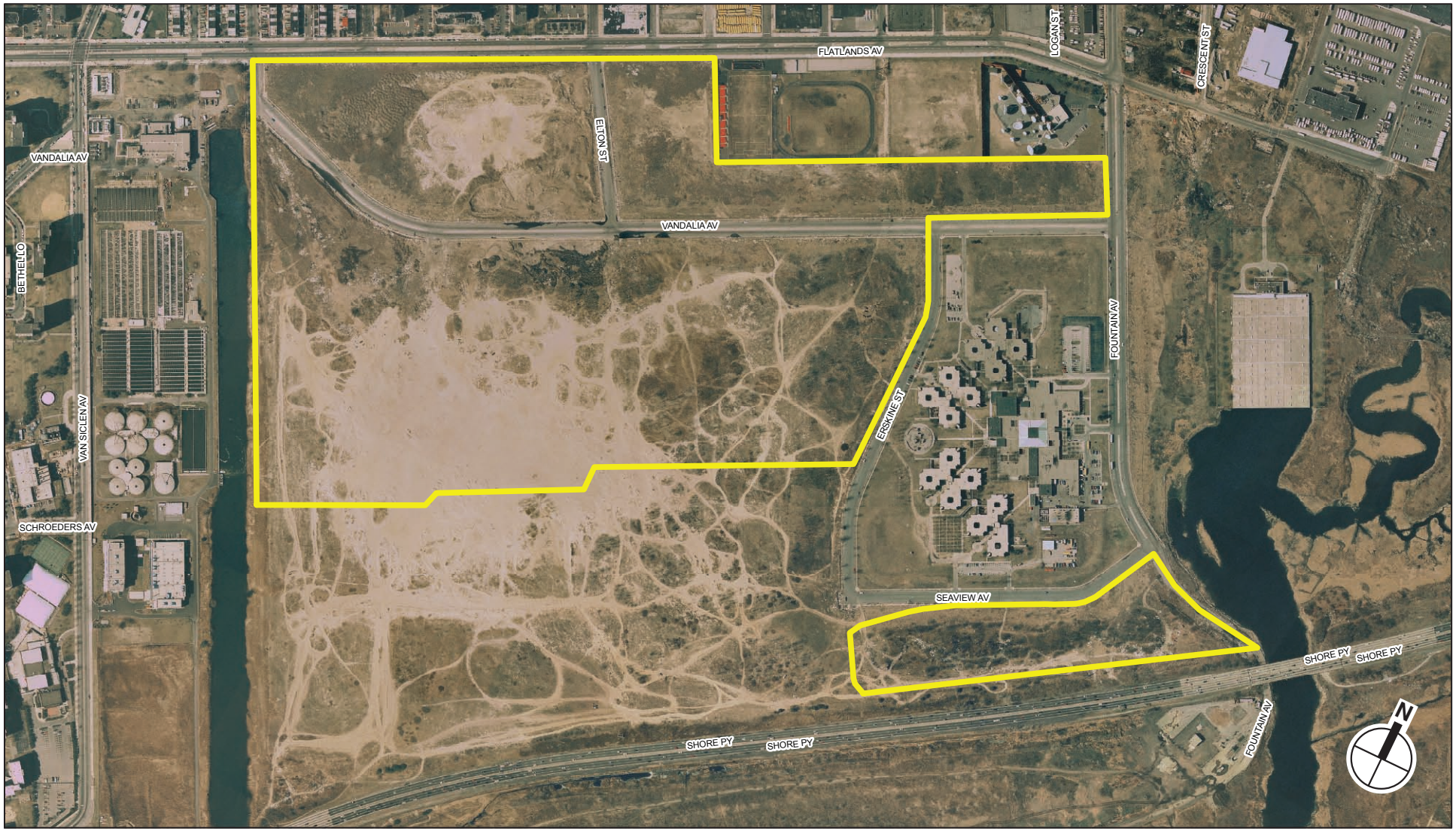
Communities described in this section follow nomenclature from the New York Natural Heritage Program (Edinger et al. 2002, Reschke 1990). Field observations conducted in 2007 identified 172 species of trees, shrubs, vines, grasses, and forbs within the Project Site (see Appendix C, "Natural Resources," Table C-1).

Habitat communities within the Project Site have been substantially impacted by past and current activities, including pre-1960 landfilling, fires, illegal waste disposal, unauthorized use of motorized vehicles, and Phase I construction activities following the 1996 Plan. Much of the Project Site comprises the mixed grassland characterized as being of poor quality in the 1996 FEIS[1], intermixed with areas of woody vegetation and bare sand. As noted in Chapter 1 "Project Description," prior to human disturbance, the FCURA was predominantly composed of salt meadows and streams or kills (such as Hendrix Creek and Spring Creek). These meadows were used for agricultural purposes through the early 1900's. Tidal wetlands that formerly comprised the Project Site were filled beginning in the 1930s, when most of the Project Site was used as the Milford Street Landfill. In 1950, when municipal landfill operations ceased, the Project Site was used for illegal dumping. The Project Site and the remaining portion of the FCURA was further altered by the deposition of approximately 3.6 million cubic yards of dredged sand material in 1967. From the 1960's through the present, the site has been continually altered by 1996 Plan Phase I construction activities, motor vehicles, illegal dumping of household and construction debris, and other human activities.

On the basis of this past history of disturbance, most of the plant communities present in 2007 would have developed over the 40-year period following sand deposition, during which time portions of the project site have experienced varying levels of human disturbance associated with construction activities, passage of vehicles, and illegal dumping. Further information on subsurface stratigraphy and soils on the Project Site is noted in Chapter 11 "Hazardous Materials". For the period between 1996 and 2006, aerial images (see Figures 10-5 through 10-7) clearly indicate that the Project Site has continued to be modified by human activity, as evidenced by the expanding areas of bare sand and paved and unpaved roadways. Since the 1960's, the Project Site has been colonized by various native and non-native plant species, and the presence of varied communities is indicative of ongoing habitat succession that appears to be affected by past and present human activities (i.e., frequency and intensity of disturbance post sand deposition). Due to periodic human disturbance, few areas of the Project Site appear to contain plant communities whose condition and species composition suggest that they have been undisturbed during the post-sand deposition period. One such area that appears to have been relatively undisturbed following the sand deposition is DPR property on the southeastern edge of the Project Site. As discussed previously, because of the historic and on-going human activities that have occurred within the Project Site, the terrestrial communities observed within the Project Site have been created and are influenced by human activity, as described for the

[‡] As described in the 1996 FEIS, poor quality mixed grasslands "….consist of opportunistic species, such as mugwort (*Artemisia vulgaris*), goldenrod (*Solidago* spp.), and *Phragmites*. These assemblages offer minimal support for grassland bird species as either shelter or food sources."

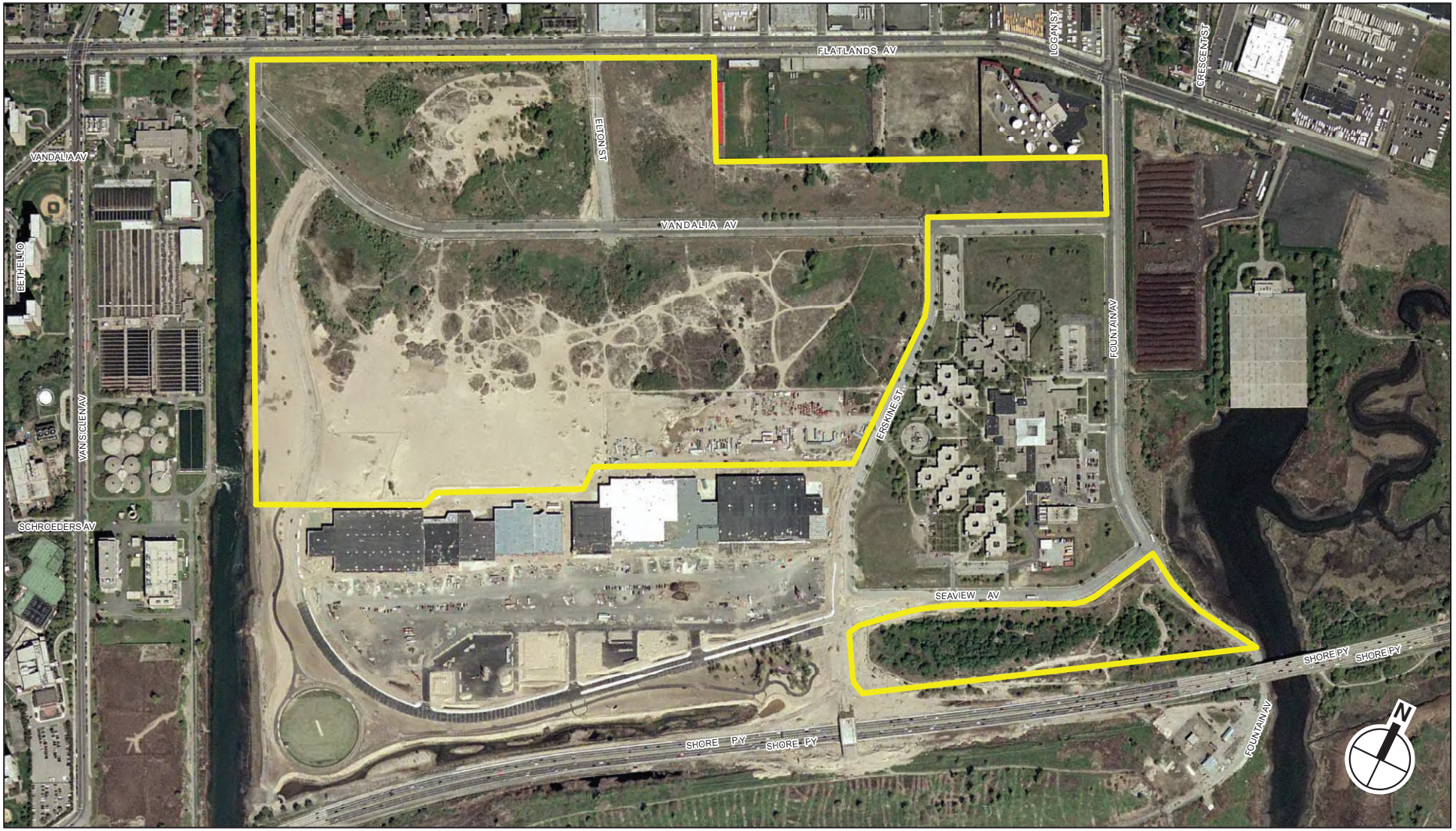
5.16.08



GATEWAY ESTATES II

1996 Aerial
Figure 10-5

5.14.08



Project Site

0 500 FEET

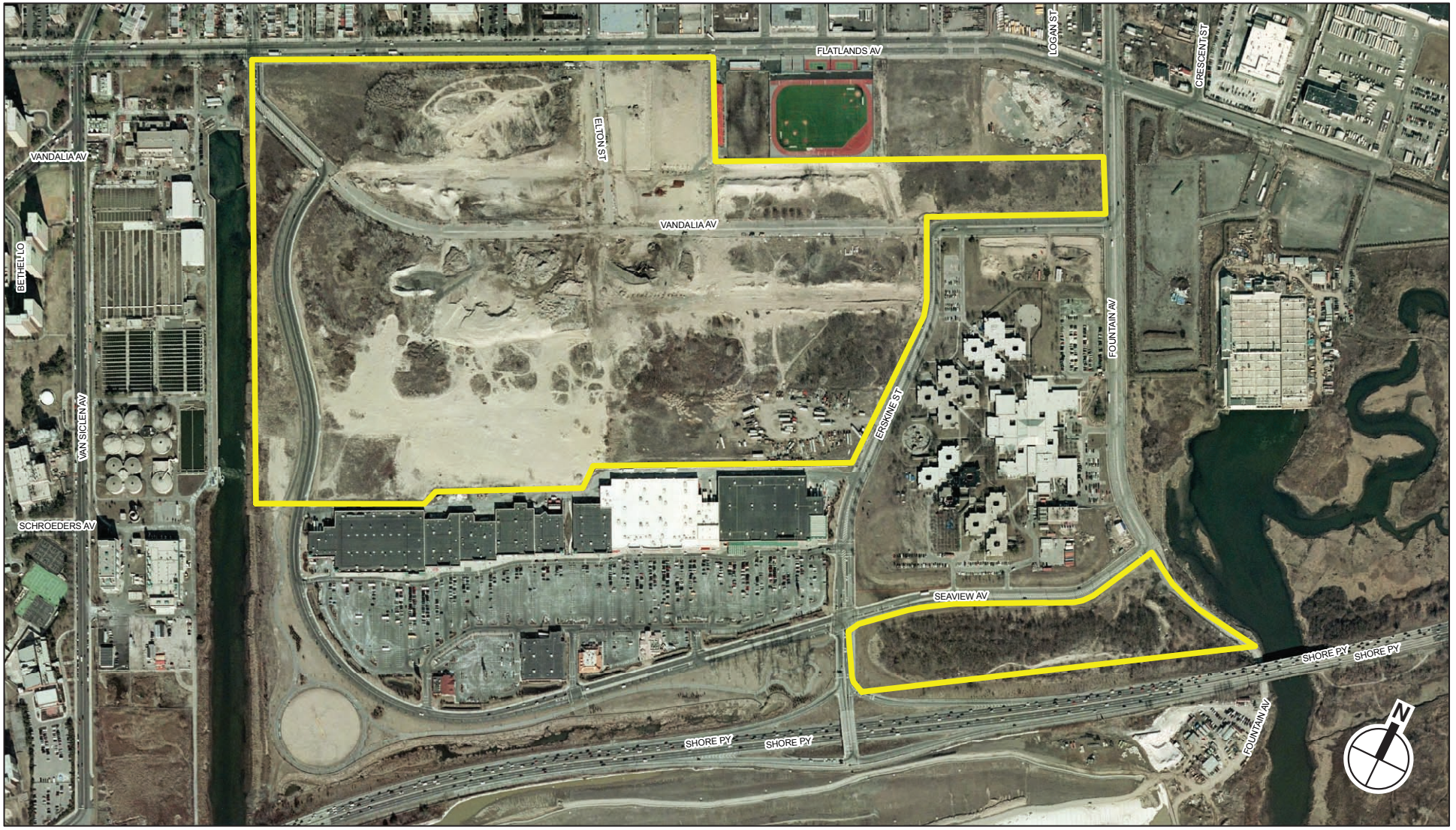
SCALE

GATEWAY ESTATES II

2002 Aerial

Figure 10-6

5.14.08



Project Site

GATEWAY ESTATES II

2006 Aerial
Figure 10-7

Terrestrial Cultural community category by Edinger et al. (2002). However, because the vegetation communities observed at the Project Site (Figure 10-4) in 2007 were not consistent with the terrestrial communities described under the Terrestrial Cultural category, with the exception of "paved and unpaved roads and paths," the following habitat types were developed for the Project Site on the basis of qualitative observations of the Project Site in 2007.

- Bare Sand: Open areas primarily consisting of sandy fill. Vegetation present was sparse, and included herbs, forbs, and graminoids. An example of this cover type is the bare sand area north of the present Gateway Estates shopping center, which occupies the central portion of the Project Site. Vegetation present in bare sand areas included sparse coverage of crab grass, spotted knapweed, winged pigweed, purple love grass, narrowleaf pinweed, sickle-leaved golden aster, and seaside goldenrod. These open areas have likely been maintained since sand deposition in the late 1960's by human disturbance and natural processes, such as the use of motorized vehicles on the site, construction activities, wind, and fire. The bare sand cover type was estimated to occupy approximately 23 acres of the Project Site in 2007.
- Grassland: Areas in which coverage of graminoid, forb, and herb species was 75 percent or greater subdivided by occasional small stands of trees and shrubs and areas of bare sand were present. No American beach grass was observed within these grasslands in 2007. An example of this cover type was located at the northeast corner and western edge of the Project Site. Common species present in grassland areas included goldenrod species, broom sedge, sickle-leaved golden aster, fescue species, mugwort, and tall reed. Occasional cottonwood, bayberry, cherry, apple, tree-of-heaven, and sumac species were also present. In general, the species complement present within the grasslands in 2007 was more consistent with the low quality than the high quality grassland community described in the 1996 FEIS. The grassland cover type was estimated to occupy approximately 40 acres of Project Site in 2007.
- Scrub-shrub: Areas dominated by low shrubs, with occasional saplings, mature trees and herbaceous cover. An example of this cover type was located north of the Gateway shopping center and recent truck depot. Common species present in scrub-shrub areas included bayberry, blackberry, multiflora rose, autumn olive, and Asiatic bittersweet. Small stands of black locust, cottonwood, and mulberry were occasionally interspersed in shrub-scrub habitat, as well as dense herbaceous cover (mugwort, Japanese knotweed) in the understory. The scrub-shrub cover type was estimated to occupy approximately 8 acres of the Project Site in 2007.
- Woodlot: Wooded areas in which coverage of trees approximately 8 inches dbh and 8 feet high was 75 percent or greater. An example of this cover type was the 13-acre woodlot bounded by Seaview Avenue, Fountain Avenue, Shore Parkway, and Erskine Street. This area had the most complex canopy and understory than the rest of on the Project Site, and was It is characterized by patches of dense trees, areas with more open canopy, and a dense understory layer with several unique species for the site (hyssop-leaved boneset, white snakeroot, late-flowering thoroughwort). Common species found in woodlots on site included black cherry, cottonwood, black locust, gray birch, tree-of-heaven, mulberry, autumn olive, and red maple. Japanese knotweed, common reed, blackberry, goldenrods, garlic mustard, barberry, switchgrass, mullein, and poison ivy comprise the understory species. This woodlot cover type was estimated to occupy approximately 36 acres of the Project Site in 2007.

- **Paved and unpaved roads and paths**: Roads created for vehicular and foot traffic dissect the Project Site. Paved roads include Vandalia Avenue, Erskine Street, and Gateway Drive within the site and Flatlands Avenue at its northern edge. The right-of-way for Elton Street has been cleared for the street bed and infrastructure. The vegetated edges of these roads are typically dominated by introduced herbaceous plants (i.e., mugwort, Japanese knotweed) and mowed grass. Several unpaved roads traverse the central portion of the Project Site, and are slated to become the main city streets within the site. Paved and unpaved roads and paths were observed to occupy approximately 12 acres of the Project Site in 2007.

The habitat types observed on the Project Site during the 2007 observations are similar to those described in the 1996 FEIS, including bare sand, grassland, shrub-scrub, and woodland. However, succession and development that has occurred within the Project Site subsequent to 1996 has changed the occurrence and extent of these habitat types. Presently, trees and shrubs located within the Project Site are common early successional species (black cherry, Eastern cottonwood, staghorn sumac) or species that are able to colonize exposed soils in urban areas (tree of heaven, black locust, autumn olive, and multiflora rose). Herbaceous species include introduced plants and trees that are able to colonize disturbed areas (mugwort, Japanese knotweed, common reed, Queen Anne's lace, garlic mustard, crown vetch, great mullein, and red clover) and forbs and grasses that are successful in sandy soils (goldenrods, little bluestem, sedges, rushes, and common milkweed). Several small, distinct patches characterized by tree and shrub stands were identified during the 2007 observations, These sites included more mature eastern cottonwoods, black locusts, black cherries, and willows. Uplands along the northeastern edge of Hendrix Creek include groundsel bush and common reed near the creek, with pitch pine further upslope.

Wildlife

Due to the degree of human activity, and available habitat at the Project Site, wildlife occurring at the Project Site include common, urban-breeding native and non-native species that are able to persist in human-modified bare sand, grassland, scrub-shrub, and wooded habitats within urban areas. The Project Site includes cover types and structural features that may provide shelter, food resources, nesting substrate, and protection for a variety of wildlife. The sandy, unvegetated areas offer little beyond nesting habitat for species that nest (i.e., killdeer) or bask (i.e., snakes) on open sand. Vegetated cover varies from patches of low grasslands that may be used by nesting/foraging birds and mammals, to fragments of tree and shrub habitats that appear to have the greatest potential for providing protection, nesting areas, and food sources. The tidal mudflats and open water of Hendrix Creek offer foraging and nesting habitat for aquatic mammals and waterbirds. Lastly, abandoned cars and refuse on the site may provide cover for reptiles and insects or nesting substrate for birds and mammals. The following describe the species of birds, mammals, reptiles and amphibians, and insects known or with the potential to occur within the Project Site.

Birds

The 1996 FEIS included qualitative and quantitative bird surveys, describing the presence of species on the site and breeding evidence. These surveys confirmed on-site breeding activity by common species found in similar urban habitats, such as ring-necked pheasant, mourning dove, killdeer, gray catbird, American robin, song sparrow, red-winged blackbird, and house sparrow (see Appendix C, "Natural Resources," Table C-2). Most have diets and habitat requirements that may be supported by the resources available on or near the site (BNA 2007). The bird species listed as breeding within the FCURA in the 1996 FEIS include species that nest in:

- Largely open areas with sparse, low vegetation (i.e., song sparrow, ring-necked pheasant);
- Low scrub with sparse to moderate tree cover (i.e., American robin, gray catbird, mourning dove);
- Open sand in the proximity of human activity (i.e., killdeer);
- Stands of common reed (i.e., red-winged blackbird); or
- The built environment (i.e., house sparrow).

The Project Site is located in New York State Breeding Bird Atlas blocks 5850D and 5950C, which include several plant communities not represented on the Project Site (i.e., forested uplands, estuarine intertidal wetlands). The 2000 to 2005 New York State Breeding Bird Atlas confirmed breeding by all species noted in the 1996 FEIS, except for killdeer (see Appendix C, "Natural Resources," Table C-2; NYSDEC 2007). The existing plant communities found within the Project Site would be expected to support a complement of bird species (Veit et al. 2002) similar to other ruderal habitats found within Jamaica Bay.

A total of 81 bird species were observed during the 2007 qualitative observations within the Project Site and adjacent study areas (see Appendix C, "Natural Resources," Table C-3). The 2007 observations indicated the presence of both migratory (e.g., least sandpiper, pine and palm warblers) and local resident species (e.g., gray catbird, American robin, Eastern towhee), which is consistent with the findings of other surveys conducted in similar habitats within Jamaica Bay (NYCDEP 2007a, Veit et al. 2002). The Hendrix Creek tidal wetlands also likely support some foraging wading birds (i.e., herons, egrets, and ibis) that nest on islands in the bay, breeding and wintering waterfowl; and were observed to support migratory shorebirds (i.e., greater yellowlegs, short-billed dowitcher, least sandpiper). Terrestrial areas offer some foraging resources to migratory species such as neotropical passerines (i.e., scarlet tanager, blackpoll warbler) during spring and fall migration although the quality of vegetation and lack of substantial food resources suggests that the Project Site is a marginal stopover site (C. Seewagen, Wildlife Conservation Society, pers. comm.).

Mammals

Mammals using the Project Site are typical urban species with a high tolerance of human activity, and none would be dependent upon habitats specific to the Project Site. Terrestrial areas provide habitat for breeding, foraging and shelter for rodents, feral dogs and cats, rabbits, bats, raccoon, and Virginia opossum. Aquatic areas support muskrat and mammals that forage along shore (i.e., raccoon).

The 2007 qualitative field observations noted 7 mammal species present within the Project Site (see Appendix C, "Natural Resources," Table C-4). Mammals observed during the 2007 observations included: eastern cottontail, gray squirrel, muskrat, meadow vole, house mouse, and feral dog and cat. Mink was allegedly observed outside the Project Site in the northeastern section of the Fountain Avenue Landfill in September 2006, which is one of few reported sightings of this species in Jamaica Bay in recent years (A. Block, pers. comm.).

Reptiles and Amphibians

NYSDEC Herp Atlas Project conducted a survey of reptiles and amphibians from 1990 to 1999, documenting the geographic distribution of New York's turtles, snakes, lizards, frogs, toads, and salamanders (NYSDEC 1999). Appendix C, "Natural Resources,"(see Table C-5) includes a list of reptile and amphibian species known to occur within the Jamaica Bay region that have the potential to use the habitats within the Project Site. The 2007 field observations confirmed the

presence of garter snake on the Project Site within scrub-shrub and forested areas in the central portion of the site.

Insects

The characteristics of insect communities is influenced by the presence of plants or a plant community, habitat complexity, and microhabitat characteristics that result in subtle differences in biotic and physical conditions of the environment (Gullen and Cranston 2005). Appendix C, "Natural Resources," Table C-6 lists insect taxa likely present at the Project Site, based on existing habitats.

No insect species were recorded in the May 2007 survey on or near the Project Site. In July and September 2007, members representing 11 orders were observed. It is likely that the site supports a higher diversity than indicated by the 2007 qualitative field observations. Dipterans, hymenopterans, lepidoterans, odonates, and orthopterans were the most common insect orders noted within the Project Site. These orders are also well represented in the diets of mammals and birds that use the Project Site. The most common observed insects in the area included Monarch butterfly *Danaus plexippus*, Cabbage White Butterfly *Pieris rapae*, Question Mark Butterfly *Polygonia interrogationis*, Common Green Darner *Anax junius*, and Black Saddlebags dragonfly *Tramea lacerata*. Within DPR property on the southwest edge of the project area, various species of thoroughworts within the site supported hundreds of feeding butterflies during the September 2007 surveys.

Conclusions from the 2007 Field Observation

Flora and fauna observed during qualitative field observations within the Project Site are consistent with species that would be found within the presently available habitat, and with species noted in the 1996 FEIS. However, substantial alteration of the site has occurred as a result of Phase I development in accordance with the 1996 Plan. This construction resulted in the removal of about 63 percent of the high-quality grasslands present primarily in the southern half of the FCURA prior to construction (see Appendix C, "Natural Resources," Figure C-1), as presented in the 1996 FEIS, and small areas of palustrine wetlands. This construction activity, and additional human disturbance and fragmentation at the Project Site (see figures 10-5, 10-6, and 10-7), would be expected to result in a reduction or degradation of available habitat within the Project Site that was observed during the 2007 field observations. These disturbances may have contributed to the absence of certain species (i.e., American beach grass, and possibly Fowler's Toad) within the Project Site in 2007.

STUDY AREA

Plant Communities

Adjacent to the Project Site are areas with upland plant communities similar to those observed within the Project Site. Upland plant communities located north of Shore Parkway include the following:

- Uplands within the Spring, Ralph, Old Mill Creek estuary, located northeast of the Project Site, are heavily colonized by common reed, groundsel bush, and multiflora rose;
- Woody and herbaceous vegetation, including commonly planted street trees and non-native shrubs, line Fountain Avenue, Seaview Avenue, Flatlands Avenue, Gateway Drive;

- The Brooklyn Developmental Center is vegetated with regularly mowed grass lawns interspersed with species of hardwood trees (pin oak, white oak, and honey locust); and
- The developed portion of the perimeter park includes a cricket pitch, passive recreational space (i.e., walking/biking trail, benches, and lawns) and landscaping with conifer and hardwood trees.

Upland plant communities south of the Shore Parkway include several DPR and NPS lands, including Spring Creek, Jamaica Bay Wildlife Refuge, and numerous federally owned islands in Jamaica Bay. Two former landfills are located immediately south of the Project Site —the Pennsylvania Avenue Landfill, extending from the western bank of Hendrix Creek to the east bank of Fresh Creek; and the Fountain Avenue Landfill, extending from the east bank of Hendrix Creek to the west bank of Old Mill Creek. Capping activities have been completed for both landfills.

The Pennsylvania Avenue Landfill (110 acres) was planted in 2005 and 2006 with a mix of grass species, specifically nurse crops to stabilize the site (i.e., annual and perennial rye grass, sheep fescue) and native grass species to further colonize the area (i.e., big and little bluestem, Indian nut grass, and switchgrass). Both paved and gravel roads run along its perimeter and in the sloped areas. The Hendrix Creek shoreline is characterized by older tree and shrub communities and salt marsh habitats that existed prior to the initiation of restoration activities. The Fresh Creek shoreline is a sand and mud beach with small pockets of high marsh cordgrass.

The Fountain Avenue Landfill (297 acres) is sparsely covered with grass species—similar to those on the Pennsylvania Avenue Landfill, and some wildflowers (i.e., wild sensitive plant) along the eastern, western, and southern slopes. Some earthmoving activities are still occurring on this landfill, and gravel roads are present throughout the site. The Old Mill and Hendrix Creek shorelines are mainly composed of intertidal marsh fragments (mainly high meadow salt marsh cordgrass with groundsel bush), small areas of common reed, and cottonwoods along the edge of perimeter roads and in drainage swales. Docks are located on the southwestern corner of the site for barges transporting fill.

Although not part of the Proposed Project, it is important to note that both landfills are undergoing extensive habitat restoration projects. The restoration plan calls for planting of approximately 40 native tree and shrub species and 30 native forb (wildflower) and graminoid (grass) species (NYCDEP 2007a), forming about 400 acres of grasslands, native maritime forest species, and pathways. Restoration activity began in spring 2006.

Wildlife

Birds

The Jamaica Bay area is well-known for the diversity of breeding, foraging, and overwintering bird-life that is supported within its varied habitats. Over 325 species of birds have been identified within NPS Jamaica Bay Wildlife Refuge alone, and habitats within the Bay in the vicinity of the Project Site offer substantial acreages of marshes, grasslands, and other habitats. Directly adjacent to the Project Site, habitat restoration sites present at the former Pennsylvania and Fountain Avenue Landfills were the subject of an intensive year-long NYCDEP study of bird populations. These sites were found to support numerous bird species that require or frequent grasslands, including: upland sandpiper, northern harrier, short-eared owl, barn owl, eastern meadowlark, savannah sparrow, vesper and clay-colored sparrows, baird's and buff-breasted sandpiper, lark sparrow, and yellow-headed blackbird. Numerous marsh obligate species (willet, clapper and Virginia rail, marsh wren, and swamp sparrow) were confirmed as

breeders along the landfill perimeter in marshes and common reed stands. In total, over 180 species of birds were identified at the restored habitats present at the two landfills (NYCDEP 2007a).

The approximately 3.5-acre freshwater wetland located north of Shore Parkway and south of Gateway Drive created as mitigation for the 1996 Plan also provides open water habitat for breeding and migratory waterfowl, and cattail marsh that would be expected to support various waterbirds and passerines that require freshwater wetlands. During the July and September 2007 field surveys, three juvenile black-crowned night-herons and two juvenile great egrets were observed roosting within cattail, black cherry, and shrubs surrounding open water areas.

Uplands in the study area north of the Shore Parkway (e.g., city-owned and private properties northeast of Spring Creek, Brooklyn Developmental Center, etc.) resemble upland areas within the Project Site and likely provide similar habitat for breeding or migrating birds and other wildlife, although a quantitative study to determine bird diversity within the study area was not conducted as part of the present assessment. Bird species with the potential to use these areas include common urban-breeding native (i.e., mourning dove, gray catbird, American robin, song sparrow, and red-winged blackbird) and non-native (i.e., European starling, house sparrow, and rock pigeon) and seasonal migrants (i.e., warblers). Areas of intertidal marsh grasslands and exposed mudflats located at Spring and Ralph Creeks may provide nesting habitat for marsh-obligate birds (i.e., salt marsh sharp-tailed sparrow, clapper rail) and foraging areas for migrating shorebirds.

Mammals

Mammalian species known to occur within the vicinity of the Project Site, are similar to species observed on the Project Site, although a quantitative study to determine mammal diversity within the study area was not conducted as part of the present assessment. Some exceptions noted at the former Fountain Avenue Landfill in 2006 (A. Block, 2007, pers. comm.) include an observation of a red fox individual (rare for the New York City area) and an alleged American mink sighting (exceedingly rare for the New York City area and Jamaica Bay). Wildlife with the potential to use terrestrial habitats north of Shore Parkway would include common to the urban land cover of New York City. Examples include: grey squirrel, eastern cottontail, and mice.

Reptiles and Amphibians

Reptiles and amphibians present within upland areas north and south of Shore Parkway are likely similar to those present at the Project Site, although a quantitative study to determine reptile and amphibian diversity within the study area was not conducted as part of the present assessment. In addition to these species, the northern diamondback terrapin (*Malaclemys t. terrapin*), an estuarine turtle, has potential to occur along the shorelines of both landfills. This species is known to breed on island and mainland habitats throughout the bay and has been observed in Old Mill Creek, Spring Creek Basin, along the perimeter of the Fountain Avenue Landfill, and along the sandy shore of NPS property (Veit et al. 2002, A. Bernick, unpub. data).

Insects

Although quantitative studies were not conducted to assess insect populations within the study area, Jamaica Bay Wildlife Refuge is known to support over 16,000 species of insects and offers diverse habitats in support of insect biodiversity (see Appendix C, "Natural Resources," Table C-6). Additionally, a qualitative survey conducted by a NYCDEP consultant at the Pennsylvania and Fountain Avenue Landfills revealed 24 species of butterflies and moths over a one-year

period, including common migratory species (monarchs and red admirals) and rare southern species (checkered white, variegated fritillary, and cloudless sulphur) (A. Block, 2007, pers. comm.).

AQUATIC RESOURCES

The major aquatic resources within the study area include Hendrix Creek, Spring Creek Basin, and Jamaica Bay. Additional aquatic resources include an approximately 3.5 acre freshwater wetland created north of the Shore Parkway during Phase I development and a series of occasionally flooded stormwater management ponds in the northwest corner of the Fountain Avenue Landfill.

WATER QUALITY

Hendrix Creek

Hendrix Creek is a tidal inlet of Jamaica Bay, which connects to the Atlantic Ocean through the Rockaway Inlet. North of the Shore Parkway, it is approximately 150 feet wide and 3,200 feet long with water depths ranging from 2 to 5 feet at low tide. Its western shoreline is engineered with bulkhead, and the eastern shoreline consists of a steep bank. South of the Shore Parkway, Hendrix Creek widens to about 650 feet and deepens to 12 to 15 feet at low tide. The mouth of Hendrix Creek is approximately 3,300 feet south of the Shore Parkway.

The mean tide range is 5.2 feet and the spring range (during the full and new moons) is 6.3 feet. Because Hendrix Creek is closed at the north end, tidal currents are generally less than one knot (nautical mile per hour). The average tidal prism (volume of water difference between high tide and low tide) in the creek north of the Shore Parkway is about 2.5 million cubic feet, and the spring tidal prism is about 3 million cubic feet. Sources of fresh water to Hendrix Creek include:

- Storm sewer systems receiving surface runoff from within the FCURA that discharge through three existing stormwater outfalls;
- A combined sewer system outfall (CSO) with an equivalent diameter of 187 inches at the head of Hendrix Creek;
- The 26th Ward WPCP, located along the west side of the creek north of the Shore Parkway, with a permitted discharge of 85 million gallons per day (mgd);
- The approximately 3.5-acre freshwater wetland located north of the Shore Parkway created as mitigation for the 1996 Plan that discharges to Hendrix Creek through a weir; and,
- A 36-inch diameter corrugated pipe beneath the Shore Parkway overpass that receives stormwater runoff from the Parkway.

The total volume of water entering and leaving the upper part of Hendrix Creek is the combination of tidal flow and freshwater inputs. On a dry day, the tide and effluent from the 26th Ward WPCP could combine for an output of approximately 210 cubic feet per second (cfs). During a storm event, the CSO and stormwater discharge could add another 1,090 cfs for a total flow of 1,300 cfs. During a tidal cycle of about 12.5 hours, a total of about 9.45 million gallons of salt water and WPCP effluent move into and out of the northern part of Hendrix Creek. On a rainy day, this volume increases to 58.5 million gallons of water.

Hendrix Creek is classified by NYSDEC as a Use Class I tributary. The best usages for Class I waters are as secondary contact recreation and fishing, and water quality should be suitable for

fish propagation and survival. Water quality standards for fecal and total coliform, dissolved oxygen (DO), and pH for Use Class I waters are as follows:

- Fecal coliform: monthly geometric mean less than or equal to 2,000 colonies/100mL from 5 or more samples;
- Total coliform: the monthly geometric mean from a minimum of 5 examinations shall not exceed 10,000 colonies/100 milliliters (mL);
- DO: never less than 4 milligrams per liter (mg/L); and,
- pH: the normal range shall not be extended by more than 0.1 of a pH unit.

DO in the water column is necessary for respiration by all aerobic forms of life, including fish and invertebrates such as crabs, clams, and zooplankton. The bacterial breakdown of high organic loads from various sources can deplete DO to low levels. Persistently low DO can degrade habitat and cause a variety of sublethal or, in extreme cases, lethal effects. Consequently, DO is one of the most universal indicators of overall water quality in aquatic systems. Although DO levels have steadily improved in the New York Harbor Estuary since the 1970s, concentrations below the "never less than 4.0 mg/L" criteria are still occasionally recorded, most often during the summer months.

Hendrix Creek is a dead-end tributary with reduced flow due to poor flushing and weather-dependent inputs of effluent; thus, water quality fluctuates throughout the year. In wet weather months, water quality at the head of the creek does not meet the water quality standards for DO or total and fecal coliform (Hydroqual data, as reported in NYCDEP 2007a). Stormwater, CSOs, and landfill leachate that discharge to Hendrix Creek during storm events, combined with the poor flushing of this tidal inlet, contribute to the impairment of its water quality.

Hendrix Creek was identified on New York State's 2004 Section 303(d) list of impaired waters. The 303(d) list identifies waters that do not support appropriate uses. This list requires development of a Total Maximum Daily Load (TMDL) for pollutants or other restoration strategy to reduce the input of the specific pollutant(s) that restrict water body uses to restore and protect such uses. However, the 2005 Consent Order signed by NYSDEC and the City of New York, are expected to result in restoration of the water body. The Consent Order directs the City to develop and implement watershed and facility plans to address CSO discharges and bring waters into compliance with the CWA (NYCDEP 2007a).

Spring Creek Basin

Spring Creek Basin/Old Mill Creek is also a tidal inlet of Jamaica Bay. Freshwater inputs to Spring Creek are from CSOs, storm sewers, and the Spring Creek Auxiliary WPCP (DEP 2007a). Inputs of leachate from Fountain Avenue Landfill also enter into Old Mill Creek, primarily south of Shore Parkway.

Spring Creek is classified by NYSDEC as a Use Class I tributary. Spring Creek frequently does not meet the water quality standards for DO or total and fecal coliform (DEP 2007a), and it was also identified on New York State's 2004 Section 303(d) list of impaired waters requiring a TMDL. As with Hendrix Creek, the Consent Order signed by NYSDEC and the City of New York, is expected to result in restoration of the water body.

Jamaica Bay

The waterways described above drain into Jamaica Bay, which is classified by NYSDEC as a Use Class SB water (primary contact/bathing). Water quality standards for fecal and total coliform, dissolved oxygen (DO), and pH for Use Class SB waters are as follows:

- Fecal coliform: monthly geometric mean less than or equal to 200 colonies/100mL from 5 or more samples.
- Total coliform: the monthly geometric mean from a minimum of 5 examinations shall not exceed 2,400colonies/100 milliliters (mL).
- DO: never less than 5 milligrams per liter (mg/L).
- pH: the normal range shall not be extended by more than 0.1 of a pH unit.

Jamaica Bay's water quality has been severely impaired as a result of nearby land uses (commercial, industrial, and landfills); filling and dredging activities; and WPCP, stormwater, and CSO discharges. Although several tidal creeks, including Hendrix and Spring Creeks, once provided freshwater inputs to the bay, freshwater now comes from groundwater discharge, stormwater runoff, and WPCP and CSO discharges (Franz and Tanacredi 1992). In 1999, 22 percent of the water samples collected in the bay exceeded the total coliform criteria (2,400 colonies/100 mL) and 40 percent of these samples exceeded the fecal coliform criteria (2,400 colonies/100 mL) (Ringenary et al. 1999). In 2004, summer fecal coliform levels were below the 200 colonies/100 mL standard, and mean levels within the bay have been below the fecal coliform standard for SB waters. In 2004, summer DO measurements were above the 5 mg/L standard for SB waters. Chlorophyl α concentration throughout the Jamaica Bay estuary, averages 39.6 µg/L, well above the 20 µg/L level generally considered indicative of eutrophic waters (DEP 2004). Despite its impaired water quality, Jamaica Bay is important as a spawning and nursery ground for fish and as a habitat for benthic invertebrates.

SEDIMENT QUALITY

Jamaica Bay has a complex distribution of sediments because of variable currents and a high degree of sediment input from natural and human actions. Sediments in the bay vary from coarse sands and gravels in high-energy areas to fine-grained silts and clays in low-energy areas.

Sediments in the New York Harbor Estuary often contain evidence of contamination. A 1998 survey found that the mean sediment contaminant concentration in the Harbor Estuary was statistically higher than other coastal areas of the East Coast for 50 of the 59 chemicals measured (Adams et al. 1998), and Newark and Jamaica Bays have been ranked highest in the Harbor Estuary for the most toxic sediments on the basis of sediment chemistry, toxicity, and benthic community (Adams and Benyi, 2003). Biological effects, measured by relative impacts on the benthic invertebrate community, were found to be associated with the chemical contamination. While the sediments of the Harbor Estuary are contaminated, the levels of contaminants (e.g., dioxin, DDT, and mercury) have decreased on average over the past 30 years (Steinberg et al. 2002). Between 1993 and 1998, the percentage of sediment samplings with benthic macroinvertebrate communities considered impacted, or of degraded quality, decreased throughout the Harbor Estuary (Steinberg et al. 2004).

Jamaica Bay's sediments are contaminated from wastewater and sewage inputs, landfill leachate, atmospheric deposits, and other inputs. Sediments contain various metals, such as nickel, zinc, copper, and cadmium from sewage effluent and lead from storm sewers and atmospheric fallout.

Atmospheric fallout of zinc, copper, and cadmium contributes a substantial portion of metals in the bay, but landfill leachate appears to be a lesser source of contaminant (Seidemann 1991).

AQUATIC BIOTA

Primary Producers

Phytoplankton are microscopic plants whose movements within the system are largely governed by prevailing tides and currents. Several species can obtain larger sizes as chains or in colonial forms. Light penetration, turbidity, and nutrient concentrations are important factors in determining phytoplankton productivity and biomass. While nutrient concentrations in most areas of the Harbor Estuary are very high, low light penetration has often precluded the occurrence of phytoplankton blooms.

The presence of chlorophyll α, the predominant pigment found in algae and cyanobacteria, is a useful indicator of the amount of phytoplankton in the water column (NYCDEP 2007a). Phytoplankton growth in Jamaica Bay typically occurs in two annual blooms; more productive blooms generating chlorophyll α concentrations ranging from 45 to 65 µg/L occur in February to April, with less productive blooms from June to September (Sambrotto 2000).

In a 1993 survey of the Harbor Estuary, 29 taxa of phytoplankton were identified. These are also common species to the bay and would be presumed to exist in Hendrix and Spring Creeks (see Appendix C, "Natural Resources," Table C-7). Phytoplankton sampling conducted at five stations in Jamaica Bay from 1995 through 1996 identified 83 species of phytoplankton. The most abundant species, accounting for 21 percent of phytoplankton organisms collected, was the diatom *Skeletonema costatum* (EEA 1997).

Primary productivity in Jamaica Bay has been steadily increasing due to increasing nitrogen levels. Phytoplankton and macro-algae blooms can be triggered by elevated nitrogen levels, which are the product of treated and untreated sewage effluent from WPCPs and CSOs. Over 36,000 pounds per day of nitrogen enters the Bay from WPCPs (NYCDEP 2005).

Zooplankton

Zooplankton are an integral component of aquatic food webs. They are primary grazers on phytoplankton and detritus material and provide a major food source for organisms of higher trophic levels. The higher-level consumers of zooplankton include forage fish, such as bay anchovy, striped bass, and white perch. Predacious zooplankton species can consume eggs and larvae and can have a detrimental effect on certain fish species.

Crustacean taxa are the most abundant group of zooplankton collected throughout the Harbor Estuary. The most dominant species include the copepods (*Acartia hudsonica, Acartia tonsa, Eurytemora affinis,* and *Temora longicornis)* with each species being prevalent in certain seasons (Stepien et al. 1981, Lonsdale and Cosper 1994, Perlmutter 1971, Lauer 1971, Hazen and Sawyer 1983). A total of 31 species of zooplankton were noted during EEA surveys of the bay from 1995-1996, with *Acartia hudsonica* representing 39.5 percent of all organisms collected (EEA 1997).

Benthic Invertebrates

Benthic invertebrates inhabit the sediments and surfaces of submerged objects such as rock, pilings, or debris. They are important to the energy flow of aquatic systems because they use detrital and suspended organic matter as food and are food for fish and waterfowl. Benthic

invertebrates include those that are retained on a 0.5 millimeter (mm) screen (macroinvertebrates) and smaller forms (nematodes and harpacticoid copepods). Some of these animals live on top of the substratum (epifauna) and some within the substratum (infauna). Substrate type (rocks, pilings, sediment grain size, etc.) are the primary factors influencing benthic invertebrate communities. Secondary factors include currents, wave action, predation, succession, and disturbance.

Inventories of infaunal benthic organisms (i.e., mollusks, worms, arthropods) and epibenthos (i.e., organisms living on or above hard substrates, including barnacles, shrimp, and certain polychaete worms) were conducted as part of the 2001 Jamaica Bay Field Sampling and Analysis Program (FSAP, HydroQual 2001a). Overall, the infaunal benthic community in Jamaica Bay can be characterized as abundant and somewhat diverse (DEP 2007b). The presence of a large number of pollution tolerant species collected during the 2001 FSAP indicated a degree of habitat degradation, although some positive indicators of habitat quality (i.e., presence of amphipods) were also noted. A total of 34 taxa of benthic organisms were collected during Ponar grab samples in Jamaica Bay, predominantly representing the Annelida, Arthropoda and Mollusca, with one cnidarian collected. Annelids that are typically found in human-enriched sediments, including the polychaete mud worm *Streblospio benedicti* and family Capitellidae (i.e., lugworms), accounted for 59 percent of individuals collected (DEP 2007b). Patterns of polychaete worm abundance and species diversity in Jamaica Bay suggests the presence of overly enriched sediments (Gosner 1978, Weiss 1995). Two amphipod species (*Ampelisca* and *Corophium*) and the mollusc *Nassarius obsoletus* were also dominant. Amphipods are considered indicators of good environmental quality due to limited mobility and a susceptibility to pollution.

For epibenthos, the Harbor-wide Epibenthic Recruitment and Survival FSAP (Hydroqual 2001a) identified a total of 43 taxa of Annelida, Arthropoda, Bryozoa, Chlorophyta, Chordata, Cnidaria, Mollusca, and Porifera within Jamaica Bay (Hydroqual 2001a). Taxa dominant by weight included ivory barnacle (*Balanus eberneus*), the golden star tunicate (*Botryllus schlosseri*), the blue mussel (*Mytilus edulis*), and the cnidarians Tubularia and Campanularia. Epibenthic communities within the Harbor Estuary typically exhibit a vertical distribution on hard surfaces such as piles and bulkheads, due to changes in water level, salinity and DO associated with the tides and salinity stratification. The epibenthic FSAP sampling did not indicate a similar vertical distribution in Jamaica Bay, suggesting that low DO levels are not limiting to epibenthos in the lower portion of the water column in open areas of Jamaica Bay (DEP 2007 b).

In Jamaica Bay tributaries, both infaunal and epibenthos tend to be more prevalent and diverse at the mouth than at the head, where the highest Total Organic Carbon (TOC) and lowest percent solids in the substrate occur. Epibenthos tolerant of organic enrichment and low DO are generally the dominant organisms in the tributaries, with the exception of the pollution-intolerant larval Say mud crab (*Dyspanopeus sayi*) (HydroQual 2002).

Results of a 1993 study of Paerdegat Basin, a Jamaica Bay tidal basin with water quality impairments similar to Hendrix and Spring Creeks[1], reported few benthic species at the head of

[1] As is the case for Hendrix Creek, the 2004 303(d) list indicates Paerdegat Basin to be impaired for DO due to pollutants associated with stormwater runoff and CSO discharges, and requires the development of a TMDL. However, the Draft 2006 Section 303(d) list of impaired waters indicates Paerdegat Basin to be an impaired water body, but one that no longer requires a TMDL because other required control measures, resulting from the Consent Order signed by NYSDEC and the City of New York, are expected

the basin near CSO outfalls, likely due to depressed DO levels and high amounts of accumulated sediments; similar patterns were also observed during recent surveys of Paerdegat Basin (Hydroqual 2002). Benthic organisms were collected in greater abundance near the mouth where water quality is improved and likely more reflective of the overall conditions of Jamaica Bay. Benthic invertebrates within Hendrix Creek, Spring Creek Basin, and Old Mill Creek are likely to be pollution tolerant. They are dominated by polychaete worms, followed by mollusks and amphipods, with few organisms found in proximity to CSO sources. Appendix C, "Natural Resources," Table C-8 lists the benthic invertebrates collected from Paerdegat Basin's mud/sand flats.

Fish

Hendrix Creek, Spring Creek Basin, and Old Mill Creek are classified by NYSDEC as Class I waterways, suited for fish propagation and survival. A 1986 survey collected five species of fish: Atlantic silverside, sundial, seahorse, summer flounder, and black sea bass. A subsequent 1993 survey collected black sea bass and summer flounder. Killifish were documented along the shoreline, and blue crabs were documented near the mouth of the basin.

Appendix C, "Natural Resources," Table C-9 lists finfish known to occur in Jamaica Bay. Where the effects of sewage and stormwater inputs are less immediate (i.e., outside the tidal basins), a diverse population of marine and estuarine species exists. Recent sampling identified 49 species of finfish within the Bay (Kurtzke and Schriebman 2002), and a four-year survey in the 1980's identified 81 species (Scaglione 1991). Even under impaired conditions, it is likely that some species spend time in Hendrix Creek, Spring Creek Basin, and Old Mill Creek for foraging and reproduction.

Results of ichthyoplankton sampling conducted in 2001-2002 to assess fish spawning or foraging activity within Jamaica Bay collected a total of 22 taxa (Hydroqual 2001b). True gobies (primarily larvae, likely comprising seaboard and naked gobies) were most abundant, followed by herring species (likely comprising Atlantic menhaden and Atlantic herring) and bay anchovy (primarily egg stages). Ichthyoplankton of other species collected included American sand lance, winter flounder, windowpane, northern pipefish, and tautog. The presence of early life stages of these species suggests that water quality is sufficient to support spawning within or near Jamaica Bay (Hydroqual 2002).

The following sections generally describe the Jamaica Bay fish community. In general, few fish appear to use Jamaica Bay tributaries during periods of low DO, as noted during the 2001 FSAP (DEP 2007b).

Marine Species. Winter flounder, scup, and bluefish are found in Jamaica Bay. Winter flounder is an important commercial and recreational fish species that prefers cold water. Adults have a short migration pattern, moving offshore in spring and returning to shallow inshore or estuarine waters in late fall to spawn (Bigelow and Schroeder 1953). Winter flounder spawn in the lower estuary during winter and early spring and prefer sandy bottoms in shallow water (Pereira et al. 1999). This species has a varied diet of small invertebrates and fish fry (Grimes et al. 1989).

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to result in restoration of the water body. The 2005 Consent Order directs the City to develop and implement watershed and facility plans to address CSO discharges and bring waters into compliance with the CWA (NYCDEP 2007a).

Scup, or porgy, is a marine species that migrates inshore during late spring. It stays close to the coast during the summer months before moving offshore during the fall. Scup is a bottom feeder that spawns from May through August (Franz 1990, Bigelow and Schroeder 1953).

Bluefish are pelagic fish whose young migrate into estuaries and harbors along the coast during late spring or early summer. Their major spawning grounds are located in the outer half of the continental shelf, and the resulting young move inshore in late spring.

Estuarine Species. Atlantic silverside, striped killifish, mummichog, and white perch have been found in abundance in the bay. These species are important as forage species for larger predator fish and are commonly used as bait by fishermen. (PAS 1985).

Atlantic silversides are small fish that school in shallow water and are permanent residents of the estuary. They spawn in May through early July and mature in one year. Atlantic silversides are omnivorous and feed chiefly on copepods, mysids, shrimp, amphipods, cladocerans, fish eggs, young squid, annelid worms, and mollusk larvae (Bigelow and Schroeder 1953).

Mummichogs spawn primarily in fresh or brackish water, usually from spring to late summer or early autumn, and adults generally mature during their second year. Striped killifish spawn in shallow, shoreline waters from June through August and also mature in their second year. Both species feed primarily on crustaceans and polychaetes (Abraham 1985).

White perch migrate to shallow, fresh and slightly brackish water in spring and early summer to spawn and then return to the lower estuary. The demersal eggs hatch in 3 to 5 days, and after approximately 1 month, they begin to look like small adults. Juveniles inhabit creeks and inshore areas until they are about a year old (Heimbuch et al. 1994). Small white perch primarily eat invertebrates. Larger white perch in salt and brackish water feed on fish fry, crabs, shrimp, and other invertebrates. White perch longer than 200 mm eat mostly fish (Stanley and Danie 1983).

Anadromous Species. Anadromous species that use Jamaica Bay include striped bass. Striped bass migrate into the bay from fall through spring (PAS 1985) and spawn before migrating back to salt waters. The young use the brackish waters as nursery and wintering area, and juveniles migrate to marine waters when nearing maturity. The majority of adults spend much of their time in coastal, bay, and river mouth waters before returning to spawn in the spring each year (Bigelow and Schroeder 1953). Juvenile striped bass eat invertebrates, and adults eat fish and sometimes shrimp. (Fay et al. 1983).

Catadromous Species. The single catadromous species common to the Bay is American eel. Eels spawn at sea and the young move into the bay as elvers in the spring (Fahay 1978). American eels are opportunistic feeders, and juveniles eat crustaceans, polychaetes, bivalves, and fish. They grow slowly and, at sexual maturity, they move out to sea (Bigelow and Schroeder 1953).

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Requests for information on rare, threatened or endangered species were submitted to USFWS, NMFS, and NYNHP. Except for occasional transient individuals, no federally listed or proposed endangered or threatened species under the jurisdiction of the USFWS were identified in the vicinity of the Project Site (Papa 2007). Although federally listed endangered or threatened sea turtles under the jurisdiction of the NMFS may occur in Jamaica Bay, no listed species occur in the waters adjacent to the Project Site (Colligan 2007)

NYNHP identified the presence of low salt marsh along the Old Mill Creek shoreline as a significant ecological community. Significant ecological communities are considered to have

high ecological and conservation value. They are either an occurrence of a community type that is rare in the state or represent a high quality example of a more common community type. In 2003, this area was described as comprising multiple patches of salt marsh with few exotic plant species in a degrading state. The New York State-endangered Roland's sea-blite (*Suaeda rolandii*) was last reported within the study area in 1992, on a tidal flat east of Fountain Avenue Landfill (Seoane 2007). There is no suitable habitat within the Project Site to support Roland's sea-blite, and few locations within the study area that would potentially support this species.

The state-listed endangered short-eared owl (*Asio flammeus*) has been identified at or near the Project Site (Seoane 2007). This species is rapidly declining as a nesting species in New York (Andrle and Carroll 1988, Cooper 1998, Atlas 2000 data). It is also listed in Pennsylvania and New Jersey as endangered and in Connecticut as threatened. The main conservation threat for this species is habitat loss and fragmentation as they nest on the ground and require fairly large open areas for foraging. Mammalian nest predators (i.e., raccoon, Virginia opossum), prevalent in urban areas, may make nesting difficult in small, easily accessible grasslands. Mortality related to the bioaccumulation of pesticides in prey populations is likely to be low (Wiggins et al. 2006).

Short-eared owls were typically breeders in coastal Long Island and western and northern New York through 1985 (Bull 1974, Cooper 1998). In New York City, short-eared owls only nested in the Jamaica Bay area, specifically John F. Kennedy International Airport (D. Reipe, pers. comm.) and Floyd Bennett Field (one breeding record in 1981, Ron & Jean Bourque, pers. comm.). Between 2000 and 2005, probable breeding evidence for this species was found at one site in Suffolk County, but no nesting was reported in New York City (Atlas 2000).

The core breeding populations of short-eared owls in North America are in the western United States and Canada. In the eastern United States the species is found more often as a winter resident (United States Geological Survey (USGS) BBS data). Short-eared owls have been observed between September and April at the Pennsylvania and Fountain Avenue Landfills (2006-2007; NYCDEP data) and the Jamaica Bay Wildlife Refuge (2005-2007; various observers), Edgemere Landfill, and Dubos Point (2000-2002; A. Bernick, unpub. data). Through the mid-1980s, when the Pennsylvania and Fountain Avenue Landfills were active, short-eared owls were routinely seen in the winter at the landfills, at Spring Creek within the GNRA parcel, and within the Project Site (Ron & Jean Bourque, pers. comm.).

Short-eared owls are a ground-nesting species that typically forage in relatively large open areas, such as grasslands, marshes, landfills, and airports. This species feeds primarily on small mammals throughout its range, particularly voles (*Microtus* spp.). Other mammals, such as rabbits, shrews, moles and several rodent species, are also known prey species for short-eared owls. Norway rats (*Rattus norvegicus*), have been characterized as a rarely consumed prey species for short-eared owls (Johnston 1956). Birds generally account for a small proportion of their diet; however, short-eared owls have been found to feed more often on birds in coastal than inland sites. The bird species consumed would be those occupying open grasslands and marshes where owls feed, such as shorebirds, tern and gull chicks, and passerines (Johnston 1956, Holt 1993).

The 1996 FEIS stated that short-eared owls would use the FCURA only as a peripheral foraging area. Presently, grasslands within the Project Site that could provide cover for prey species are limited, but may provide peripheral foraging habitat for short-eared owls in the winter. The portions of the Project Site that may provide suitable foraging habitat for short-eared owls are substantially fragmented by the ongoing residential development, and surrounded by active

roadways; the largest open patches within the Project Site are approximately six to eight acres in size. However, habitat degradation and fragmentation within and adjacent to the Project Site (see figures 10-5, 10-6, and 10-7) and the presence of relatively small areas open grasslands to support prey populations (i.e., meadow voles) both suggest that the Project Site would not provide critical short-eared owl foraging habitat, but may be used on an occasional basis by foraging short-eared owls. More contiguous habitats owned and protected by DPR and NPS exist throughout Jamaica Bay. These sites would be more likely to support foraging short-eared owls during the winter. Once completed, the White Island grassland restoration could provide additional contiguous grassland habitat that may offer winter foraging opportunities for this species.

In addition to short-eared owls, northern harriers feed in open habitats on small to medium-sized mammals, particularly voles and other rodents, and in summer on bird species (including passerines and shorebirds), and other vertebrates. (Macwhirter et al. 1996). Barn owls also occupy a similar niche, and feed on a wide variety of rodents (Marti et al. 2005). Barn owls are the only species of these three to have been recently confirmed as nesters within the vicinity of the Project Site NYSDEC 2007), and are known to nest in or on human-constructed structures.

Surveys prepared for the 1996 FEIS identified nine bird species (common tern, Cooper's hawk, Henslow's sparrow, northern harrier, osprey, peregrine falcon, vesper sparrow, short-eared owl, and barn owl) that were protected by either the federal or state government within or near the FCURA. Northern harrier and common tern were sighted within the study area during the 2007 surveys, and both peregrine falcon and osprey are confirmed breeders within 3 miles of the Project Site. In 2007, northern harrier, common tern, peregrine falcon, and osprey were observed within the study area and are known to occur regularly within Jamaica Bay. Henslow's sparrow and vesper sparrow are rare transients that are not commonly expected to be present at the Project Site.

Ospreys and common terns are piscivorous and feed in aquatic habitats throughout Jamaica Bay, and these species commonly forage in tidal creeks and inlets within the study area. Within the Project Site, these species would only be found in Hendrix Creek. Species such as Cooper’s hawk, northern harrier, peregrine falcon, and barn owl may occasionally forage at the Project Site. In their present condition, however, habitats present within the Project Site would not be expected to provide critical foraging habitat for these species. Henslow’s sparrow, short-eared owl, vesper sparrow, which are all rare in the New York City area and undergoing rangewide declines, are also not likely to use the Project Site under existing conditions as a critical foraging area.

Within the study area, the above bird species have been observed foraging in open grassland habitats at adjacent natural areas managed by federal and state agencies and former landfills during breeding (i.e., peregrine falcon, barn owl), migration (i.e., vesper sparrow) and winter (i.e., short-eared owl, northern harrier). This suggests that, while the Project Site may offer foraging opportunities for the listed species described above, there are also adjacent areas with a reduced level of human activity (i.e., less fragmented by roads and development) that offer substantial resources for species that forage in open, contiguous grassland habitats. It is likely that grassland habitat currently available at these adjacent sites, which could be augmented upon successful completion of several habitat restoration projects within the study area, represent larger contiguous areas of foraging habitat than what is presently available on the Project Site.

The former Fountain and Pennsylvania Avenue landfills could offer suitable habitat for the above species (i.e., at least 100 acres of grasslands that have experienced two years of growth).

When the planned restoration activities are completed at the landfills, and the restored habitats are managed as natural areas by NPS, additional acreages of native grasslands and woodlands could be available within the Jamaica Bay ecosystem, which supports several of the threatened and endangered species described above.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT

NYSDOS has designated Jamaica Bay as a Significant Coastal Fish and Wildlife Habitat (Block NY-22, NYS Coastal Management Program Atlas 2002). To designate a Significant Coastal Fish and Wildlife Habitat, NYSDEC evaluates the significance of the habitat, and following a recommendation from NYSDEC, NYSDOS designates and maps the area. Jamaica Bay has exceptional value for a variety of wildlife. It is an important breeding site, migratory stopover site, and overwintering site for over 300 species of birds. One important reptile species, the northern diamondback terrapin, is an estuarine turtle that breeds and forages throughout the bay. Finfish biodiversity is high in the bay and is composed of species that either migrate through or breed in its waters, and the bay serves as a nursery and feeding area for a variety of fish species (NYSDOS 1992). The boundary for the Significant Coastal Fish and Wildlife Habitat includes Old Mill, Spring, and Ralph Creeks and Jamaica Bay but excludes Hendrix Creek.

D. 2011 THE FUTURE WITHOUT THE PROPOSED ACTION

Absent the Proposed Project, 378 residential units will be constructed by the 2011 build year, consistent with the 1996 Plan, but the remainder of the Project Site will be undeveloped.

FLOODPLAINS

Absent the Proposed Project, there will not be new development on the portions of the Project Site within the 100- or 500-year floodplain. As presented in Chapter 13, "Infrastructure," the Project Site is currently served by a storm sewer system that is generally located within the bed of Vandalia Avenue, Erskine Street, and Gateway Drive. West of Elton Street, the storm sewers flow to the west and discharge to Hendrix Creek through an existing 60-inch diameter stormwater outfall. East of Elton Street, the storm sewers flow eastward to Fountain Avenue and ultimately discharge to Spring Creek through a 78-inch stormwater outfall.

The Project Site currently generates 157 cubic feet per second (CFS) of stormwater in a 2-year storm event, 227 CFS of stormwater in a 5-year storm event, and 343 CFS of stormwater in a 100-year storm event. The new residential units will increase the amount of impervious surface, resulting in more stormwater runoff discharging to the existing storm sewers than under the current condition in which precipitation infiltrates into the ground, Development on the Project Site in 2011 without the Proposed Action would eventually generate 403 CFS of stormwater in a 2-year storm event, 584 CFS in a 5-year storm event, and 883 CFS in a 100-year storm event (see Chapter 13 "Infrastructure," Figure 13-1). However, the stormwater management measures implemented as part of the 1996 Plan, discussed below under Aquatic Resources, will control the quality and rate of stormwater discharges to Hendrix Creek and Spring Creek Basin. Additionally, the floodplain within and near the Project Site is affected by coastal flooding from the New York Bight (FEMA 2001) and will not be affected by construction or operation of the 1996 Plan.

WETLANDS

Construction activities associated with the 1996 Plan will not occur within tidal wetlands of Hendrix Creek or Spring Creek Basin. Stormwater generated within the Project Site will be directed to Hendrix Creek or Spring Creek Basin through the existing stormwater outfalls discussed in the previous section with sufficient capacity to accommodate the additional stormwater flow (see Chapter 13, "Infrastructure"). Furthermore, implementation of erosion and sediment control measures consistent with the "New York Standards and Specifications for Erosion and Sediment Control," will minimize potential construction-period impacts to tidal wetlands.

The operation of the new residential units will not impact the tidal wetlands of Hendrix Creek, Spring Creek Basin, or Jamaica Bay. The installation and operation of stormwater BMPs—consistent with NYSDEC's technical standard for the design of water quality controls (post-construction stormwater control practices) presented in the New York State Stormwater Management Design Manual, including catch basins with measures to control sediments and floatable, and on-site stormwater detention to limit the discharge rate of stormwater entering the storm sewer—would minimize potential impacts on tidal wetlands in Hendrix Creek and the Spring Creek/Ralph Creek/Old Mill Creek estuary from the discharge of stormwater through the existing stormwater outfalls.

As described in the "Aquatic Resources" section below, the Harbor Estuary Program (HEP) and other programs are specifically directed at improving biological resources and habitats within the Jamaica Bay watershed and will result in some improvements to tidal wetland resources over time. Many of the restoration sites identified by HEP are salt marsh restoration efforts, which will enhance the wetland resources within the Jamaica Bay watershed. In Hendrix Creek, NYCDEP proposes to restore 0.25 acres of tidal wetland and 0.8 acres of a coastal woodland buffer contiguous with the restoration work at the Pennsylvania Avenue landfill. In Spring Creek, NYCDEP and USACOE propose to remove fill material, implement invasive plant control, and restore 42 acres of coastal dune, 120 acres of maritime forest, and re-grade the shoreline to create 25 acres of low and 9 acres of high salt marsh (NYCDEP 2007a).

The approximately 3.5 acre freshwater wetland created as part of the 1996 Plan will not be affected by the construction or operation of the residential units. This wetland is outside the portion of the Project Site that will be disturbed during construction, and the existing stormwater management system that directs some stormwater runoff to this wetland will not be affected by the 2011 No Build condition.

TERRESTRIAL RESOURCES

Construction activity associated with the new residential units will impact much of the central portion of the Project Site, potentially deterring wildlife from habitats near the construction area. On the undeveloped portions of the Project Site, the process of ecological succession will continue, resulting in changes to the vegetation communities. Grassland areas will be invaded by disturbance-tolerant and early successional shrub and tree species (i.e., cottonwood, tree-of-heaven, black cherry, multiflora rose). Open sand areas, not frequently disturbed by vehicles, will be colonized by grasses (i.e., common reed, switchgrass, African love grass). Continued habitat disturbance through unauthorized vehicles use and dumping may reduce the amount of suitable habitat for wildlife within these areas, and terrestrial resources will be similar to those currently present on the Project Site.

Land immediately east of Spring Creek Basin was designated as a Forever Wild site under the jurisdiction of DPR. The site is composed mainly of salt marsh creeks and grasslands with upland areas covered with early successional vegetation and numerous introduced species. The tidal wetland complex within this site will continue to provide habitat for wildlife such as great blue heron, red-winged blackbird, mallards, raccoons and muskrats and foraging grounds for diamondback terrapin.

NPS owns approximately 150 acres of sandy uplands composed mainly of common reed and salt marsh habitats along the eastern shore of Old Mill Creek. Although the site is heavily used by unauthorized all-terrain vehicles and dirt bikes, it will continue to have extensive resource value to wildlife and plant communities.

Restoration of the former Pennsylvania and Fountain Avenue Landfills will continue. Planting of woody and herbaceous material began at the Pennsylvania Avenue Landfill in 2006 and at for Fountain Avenue Landfill in 2007. As these restoration activities are ongoing, it is expected that coastal woodland and grassland habitats will be established at both landfills by 2011, and would be further developed by 2013. Eventually, both landfill restoration projects will be transferred to NPS to be managed as part of the GNRA. These projects represent a substantial resource for terrestrial wildlife, particularly grassland species. Target communities include approximately 200 acres of coastal grassland habitat and approximately 200 acres of maritime forest.

As described in the 1996 FEIS, the removal of high quality grasslands on the Project Site would result in a significant adverse impact on avian species known to have been present within the FCURA. To that end, the 1996 FEIS identified the restoration of the approximately 73-acre Island with high quality grasslands to mitigate the loss of 56 acres that were identified within the FCURA. The restoration of White Island, in tandem with the development of the FCURA, would have allowed migratory species to occupy White Island as the grasslands within the FCURA were removed. However, the mitigation was not implemented in the timeline previously anticipated, meaning that presently there is a net reduction in high quality grasslands.

The creation of coastal grassland habitat on White Island will result in additional habitat for grassland species in the future. The approximately 73-acre island is located 3 miles southeast of the Project Site and is considered a high priority coastal grassland restoration site by the HEP. The present restoration schedule includes clearing/grubbing of woody vegetation and common reed in Summer 2008, herbicide application in Fall 2008, additional clearing and herbicide application in 2009 as needed, during the design phase. The design will address stabilization along the edges of the island which currently has sand bags in place to prevent garbage from migrating into the surrounding creeks. The design will also include capping of the island with sand and planting with grassland species. Construction is anticipated to begin late-Spring 2009 (Michael Feller, DPR – Natural Resources Group, personal communication, 18 April 2008).

As described above, the restoration of White Island is underway, which will mitigate the quantity of grasslands lost with implementation of the 1996 Plan. The delay experienced in the implementation of this mitigation and resultant reduction in grasslands may have diverted some species to other habitats more distant from the FCURA. Efforts taken outside the White Island Restoration Project, include a restoration project at Gerritsen Beach, which is located adjacent to Gerritsen Creek southwest of White Island. The Gerritsen Beach restoration project will result in the restoration of tidal wetlands and grassland habitats, and is being undertaken by the City, the State, and USACOE. These combined efforts will increase the value of the habitat at both sites. The City will work within its capacity and with the USACOE and NYSDEC to enhance the value and habitat elements of the Gerritsen Beach Project to the extent permissible.

AQUATIC RESOURCES

Construction activities will not occur within the surface waters of Hendrix Creek or Spring Creek Basin in the 2011 No Build condition, and stormwater generated within the Project Site will be discharged through existing stormwater outfalls. During construction, implementation of erosion and sediment control measures consistent with the "New York Standards and Specifications for Erosion and Sediment Control," will minimize potential impacts to the water quality and aquatic biota of Hendrix Creek and Spring Creek Basin from the discharge of stormwater. These discharges will not further impair the water quality of Hendrix Creek and Spring Creek Basin for their designated use as Class I waters nor will they affect future water quality improvements that will result from the water quality and aquatic habitat improvement efforts described below.

As discussed above under "Wetlands," following construction, the installation and operation of stormwater BMPs consistent with NYSDEC's technical standard for the design of water quality controls and on-site stormwater detention to limit the discharge rate of stormwater entering the storm sewer, would minimize potential impacts on the aquatic resources of Hendrix Creek and the Spring Creek/Ralph Creek/Old Mill Creek estuary from the discharge of stormwater from the existing outfalls. The discharge of stormwater from the residential units will not further impair the water quality of Hendrix Creek and Spring Creek Basin for their designated use as Class I waters, or affect future water quality and aquatic habitat improvements to these waters that will result from the programs described below.

New development within the Project Site in the 2011 No Build condition will generate 124,432 gallons per day (GPD) of sanitary sewage. This represents approximately 0.15 percent of the 26th Ward WPCP's permitted flow of 85 mgd. As presented in Chapter 13, "Infrastructure," the recent 12-month average dry weather flows are well below the 85 mgd flow limit. Therefore, this small increase in flow will not adversely affect the 26th Ward WPCP's ability to meet the effluent limitations of its SPDES permit, would not result in an increase in the frequency or volume of CSO events at the 26th Ward WPCP (see Chapter 13, "Infrastructure"), nor would it adversely affect the water quality of Hendrix Creek, Spring Creek Basin, or Jamaica Bay.

Activities undertaken by DEP, and as part of HEP, the HRE, and other programs within Jamaica Bay will be expected to result in improvements to water quality and aquatic resources in the future with or without the Proposed Action as described below.

NEW YORK/NEW JERSEY HARBOR ESTUARY PROGRAM PROJECTS

The HEP Final Comprehensive Conservation and Management Plan (CCMP) included a number of goals to improve water quality and aquatic resources throughout the Harbor Estuary. To meet these goals, the CCMP outlines objectives for the management of toxic contamination, dredged material, pathogenic contamination, floatable debris, nutrients and organic enrichment, and rainfall-induced discharges. Most of these objectives aim to increase knowledge of the nature and extent of various forms of pollution (e.g., toxic chemicals, sewage overflows, and floatables), reduce inputs of these pollutants, and increase the habitat and human use potential of the Harbor Estuary area. The floatables action plan of the HEP aims to reduce the amount of debris in the states' waters. It includes marine debris survey collection programs, improved street cleaning, combined sewer overflow and stormwater abatement, enforcement of solid waste transfer regulations, shoreline cleanup programs, and public education.

The HEP Habitat Workgroup developed watershed-based priorities for acquisition, protection, and restoration. USACOE New York District began a feasibility study in 2001 to assess potential sites for habitat restoration in New York Harbor. In May 2003 the Regional Plan Association identified needs and opportunities for environmental restoration in the Hudson-Raritan Estuary. These sites involve the preservation and enhancement of tidal wetlands that will provide improved habitat for fish and macroinvertebrates as well as the birds, mammals, and reptiles that depend on these habitats. Numerous HEP Acquisition and Restoration Sites have been identified within Jamaica Bay, including Hendrix and Spring Creeks. These programs will result in improved water quality and aquatic habitat

NEW YORK CITY PROJECTS

United States Environmental Protection Agency (USEPA) National CSO Strategy of 1989 requires states to eliminate dry weather overflows of sewers, meet federal and state water quality standards for wastewater discharges, and minimize impacts on water quality, plant and animal life, and human health. New York City committed $1.5 billion for construction of CSO abatement facilities over the period from 1998 to 2008, which should result in future improvement in the coliform, DO, and floatables levels in Jamaica Bay and other portions of the Harbor Estuary. The City also recently completed improvements to its wastewater treatment plants, which should lead to further decreases in coliform counts and floatables levels.

As required by USEPA's CSO Control Policy, NYCDEP initiated its Long Term Control Plan (LTCP) Project in 2004. The LTCP Project will integrate CSO Facility Planning and the Comprehensive City-Wide Floatables Abatement Plan, incorporate ongoing Use and Standards Attainment Program (USA) Project work, and will develop Waterbody/Watershed Facility Plan Reports and the LTCP for each waterbody area. The LTCP Project monitors and assures compliance with applicable Administrative Consent Orders between NYSDEC and New York City for the CSO Abatement Program. Additionally, NYCDEP plans to increase identification and control of pollutants of concern, including mercury, PCBs, and solvents. The Drainage Basin Specific and City-Wide LTCP that will be developed is intended to further control CSO discharges.

Hendrix Creek and Spring Creek were listed on the New York State 1998 Section 303(d) list as impaired waterbodies and were scheduled for TMDL development. However, the Draft 2006 Section 303(d) list of impaired waterbodies includes Hendrix Creek and Spring Creek in the list of waters that are impaired but no longer requiring a TMDL. Both waterbodies were de-listed because other required control measures, resulting from the implementation of Consent Order signed by NYSDEC and New York City in 2005, are expected to result in restoration of the water body. The 2005 Consent Order directs the City to develop and submit a Waterbody/Watershed Facility Plan for Jamaica Bay, Spring Creek, Hendrix Creek, and Fresh Creek to address CSO discharges by June 2007 and submittal of a Drainage Basin Specific LTCP for these same watersheds by August 2012. A draft of the "Jamaica Bay and CSO Tributaries Waterbody/Watershed Facility Plan Report" was submitted to NYSDEC in June 2007. These plans are investigating additional CSO control needs and opportunities in compliance with USEPA's CSO Policy and NYCDEP SPDES permits for these areas. Dredging of Hendrix Creek will also be implemented as part of the Jamaica Bay CSO projects and is expected to be completed in 2010. Water quality and aquatic habitat improvements will be expected to have occurred as a result of CSO control activities by 2011. On September 24, 2007, a public notice was issued by the USACE regarding a NYCDEP application for dredging within Hendrix Creek. The project would consist of dredging 20,000 cubic yards of material, conducting onsite dewatering of the material, and placement of the dredge

material at an as-yet unspecified "authorized upland facility." This material would be capped with sand and gravel, and a rip-rap apron would be placed at a combined sewer overflow outfall at the northern end of Hendrix Creek to prevent erosion (USACE 2007).

In addition to the measures that will be implemented as part of the CSO control activities, NYCDEP is preparing the Jamaica Bay Watershed Protection Plan, as required by Local Law 71, to ensure a comprehensive watershed approach toward restoring and maintaining the water quality and ecological integrity of the Bay. Implementation of potential management strategies identified in the Plan will result in improvements to water quality and habitat by 2011.

As part of the City's goal to expand, track, and analyze new stormwater BMPs on a broad scale, it plans pilot projects to evaluate promising stormwater BMPs. One of these pilot projects is the introduction of ribbed mussel beds in the Harbor Estuary to help filter the water and improve water quality. The first location to be evaluated as part of this pilot project is Hendrix Creek. The study will evaluate to what extent mollusks can grow in New York City waterways, the mollusk densities needed to address urban pollution and nutrient problems, and the costs associated with achieving various levels of water quality improvement. The Hendrix Creek demonstration habitat will be monitored, documented, and replicated as appropriate. This demonstration project should be initiated by 2011 after dredging is completed.

STATE AND REGIONAL PROJECTS

The Hudson-Raritan Estuary Ecosystem Restoration Project (HRE) is a cooperative project being led by USACOE and the Port Authority of New York and New Jersey (PANY/NJ) with involvement from USEPA, USFWS, National Oceanic and Atmospheric Administration (NOAA), National Resource Conservation Service, New Jersey Department of Environmental Protection (NJDEP), New Jersey Department of Transportation, NYSDEC, NYSDOS, DEP, DPR, and the New Jersey Meadowlands Commission. The study will identify the actions needed to restore the Hudson-Raritan Estuary and develop a plan for their implementation. The study area for the program includes all of the waters of the New York and New Jersey Harbor and the tidally influenced portions of all rivers and streams that empty into and ecologically influence the Harbor. The program has drafted a plan that presents an ecosystem approach to restoration of the estuary, guidance for selecting specific projects, measurable objectives called target ecosystem characteristics, and tracking program performance.

Thirteen sites in New York and New Jersey have been identified as the first sites for potential restoration projects and feasibility level analysis. It is anticipated that expedited restoration of these sites will provide substantial immediate value to the ecosystem. None of these sites occurs in the vicinity of the Project Site. The Hudson-Raritan Estuary Ecosystem Restoration Project Environmental Restoration Feasibility Study prepared for Jamaica Bay, identified 45 potential restoration sites within Jamaica Bay, including Spring Creek, Hendrix Creek, and the Pennsylvania Avenue Landfill (USACOE 2004).

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

In the 2011 No build condition, short-eared owls and other bird species that feed primarily on rodents in open habitats (i.e., northern harriers, barn owls, etc.) could potentially continue to occasionally forage in the limited grassland and open areas available at the Project Site. These areas are known to contain populations of voles and other small mammals which are the main prey items for this species. On the basis of the habitat requirements of short-eared owls and

similar foragers, however, the Project Site would most likely be used by these species on an occasional basis during the non-breeding season.

Local wintering populations would have additional grassland foraging areas within the study area in 2011 as a result of other future projects. The nearby Fountain and Pennsylvania Avenue Landfills could have approximately 200 acres of native grasslands when restoration activities are successfully completed, and the restored grasslands managed as natural areas by NPS. The projected construction schedule for the White Island mitigation project could result in additional grassland habitat within the vicinity of the Project Site in 2011.

Overall, implementation of elements of the 1996 Plan would result in the loss of habitat that may be used occasionally by threatened or endangered species on the Project Site, but would not result in the loss of critical habitat for these species within the vicinity of the Project Site.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT

Construction of the residential units within the Project Site in 2011 will not result in significant adverse impacts to wetlands, plant communities, wildlife, water quality, or the aquatic biota of Jamaica Bay. Therefore, the 2011 No Build condition will not affect the resources of Jamaica Bay responsible for its designation as a Significant Coastal Fish and Wildlife Habitat.

E. 2011 PROBABLE IMPACTS OF THE PROPOSED ACTION

By 2011, the Proposed Project would result in the construction of new streets and infrastructure, housing units, a shopping center, and local retail space.

Within the northern portion of the Project Site between Schroeders Avenue and Flatlands Avenue, and Gateway Drive and Erskine Street, new storm sewers would be installed. These new sewers would be designed and built to meet NYCDEP requirements. West of Elton Street, stormwater would discharge to Hendrix Creek through an existing outfall. East of Elton Street, stormwater would flow to the east and connect to an existing storm sewer running under Fountain Avenue and then across City-owned land to discharge through an outfall on the west bank of Spring Creek Basin, just south of the Spring Creek Auxiliary WPCP. The stormwater management system for this northern portion of the Project Site would include on-site stormwater detention to limit the discharge rate of stormwater entering the storm sewer, and water quality treatment devices. All catch basins installed within city streets as part of the Proposed Project would include sumps and hoods to remove solids and hoods to remove floatables.

New storm drains would also be constructed within the new shopping center. The majority of this storm drainage system would flow west and then be conveyed to a storm sewer beneath Gateway Drive and discharged to Hendrix Creek through an existing 66-inch stormwater outfall. The stormwater management system within the shopping center would include on-site stormwater BMPs to remove pollutants, sediments and floatables in compliance with NYSDEC's technical standard for the design of water quality controls (post-construction stormwater control practices) presented in the 2003 New York State Stormwater Management Design Manual. Stormwater BMPs being considered include pretreatment measures such as vegetated swales and rain gardens to allow some infiltration of stormwater, temporary on-site stormwater storage to detain the runoff and control the rate it is discharged to the storm sewer, and hydrodynamic devices to remove oil, grit, and floatables.

FLOODPLAINS

In 2011, the Proposed Project would not result in new construction within the 100- or 500-year floodplain; however, the new residential units, shopping center, and local retail space would result in a greater area of impervious surface as compared to the No Build condition for the 2011 build year, resulting in more stormwater runoff. The proposed stormwater BMPs would help reduce the discharge rate of stormwater.

While the amount of impervious cover and stormwater runoff generated by the Proposed Project would be greater than under the No Build condition for the 2011 build year, the implementation of the proposed stormwater management measures would minimize potential increases in stormwater flow rate and volume, and stormwater runoff generated by the Proposed Project would be small compared to the effluent flow from the 26th Ward WPCP. Also, the floodplain within and adjacent to the Project Site is affected by coastal flooding originating from the New York Bight (FEMA 2001) and would not be affected by construction or operation of the Proposed Project. Therefore, the Proposed Project would not result in significant adverse impacts on floodplains.

WETLANDS

During construction, the Proposed Project would not directly impact tidal wetlands of Hendrix Creek or Spring Creek Basin, and stormwater generated within the Project Site would be directed to the existing outfalls. During construction of the residential units, shopping center, and local retail space, implementation of erosion and sediment control measures consistent with the "New York Standards and Specifications for Erosion and Sediment Control," would minimize potential impacts to tidal wetlands.

When operational, the new residential units, shopping center, and local retail would not impact tidal wetlands within Hendrix Creek, the Spring Creek/Ralph Creek/Old Mill Creek estuary, or Jamaica Bay. The amount of impervious cover and stormwater runoff generated within the Project Site would be greater than in the No Build condition for the 2011 build year, but the stormwater BMPs would control the quality and rate of discharge of stormwater to Hendrix Creek and to Spring Creek Basin and would minimize potential impacts on their tidal wetlands. Additionally, the results of the shadows analysis presented in Chapter 6, "Shadows," indicated that shadows from the Proposed Project would not reach wetlands within Hendrix Creek. The Proposed Project would also not impact the wetlands and salt marsh restoration programs described above.

TERRESTRIAL RESOURCES

The construction of the Proposed Project by 2011 would impact terrestrial resources from activities such as grading, land clearing, temporary access roads for construction vehicles, piling of debris near or within vacant areas, and noise. As streets and housing are constructed, the existing plant and wildlife communities within their footprints would be lost. Although the reduction in terrestrial habitat would be greater in 2011 with the Proposed Project than in the No Build condition (i.e., under the No Build most of the land clearing would occur under the 2013 build year rather than the 2011 build year), adversely affecting those wildlife individuals unable to find suitable habitat nearby. The species that occur within this area are, in general, common to urban settings. Therefore, while construction of Proposed Project elements in 2011 would adversely affect vegetation and wildlife currently present within the Project Site, the loss of this flora and fauna would not result in significant adverse impacts to these terrestrial resources on a

regional scale. The Project Site does not provide habitat critical to maintaining populations of these species within the region.

Following construction, landscaping associated with project elements would provide limited habitat for some of the urban tolerant species that currently use the Project Site. Vegetation communities in the undeveloped portions of the site would continue to undergo succession. Grassland areas would be invaded by trees and shrubs, and open sandy areas would be colonized by grasses where not disturbed by human activity. While habitat disturbance through unauthorized vehicle use and dumping would continue to reduce the amount of suitable habitat for wildlife on undeveloped areas within the Project Site, these activities would be of a lower intensity than under the No Build condition. The terrestrial resources that would be found on the Proposed Project would be similar to those currently present on the site since it would continue to be a highly fragmented habitat with plant and wildlife communities characteristic of urban vacant lands in coastal areas throughout Jamaica Bay and New York City.

While the habitat restoration activities at the former Pennsylvania and Fountain Avenue Landfills are independent of the Proposed Project, and the benefits from these projects are not intended to offset potential impacts resulting from the Proposed Project, it is important to note that these habitat restoration projects will provide substantial new foraging and nesting habitat for wildlife. Furthermore, the nearby DPR and NPS properties will continue to provide terrestrial resources throughout the year for wildlife using upland and tidal wetland areas, and any future restoration activities in this area will greatly enhance their resource value.

AQUATIC RESOURCES

Construction activities would not occur within the surface waters of Hendrix Creek or Spring Creek Basin for the 2011 Proposed Project. Stormwater generated within the portion of the Project Site disturbed by construction of the Proposed Project elements would be discharged to Hendrix Creek or Spring Creek Basin through existing stormwater outfalls. Implementation of erosion and sediment control measures would minimize potential effects on the water quality and aquatic biota of Hendrix Creek and Spring Creek Basin from the discharge of stormwater. The discharge of stormwater would not result in further impairment of the water quality of Hendrix Creek and Spring Creek Basin for their designated use as Class I waters nor would it affect future water quality improvements that will result from the water quality and aquatic habitat improvement efforts that will occur in the No Build condition.

The elements of the Proposed Project that would be constructed by 2011 would result in a greater area of impervious surface as compared to the No Build condition and, consequently, more stormwater runoff. However, BMPs that would be implemented as part of the Proposed Project, discussed above under “Floodplains,” would control the quality and rate of discharge of stormwater to Hendrix Creek and Spring Creek Basin, thereby minimizing potential adverse impacts to aquatic resources.

The Proposed Project would have separate storm and sanitary sewers. Stormwater would be directed to existing outfalls, and sewage would be directed to the 26th Ward WPCP. Sanitary sewage demand generated by the Proposed Project would increase the quantity of sewage treatment at the 26th Ward WPCP in both dry and wet weather. As described in Chapter 13, “Infrastructure,” the Proposed Project is not anticipated to substantially increase CSO discharges to Hendrix Creek from the 26th Ward WPCP, would not cause the WPCP to exceed its permitted capacity, and would not impair its ability to properly treat sanitary sewage. Therefore, the

Proposed Project would not adversely affect the water quality of Hendrix Creek, Spring Creek Basin, or Jamaica Bay.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Under the 2011 Proposed Action condition, new construction would result in the loss of all possible foraging habitats within the Project Site except for narrow grassland along the north end of Hendrix Creek west of Gateway Drive, and a small number of patches within the Project Site. Short-eared owls would not likely forage at the Project Site under these conditions unless prey populations were sufficient within these areas. As discussed previously, the foraging habitat available on the Project Site for grassland bird species is currently limited and degraded. For the period between 1996 and 2006, aerial images clearly indicate that the Project Site has been dramatically modified by humans from its pre-1996 condition as described in the 1996 FEIS (see figures 10-5, 10-6, and 10-7). Additional roads and pathways have been created, a truck depot has been established on the eastern edge of the site, a large portion of former 'high-quality' grassland areas noted in the 1996 FEIS have been covered with impervious surface resulting from Phase I construction of the 1996 Plan, human activities on the site have continued, and succession within plant communities has changed the relative composition of habitats present within the Project Site; these factors suggest that the Project Site would not be used as a primary foraging area for threatened or endangered species.

Short-eared owls and other bird species that feed primarily on rodents in open habitats (i.e., northern harriers, barn owls, etc.) may forage within the remaining, degraded open habitats found within the Project Site, and are known to forage in larger contiguous habitats within the Jamaica Bay area (including Pennsylvania and Fountain Avenue Landfills). However, as the Project Site does not likely represent a critical foraging area within Jamaica Bay for these species, the loss of this potential foraging habitat within the Project Site for short-eared owls and other birds occupying similar ecological niches would not be expected to result in significant adverse impacts to these species. Terrestrial and intertidal grassland habitats known to be suitable for, and used by, these species would continue to be available within the Jamaica Bay area. Although the Fountain and Pennsylvania Avenue Landfill restoration projects are not intended as offsets for any adverse impacts from the Proposed Project, it is important to note that these projects could add substantial grassland acreages that could provide suitable foraging habitat for these species adjacent to substantial areas of relatively contiguous open habitats within Jamaica Bay. The White Island restoration project may provide some grassland habitat in the 2011 build year.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT

In 2011, the Proposed Project would not result in significant adverse impacts to wetlands, plant communities, wildlife, water quality, or the aquatic biota of Jamaica Bay. Therefore, the Proposed Project would not result in significant adverse impacts to the resources of Jamaica Bay responsible for its designation as a Significant Coastal Fish and Wildlife Habitat.

F. 2013 THE FUTURE WITHOUT THE PROPOSED ACTION

Absent the Proposed Project, all of the elements of the 1996 Plan, including 35.5 acres of additional open space, will be completed by 2013. The full build out of the 1996 Plan will also include landscaped areas for the community facilities and residences, and along new streets.

FLOODPLAINS

Under the 2013 No Build condition, no activities will occur within the 100- or 500-year floodplain.

While the development of the 1996 Plan will result in an increase in impervious surface and increased stormwater runoff, the stormwater management measures implemented as part of the 1996 Plan will control the discharge to Hendrix Creek and Spring Creek Basin. Although greater than in the 2011 No Build condition, the stormwater runoff generated by the 2013 No Build condition will still be small compared to the total effluent flow from the 26th Ward WPCP. Furthermore, as discussed previously, the floodplain within and adjacent to the Project Site is affected by coastal flooding originating from the New York Bight and will not be affected by construction or operation of the 1996 Plan.

WETLANDS

During construction, the 1996 Plan will not directly impact tidal wetlands of Hendrix Creek or Spring Creek Basin, and stormwater generated within the Project Site will be directed to existing stormwater outfalls. During construction, implementation of erosion and sediment control measures consistent with the "New York Standards and Specifications for Erosion and Sediment Control," would minimize potential impacts to tidal wetlands within Hendrix Creek and Spring Creek Basin from the discharge of stormwater through existing permitted outfalls.

When operational, the 1996 Plan will not impact tidal wetlands within Hendrix Creek, Spring Creek Basin, or Jamaica Bay. The installation and operation of stormwater BMPs—consistent with NYSDEC's technical standard for the design of water quality controls (post-construction stormwater control practices) presented in New York State Stormwater Management Design Manual, including catch basins with measures to control sediments and floatables, and on-site stormwater detention to limit the discharge rate of stormwater entering the storm sewer—would minimize potential impacts on tidal wetlands in Hendrix Creek and the Spring Creek/Ralph Creek/Old Mill Creek estuary from the discharge of stormwater.

The programs discussed above to enhance the wetland resources of Jamaica Bay will continue between 2011 and 2013, and the wetland restoration projects planned in Hendrix and Spring Creeks will be initiated or continue to mature. The approximately 3.5-acre freshwater wetland located west of the Erskine Street interchange that was created as part of the mitigation for the 1996 Plan, is outside the area that will be disturbed during the construction of the remaining components of the 1996 Plan. However, the existing stormwater management system directs some stormwater runoff to this wetland, which will not change in the 2013 No Build condition.

TERRESTRIAL RESOURCES

Similar to the 2011 future with the Proposed Project, as the remaining elements of the 1996 Plan are constructed by the 2013 build year, the existing plant and wildlife communities within their footprints would be lost. The loss of the vegetation community would result in adverse impacts to wildlife individuals unable to find suitable habitat nearby. The species that occur within this area, generally, are common to urban settings. Therefore, while construction of 1996 Plan in 2013 would adversely affect vegetation and wildlife currently present within the Project Site, the loss of this flora and fauna would not result in significant adverse impacts to these terrestrial resources on a regional scale. The Project Site does not provide habitat critical to maintaining populations of these species within the region.

The remaining approximately 32.4 acres of perimeter park and 3.1 acres of interior parks will be developed within the FCURA. Thus, the build out of the 1996 Plan will result in approximately 228.8 acres of developed land and 45.2 acres of open space with landscaping. Upon completion, the 42.1-acre perimeter park will contain a bike and pedestrian path, grassy areas for both active and passive recreation, and natural areas with native plantings. However, this park area will likely have minimal resource value for wildlife. Additionally, although the interior parks will have some landscaped areas for passive recreational activities, these areas, along with street trees and other landscaping within the Project Site, will offer limited wildlife habitat and will be expected to be used by urban tolerant species.

While not intended as offsets for any adverse impacts resulting from the Proposed Project, by 2013 the habitat restoration activities at the former Pennsylvania and Fountain Avenue Landfills would provide substantial new foraging and nesting habitat for wildlife. The White Island restoration project would also be expected to provide some grassland habitat in the 2013 build year. Furthermore, the nearby DPR and NPS properties will continue to provide terrestrial resources throughout the year for wildlife using upland and tidal wetland areas, and any future restoration activities at these properties will greatly enhance their resource value.

AQUATIC RESOURCES

Construction activities would not occur within the surface waters of Hendrix Creek or Spring Creek Basin for the 1996 Plan. Stormwater generated within the Project Site during construction would be discharged to Hendrix Creek or Spring Creek Basin through existing stormwater outfalls. Implementation of erosion and sediment control measures would minimize potential impacts to the water quality and aquatic biota of Hendrix Creek and Spring Creek Basin from the discharge of stormwater. The 1996 Plan will increase the amount of impervious surface within the Project Site. The use of stormwater BMPs will minimize potential impacts on aquatic resources. The discharge of stormwater during the construction and operation of the 1996 Plan will not further impair the water quality of Hendrix Creek and Spring Creek Basin for their designated use as Class I waters nor would it affect future water quality and aquatic habitat improvements that will occur in independent of the 1996 Plan.

The passive recreational areas within the 32.4 acres that will be added to the perimeter park will allow some infiltration of rainwater, but will result in a small increase in stormwater runoff over the existing condition due to the paved pathways and other impervious surfaces. Implementation of an Integrated Pest Management strategy will minimize potential impacts to stormwater quality from surface runoff within the perimeter park and the interior parks.

Sanitary sewage generation will increase by 816,456 GPD with completion of the 1996 Plan. This increase represents approximately 1 percent of the 26th Ward WPCP's permitted flow of 85 mgd. This increase will not adversely affect the WPCP's ability to meet the effluent limitations of its SPDES permit, would not result in an increase in the frequency or volume of CSO events (see Chapter 13, 'Infrastructure"), nor would it adversely affect the water quality of Hendrix Creek, Spring Creek Basin, or Jamaica Bay.

Activities undertaken by DEP, and as part of HEP, HRE, and other programs within Jamaica Bay described in the 2011 No Build condition, will continue to result in improvements to water quality and aquatic resources by 2013.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

The construction of the remaining 1996 Plan elements between 2011 and 2013 will result in the loss of all foraging habitat within the Project Site. The expansion of the perimeter park will not be expected to support foraging activity by short-eared owls since its open grassy areas will undergo regular mowing and will not provide the necessary cover for prey species. While the perimeter park will have some natural areas, they will not be suitable forage habitat for this species. As discussed previously in Section C, "Existing Conditions," the existing foraging habitat available on the Project Site for grassland bird species is currently limited and degraded. For the period between 1996 and 2006, aerial images clearly indicate that the Project Site has been dramatically modified by humans from its pre-1996 condition as described in the 1996 FEIS (see figures 10-5, 10-6, and 10-7). Additional roads and pathways have been created, a truck depot has been established on the eastern edge of the site, the majority of former 'high-quality' grassland areas noted in the 1996 FEIS have been covered with impervious surface resulting from Phase I construction of the 1996 Plan, and human activities on the site have continued; these factors suggest that the Project Site would not be used as a primary foraging area for threatened or endangered species.

Short-eared owls and other bird species that feed primarily on rodents in open habitats (i.e., northern harriers, barn owls, etc.) may forage within the remaining, degraded open habitats found within the Project Site, and are known to forage in larger contiguous habitats within the Jamaica Bay area (including Pennsylvania and Fountain Avenue Landfills). However, as the Project Site does not likely represent a critical foraging area within Jamaica Bay for these species, the loss of this potential foraging habitat within the Project Site for short-eared owls and other birds occupying similar ecological niches would not be expected to result in significant adverse impacts to these species. Terrestrial and intertidal grassland habitats known to be suitable for, and used by, these species would continue to be available within the Jamaica Bay area. Although the Fountain and Pennsylvania Avenue Landfill restoration projects are not intended as offsets for any adverse impacts from the Proposed Project, it is important to note that these projects could add substantial grassland acreages that could provide suitable foraging habitat for these species adjacent to substantial areas of relatively contiguous open habitats within Jamaica Bay. The White Island restoration project may provide some grassland habitat in the 2013 build year.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT

Completion of the 1996 Plan in 2013 will not result in significant adverse impacts to wetlands, plant communities, wildlife, water quality, or the aquatic biota of Jamaica Bay. Therefore, the 1996 Plan will not significantly affect the resources of Jamaica Bay responsible for its designation as a Significant Coastal Fish and Wildlife Habitat.

G. 2013 PROBABLE IMPACTS OF THE PROPOSED ACTION

By 2013, all of the elements of the Proposed Project, including 36.5 acres of additional open space, would be implemented. The full build out would also include landscaped areas for the community facilities and residences as well as along the new streets.

FLOODPLAINS

Under the Proposed Project, no activities would occur within the 100- or 500-year floodplain by the 2013 Build year.

Completion of the Proposed Project would result in a similar new area of impervious surface as compared to the 2013 No Build condition. Compared to the 1996 Plan, the Proposed Project would decrease stormwater flows on the Project Site. The Proposed Project would generate approximately 400 CFS of stormwater in a 2-year storm event, 580 CFS in a 5-year storm event, and 878 CFS of stormwater in a 100-year storm event (see Chapter 13, "Infrastructure").

As discussed under the 2011 Proposed Action condition, stormwater management measures implemented as part of the Proposed Project would control the quality and discharge rate of stormwater released to the storm sewers and discharged to Hendrix Creek and Spring Creek Basin through the existing stormwater outfalls. Additionally, the floodplain within and adjacent to the Project Site is affected by coastal flooding originating from the New York Bight (FEMA 2001). Therefore, the Proposed Project would not result in significant adverse impacts on floodplains.

WETLANDS

During construction, the Proposed Project would not result impact tidal wetlands of Hendrix Creek or Spring Creek Basin, and stormwater generated within the Project Site would be directed to the existing outfalls. During construction of the residential units, shopping center, and local retail space, implementation of erosion and sediment control measures consistent with the "New York Standards and Specifications for Erosion and Sediment Control," would minimize potential impacts to tidal wetlands.

When operational, the Proposed Project would not impact tidal wetlands within Hendrix Creek, Spring Creek Basin, or Jamaica Bay. The amount of impervious cover within the Project Site would be greater than in the No Build condition, but the stormwater BMPs would control the quality and rate of discharge of stormwater to Hendrix Creek and to Spring Creek Basin and would minimize potential impacts on their tidal wetlands. Furthermore, the Proposed Project would not impact the wetlands and salt marsh restoration programs described above nor would it alter the approximately 3.5-acre created freshwater wetland west of the Erskine Street interchange since.this wetland area is outside the Project Site.

TERRESTRIAL RESOURCES

The construction of Proposed Project by 2013 would impact terrestrial resources from activities such as grading, land clearing, temporary access roads for construction vehicles, piling of debris near or within vacant areas, and noise. As project elements are constructed, the existing plant and wildlife communities within their footprints would be lost. The reduction in terrestrial habitat would be similar to the No Build condition, but as discussed previously for the 2011 build year, the species that occur within this area are, generally, common to urban settings. Therefore, while construction of Proposed Project elements in 2013 would adversely affect vegetation and some wildlife individuals currently present within the Project Site, the loss of this flora and fauna would not result in significant adverse impacts to these terrestrial resources on a regional scale. The Project Site does not provide habitat critical to maintaining populations of these species within the region.

By 2013, the remaining approximately 32.4 acres of perimeter park and three interior parks would be developed within Project Site. With the development of these open space areas, full build out of the Proposed Project would result in approximately 228.8 acres of developed land and 46.2 acres of open space with landscaping. As discussed under the 2013 No Build condition, the completed 42.1-acre perimeter park would contain a bike and pedestrian path, grassy areas for both active and passive recreation, and some natural areas with native plantings. On the whole, however, this park would have minimal resource value for wildlife. Additionally, although the interior parks would have some landscaped areas, these areas, along with street trees and other landscaping planted within the Project Site, would offer limited wildlife habitat and would be expected to be used by urban tolerant species.

While not intended as offsets for any adverse impacts resulting from the Proposed Project, by 2013 the habitat restoration activities at the former Pennsylvania and Fountain Avenue Landfills would provide substantial new foraging and nesting habitat for wildlife. White Island restoration project would also be expected to provide some additional grassland habitat in the 2013 build year. Furthermore, the nearby DPR and NPS properties will continue to provide terrestrial resources throughout the year for wildlife using upland and tidal wetland areas, and any future restoration activities at these properties will greatly enhance their resource value.

AQUATIC RESOURCES

Construction activities would not occur within the surface waters of Hendrix Creek or Spring Creek Basin for the 2013 Proposed Project. Stormwater generated within the Project Site during construction would be discharged to Hendrix Creek or Spring Creek Basin through existing stormwater outfalls, and implementation of erosion and sediment control measures would minimize potential effects on the water quality and aquatic biota of Hendrix Creek and Spring Creek Basin from the discharge of stormwater. Operation of the Proposed Project in 2013 would result in a greater area of impervious surface, but the amount of stormwater runoff generated within the Project Site under the 2013 No Build and Proposed Project conditions would also be similar. The use of stormwater BMPs to minimize potential impacts on aquatic resources would be employed. The discharge of stormwater with completion of the Proposed Project would not result in further impairment of the water quality of Hendrix Creek and Spring Creek Basin for their designated use as Class I waters nor would it affect future water quality and aquatic habitat improvements to these waters that will result from the water quality and aquatic habitat improvements that will occur in the No Build condition.

The lawns and plantings that will be added to the perimeter park will allow some infiltration of rainwater, but will result in a small increase in stormwater runoff over the existing condition due to the paved pathways and other impervious surfaces. Implementation of an Integrated Pest Management strategy would minimize potential impacts to stormwater quality from surface runoff generated within the perimeter park and the interior parks.

The Proposed Project would have separate storm and sanitary sewers. Stormwater would be directed to existing outfalls, and sewage would be directed to the 26th Ward WPCP. The Proposed Project would generate approximately 907,836 GPD of sanitary sewage in 2013. Sanitary sewage demand generated by the Proposed Project would increase the quantity of sewage treatment at the 26th Ward WPCP in both dry and wet weather. As described in Chapter 13, "Infrastructure," the Proposed Project is not anticipated to substantially increase CSO discharges to Hendrix Creek from the 26th Ward WPCP, would not cause the WPCP to exceed its permitted capacity, and would not impair its ability to properly treat sanitary sewage.

Therefore, the Proposed Project would not adversely affect the water quality of Hendrix Creek, Spring Creek Basin, or Jamaica Bay.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

The construction of the remaining Proposed Project elements between 2011 and 2013 would result in the loss of all foraging habitat within the Project Site, and the expansion of the perimeter park would not be expected to support foraging activity by short-eared owls since its open grassy areas would undergo regular mowing and would not provide the necessary cover for prey species. While the perimeter park would have some natural areas, these would not be suitable forage habitat for this species. As discussed previously, the existing foraging habitat available on the Project Site for grassland bird species is currently limited and degraded. For the period between 1996 and 2006, aerial images clearly indicate that the Project Site has been dramatically modified by humans from its pre-1996 condition as described in the 1996 FEIS (see figures 10-5, 10-6, and 10-7). Additional roads and pathways have been created, a truck depot has been established on the eastern edge of the site, the majority of former 'high-quality' grassland areas noted in the 1996 FEIS have been covered with impervious surface resulting from Phase I construction of the 1996 Plan, and human activities on the site have continued; these factors suggest that the Project Site would not be used as a primary foraging area for threatened or endangered species.

Although short-eared owls are known to use the grassland habitats on the Pennsylvania and Fountain Avenue Landfills, and may have the potential to forage occasionally within the degraded open grassland habitat found within the Project Site, foraging activity in this lower quality habitat would be expected to be limited. Therefore, the loss of this possible foraging habitat for short-eared owls would not result in significant adverse impacts to this species. Terrestrial and intertidal grassland habitats known to be suitable for, and used by, this species would continue to be available within the Jamaica Bay area. Although the Fountain and Pennsylvania Avenue Landfill restoration projects are not intended as offsets for any adverse impacts from the Proposed Project, it is important to note that these projects will add over 250 acres of new grasslands that would be expected to provide suitable foraging habitat for this species.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT

Full build out of the Proposed Project in 2013 would not result in significant adverse impacts to wetlands, plant communities, wildlife, water quality, or the aquatic biota of Jamaica Bay. Therefore, the Proposed Project would not result in significant adverse impacts to the resources of Jamaica Bay responsible for its designation as a Significant Coastal Fish and Wildlife Habitat.

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