

A. INTRODUCTION AND METHODOLOGY

This chapter provides descriptions of the natural resources within the project area, assesses future natural resources and water quality conditions without the Proposed Project, assesses potential impacts to natural resources and water quality from the Proposed Project, and, if necessary, develops measures to reduce the potential impacts on natural resources and water quality.

The project site is almost completely developed with buildings, parking lots and roadways and, as such, on-site natural resources are limited. For the purposes of this analysis, the project site includes the location of a proposed new 8'x5' box culvert and stormwater outfall to the Harlem River. This new outfall will be constructed west of the retail project, adjacent to the Harlem River (see Figure 10-1). This natural resources analysis concludes that the Proposed Project would not result in significant adverse impacts to water quality, terrestrial resources, wetlands, aquatic resources, or endangered, threatened, or species of special concern during either construction activities or operation of the project. The Proposed Project may have an overall positive effect on natural resources and particularly on aquatic resources in the area by:

- Remediating contaminated soils;
- Improving the quality of stormwater runoff; and
- Eliminating areas that may be attractive to nuisance species.

Implementation of best management practices (BMPs) for erosion and sediment control would minimize potential water quality effects associated with the discharge of stormwater during construction. With the project's removal or capping of contaminated soils, improved water quality conditions in the Harlem River are anticipated.

In addition, it is expected that the construction of a 2-acre, off-site waterfront open space by the City with contributions from the project sponsor would include landscaped pervious areas, and would therefore provide waterfront/fringe habitat for certain wildlife species.

METHODOLOGY

The methodology for the natural resources analysis involved review of literature sources and on-site observation. Literature sources included documents (reports and maps) prepared by the New York State Department of Environmental Conservation (NYSDEC), the New York State Department of State (NYSDOS), and the New York City Department of Environmental Protection (NYCDEP). Materials obtained from NYSDEC included Tidal Wetlands Maps. Materials obtained from NYCDEP included the *New York Harbor Water Quality Report* (NYCDEP 2002). Materials obtained from NYSDOS included the Significant Coastal Fish and Wildlife Habitats Program. The *Second Avenue Subway Final Environmental Impact Statement* (2004) was also reviewed.

B. REGULATIONS AND PERMITS

The following section briefly describes the federal and state laws and associated regulations and regulatory programs that may apply to the Proposed Project with respect to water quality and aquatic and terrestrial resources. The regulations apply to certain activities in coastal areas, surface waters, and floodplains, and to the protection of rare species/species of special concern.

Because some of the state laws and regulatory programs were promulgated under authority of federal laws, the federal laws and regulatory programs are discussed first.

FEDERAL LAWS AND REGULATORY PROGRAMS

THE CLEAN WATER ACT

The Federal Water Pollution Control Act, as amended, commonly referred to as the Clean Water Act, addresses both point and non-point sources of pollution. The sections of the Clean Water Act with the potential to apply to the Proposed Project are Sections 401 and 404, which pertain to discharges of fill or dredged material to waters of the United States, and Section 301, which pertains to the need for a National Pollutant Discharge Elimination System (NPDES) permit for point discharges of pollutants to navigable waters. The NPDES program is delegated to New York State by the U.S. Environmental Protection Agency (USEPA) and is incorporated in New York's State Pollutant Discharge Elimination System (SPDES) permit system (described below).

Section 401 of the Clean Water Act of 1987 requires that any applicant for a federal permit or license for an activity that may result in a discharge to waters of the United States must provide to the federal agency issuing a permit a water quality certification. The certification must be issued by the state where the discharge will occur or from an interstate water pollution control agency with jurisdiction over navigable waters where the discharge will occur. The certification is only issued after the applicant demonstrates that the discharge will comply with Sections 301 (effluent limitations for point source discharges), 302 (water quality-related effluent limitations for a point source or group of point sources to attain or maintain water quality), 303 (setting of water quality standards and implementation plans by each state), 306 (standards for the control of pollutants discharged by certain categories of point sources set on the federal level or by each State), and 307 (effluent standards for certain toxic contaminants) of the Clean Water Act. Furthermore, dredging, or the disposal of dredged material, may not cause the concentrations of chemicals in the water column to exceed state standards. In New York State, NYSDEC issues the Water Quality Certification.

Section 404 of the Clean Water Act requires authorization from the Secretary of the Army, acting through the United States Army Corps of Engineers (USACOE), for the discharge of dredged or fill material into navigable waters and other waters of the United States. The term "Waters of the United States" is defined in 33 CFR 328.3 and includes wetlands, mudflats, sandflats, streams, and rivers that meet the specified requirements. Section 404 applies to both permanent and temporary fill discharged into waters of the United States. A Section 404 permit from the USACOE requires a Water Quality Certification.

For the Proposed Project, a Section 404 permit would be required for the construction of a new outfall. This activity is expected to qualify for Nationwide Permit #7 (pertaining to construction of outfall structures and excavation for maintenance of outfall structures).

In adopting a Nationwide Permit, the USACOE has already determined that the subject activity would not have a significant effect on the aquatic environment. A Water Quality Certification, with conditions that should be satisfied, has already been issued by NYSDEC for these Nationwide Permits. The work must also comply with any Regional Conditions applicable to Nationwide Permit #7.

RIVERS AND HARBORS APPROPRIATIONS ACT OF 1899

Section 10 of the Rivers and Harbors Appropriations Act of 1899 requires authorization from the Secretary of the Army, acting through the USACOE, for the construction of any structure in, under or over any navigable waters of the United States, the excavation from or deposition of material in these waters, or any obstruction or alteration in navigable waters of the United States. The purpose of this Act is to protect navigation and navigable channels.

A Section 10 permit would be required for the construction of a new outfall. This activity is expected to qualify for Nationwide Permit #7, as noted above. While the waters of the Harlem River may be considered navigable, no impact to navigation is expected from implementation of the Proposed Project.

COASTAL ZONE MANAGEMENT ACT OF 1972

New York has a federally approved coastal zone management program that is described in Chapter 12, “Waterfront Revitalization Program.” Federal permits issued in states with approved coastal management programs must be accompanied by a Coastal Zone Consistency Determination that evaluates consistency with each state’s coastal zone management plan. Cities may adopt their own local Waterfront Revitalization Programs (WRPs), which are considered in NYSDOS determinations of consistency. In New York State, NYSDOS is responsible for the consistency review. New York City’s revised Waterfront Revitalization Program, consisting of 10 policies, was approved by NYSDOS in August 2002. Chapter 12, “Waterfront Revitalization Program,” assesses the consistency of the Proposed Project with these policies. The Proposed Project is expected to be consistent with both state and local Coastal Zone Policies.

MAGNUSON-STEVENSON ACT

Section 305(b)(2)-(4) of the Magnuson-Stevens Act outlines the process for the National Marine Fisheries Service (NMFS) and the Regional Fishery Management Councils (in this case the Mid-Atlantic Fishery Management Council) to comment on activities proposed by federal agencies (issuing permits or funding projects) that may adversely impact areas designated as essential fish habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC 1802(10)). USACOE, in its permitting process, must either incorporate NMFS recommendations for minimizing effects to EFH (measures to avoid, minimize, or mitigate), or provide an explanation for not adopting them. Under the Magnuson-Stevens Act, NMFS and eight regional Fishery Management Councils were directed to describe and identify EFH in the fishery management plans developed by each Council to reduce the adverse effects of fishing on EFH and encourage the conservation and enhancement of EFH. Because the proposed stormwater outfall is expected to qualify for a Nationwide Permit under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, and requires no individual permits under those statutes for work below the high tide line that could affect aquatic species, an EFH Assessment should not be necessary.

ENDANGERED SPECIES ACT OF 1973 (PL 93-205; 16 USC 1531 ET SEQ.)

The Endangered Species Act of 1973 recognized that endangered species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people. The Act prohibits the importation, exportation, taking, possession, and certain other activities involving species covered under the Act, and certain interstate or foreign commercial activities. The Act also provides for the protection of critical habitats on which endangered or threatened species depend for survival. The United States Fish and Wildlife Service (USFWS) (non-marine plants and animals) and NMFS (marine plants and animals) are responsible for administering the Act. Section 7(a) of the Act requires federal agencies to consult with the Secretary of the Interior (through USFWS and/or NMFS) before project implementation to ensure that the proposed actions will not jeopardize a species, or destroy or adversely modify the designated critical habitat of the species. Threatened, endangered, and species of special concern with the potential to occur in the project area are discussed below in “Existing Conditions” and “Probable Impacts of the Proposed Actions.”

NEW YORK STATE LAWS AND REGULATORY PROGRAMS

PROTECTION OF WATERS, ARTICLE 15, TITLE 5, ECL, IMPLEMENTING REGULATIONS 6 NYCRR PART 608

New York State’s surface waters (rivers, streams, lakes, and ponds) are valuable sources of drinking water, for bathing, agricultural, commercial and industrial uses, for the fish and wildlife habitat they provide, and for educational and recreational opportunities. It is the state’s policy, as set forth in Title 5 of Article 15, ECL to preserve and protect these waters. NYSDEC is responsible for administering the Protection of Waters regulations to prevent undesirable activities on water bodies. Under this regulatory program, all waters of the state are provided a use classification (A or AA for drinking water source, B for best usage for swimming and other contact recreation, C for waters supporting fisheries and non-contact recreation, and D the lowest use classification), and a standard designation based on existing or expected best usage (such as T for those that may support trout, or TS for those that may support trout spawning). The Harlem River is a Class I surface water. The water quality goals of Class I are discussed below.

The Protection of Waters Permit Program regulates five different categories of activities: disturbance of the stream bed 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 Clean Water Act. A Water Quality Certification is required when a federal permit is needed for a discharge to any waters of the United States. Also, a Protection of Waters permit would be required for the construction of a new outfall along the Harlem River.

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES), ARTICLE 17 TITLE 8, ECL, IMPLEMENTING REGULATIONS 6NYCRR PARTS 750 THROUGH 757

Title 8 of Article 17, ECL, *Water Pollution Control*, was enacted to protect and maintain surface and ground water resources and authorized the creation of the SPDES permitting scheme to

regulate discharges to the state's waters. This program incorporates requirements of the federal NPDES program delegated by USEPA to New York State. The following activities require SPDES permits: stormwater discharges during construction activities (SPDES General Permit), constructing or using (unless already permitted) an outlet or discharge pipe (point source) that discharges wastewater into surface or ground waters of the state; constructing or operating a disposal system (sewage treatment plant); or discharge of stormwater from certain types of uses. Because construction activities for the Proposed Project would disturb more than one acre, the SPDES stormwater general permit for construction activities will be required.

*WATERFRONT REVITALIZATION OF COASTAL AREAS AND INLAND WATERWAYS ACT
(EXECUTIVE LAW SECTIONS 910-921).*

Under this Act, NYSDOS is responsible for conducting a Coastal Zone Consistency review and administering the Coastal Management Program (CMP) that contains legislatively enacted coastal area policies that must be complied with by New York State agencies. It also authorizes the state to encourage local governments to adopt WRPs that incorporate the state's policies. New York City has a WRP administered by the Department of City Planning (NYCDP).

The WRP, originally adopted in 1982, included 44 State policies and 12 City policies. It established the City's policies for development and use of the waterfront. A revised WRP, which simplified and clarified the review process, was approved by the City Council in October 1999. The new WRP consists of 10 New York City coastal zone policies. Any activity subject to review under federal, state, and city laws must be assessed with respect to consistency with the state CMP and the state and city policies. A number of the policies deal with protection of water quality and natural resources. Chapter 12, "Waterfront Revitalization Program," addresses the consistency of the Proposed Project with the 10 City policies.

NYSDOS has designated 15 Significant Coastal Fish and Wildlife Habitats within New York City. The closest to the project site is known as the Lower Hudson Reach. The project site/Harlem River are not situated in this area. Therefore, this portion of the regulation does not apply to the Proposed Project.

The WRP designates three Special Natural Waterfront Areas (SNWA): East River and Long Island Sound; Jamaica Bay; and Northwest Staten Island Harbor Herons. None are located near the project site; therefore, this portion of the regulation does not apply to the Proposed Project.

The WRP also maps Significant Maritime and Industrial Areas (SMIA). The nearest is the South Bronx SMIA, at the confluence of the Harlem River with the East River, near Randall's Island. This SMIA does not include the project site.

*THE NEW YORK STATE ENVIRONMENTAL QUALITY REVIEW ACT (6 NYCRR PART 617,
SEQRA).*

Under SEQRA, local agencies may designate specific geographic areas as Critical Environmental Areas (CEAs). There are no CEAs located within the project area; therefore, this portion of the regulation does not apply to the Proposed Project.

FISH AND WILDLIFE ACT, ARTICLE 11, TITLE 20, ECL

This legislation, enacted in 1997, authorizes the commissioners of NYSDEC, NYSDOS, and the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to designate areas of state lands and waters that are particularly important to bird conservation. There are no

Bird Conservation Areas (BCAs) located in the study area. As such, this portion of the regulation would not apply to the Proposed Project.

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 are found along much of the salt-water shore, bays, inlets, canals, and estuaries of Long Island, New York City, and Westchester and Rockland Counties. They are valuable for marine food production, wildlife habitat, flood, hurricane, and storm control, recreation, absorption of silt and organic material, education and research opportunities, and aesthetic values. The Tidal Wetlands Act sets forth the state's policy that tidal wetlands should be preserved and protected. NYSDEC is responsible for administering the tidal wetlands regulatory program (6 NYCRR Part 661) and mapping the locations of New York State's regulated tidal wetlands. The tidal wetlands are identified by category based on the types of vegetation and the presence of tide. Each category has restrictions on activities allowed in and adjacent (up to 150 feet inland from the landward wetland boundary within New York City) to wetlands falling under that category. A permit is required for almost any activity that will affect wetlands or regulated adjacent areas. Accordingly, the construction of a new stormwater outfall would require a tidal wetlands permit. Mapped tidal wetlands on the project site are described below in "Existing Conditions."

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, transportation, transport, possession, or sale of any endangered or threatened species of fish or wildlife, or any hide or other part of these species as listed in Section 182.6. Threatened, endangered, and special concern species with the potential to occur in the project area are discussed under "Existing Conditions" and "Probable Impacts of the Proposed Actions."

C. EXISTING CONDITIONS

TERRESTRIAL RESOURCES

The project site is entirely developed. Vegetation on the site is sparse, consisting of scattered areas of weedy growth and small trees. Soils on site are highly disturbed fill soils that are largely overlain by buildings, parking lots or roads. While no significant areas of vegetation or other natural resources occur on the site, a small woodlot (approximately 1/3-acre) is situated in the eastern corner of the site adjacent to the Metro North Rail Road tracks. As discussed previously, a new stormwater outfall would be constructed off-site with the Proposed Project, to the west along the shore of the Harlem River (see Figure 10-1). The location of the new stormwater outfall and box culvert leading to it are not part of the project site. The land area in which these elements would be located is fully developed with concrete and gravel parking areas, and the entire shoreline is engineered, primarily with timber bulkheads, relieving platforms or rip-rap. Scrubby upland vegetation also occurs at the fringes of most of the former piers. Wildlife that

may be expected to occur along the waterfront consists of species that are tolerant of urban conditions such as gulls, sparrows, starlings, and rats.

The area to be developed by the City as a public open space is located off-site, west of Exterior Street along the Harlem River shoreline.

WETLANDS

USACOE has issued a jurisdictional determination that the extent of the agency's jurisdiction (under Sections 10 and 404) for the project site and the off-site waterfront property to the west is the spring high tide line of the Harlem River on the off-site waterfront property. Thus, no jurisdictional wetlands/waters of the U.S. occur on the project site. NYSDEC has issued a jurisdictional determination that the State-regulated Tidal Wetland boundary is the Mean High Water elevation (el 1.0 Bronx Highway Datum) of the Harlem River. NYSDEC has also indicated that Tidal Wetland adjacent areas extend onto certain upland areas which occupy only portions of the off-site parcel to the west. Figure 10-2 indicates the extent of adjacent area.

The NYSDEC Tidal Wetland Map #588-518 indicates that the Harlem River near the proposed outfall has a Tidal Wetland-Littoral Zone designation (see Figure 10-3). Tidal Wetland Regulations 6 NYCRR Part 661.4 states the following:

“Littoral Zone—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...”

Water depth directly adjacent to the proposed outfall is less than six feet at mean low water.

The shoreline where the stormwater outfall is proposed is entirely man-made, comprised of rip-rap. The area of the Harlem River near the proposed outfall is not considered Significant Coastal Fish and Wildlife Habitat by NYSDOS (1992). The USFWS National Wetland Inventory classifies the Harlem River as E1UBL (Estuarine subtidal unconsolidated bottom) (Figure 10-4). Subtidal areas are continuously submerged substrates (below extreme low water). Unconsolidated bottoms have at least 25 percent cover of particles smaller than 6 or 7 cm, and less than 30 percent vegetative cover. While the area where the stormwater outfall is proposed to be constructed is mapped as E1UBL by the NWI, this area in actuality is an intertidal rip-rap slope that is alternately flooded and exposed.

FLOODPLAIN

Much of the project site west of Cromwell Avenue is within the 100-year floodplain (see Figure 10-5). The portions of the project site outside the 100-year floodplain include the location of former Building A, and the area east of Cromwell Avenue occupied by the Bronx House of Detention and Buildings C and D.

The 100-year floodplain rises to about 11 feet above National Geodetic Vertical Datum (NGVD), or about 8.4 feet above Bronx Borough Datum. The ground elevation at Exterior Street ranges from about 5 to 6 feet above Bronx Borough Datum. This low ground elevation extends to a portion of Cromwell Avenue. The Federal Emergency Management Agency (FEMA) maps and regulates floodplains and floodways for insurance purposes. Flooding leads to widespread loss of life and property, and the purpose of the regulations and mapping is to minimize these losses. A municipality that becomes part of the National Flood Insurance Program (NFIP) is

required to promulgate and enact regulations to prevent inappropriate development in floodplains and floodways.

In New York City, Local Law 33 of 1988 regulates construction in the 100-year floodplain, and requires that roadway and utility construction be designed to minimize or eliminate damage from flooding. In addition, habitable structures must have the lowest floor not less than one foot above the base flood level. This New York City Law applies to the project.

The project site is located in an area that is subject to coastal flooding and is not subject to riverine flooding. Riverine flooding is caused by runoff flowing into a river and causing the river to overflow its banks. If the volume of runoff is greater than volume of water that the streambed or floodway can keep within its banks, the water overflows onto the floodplain, where buildings and structures are flooded. Coastal flooding, however, has a different cause. The coastal ocean and bay waters rise because of the tides, storm surge and ocean waves from large area storm systems or hurricanes. The river does not back up and cause flooding, but rather the ocean rises over a large area, flooding the lower lying land areas. Only open coastal waters rising because of meteorological and oceanic conditions would cause flooding at the project site.

AQUATIC RESOURCES

HYDROLOGY

The location of the proposed stormwater outfall, at one of the pierheads along the Harlem River, is directly affected by the tides in the Harlem River. There is approximately a 4.5-foot tidal range between mean high water and mean low water.

EXISTING WATER QUALITY CONDITIONS

Title 6 of the New York Code of Rules and Regulations (NYCRR) Part 703 includes surface water standards for each use class of New York surface waters. The Harlem River is use classification Class I. Table 10-1 presents the standards for the use classification (Class I).

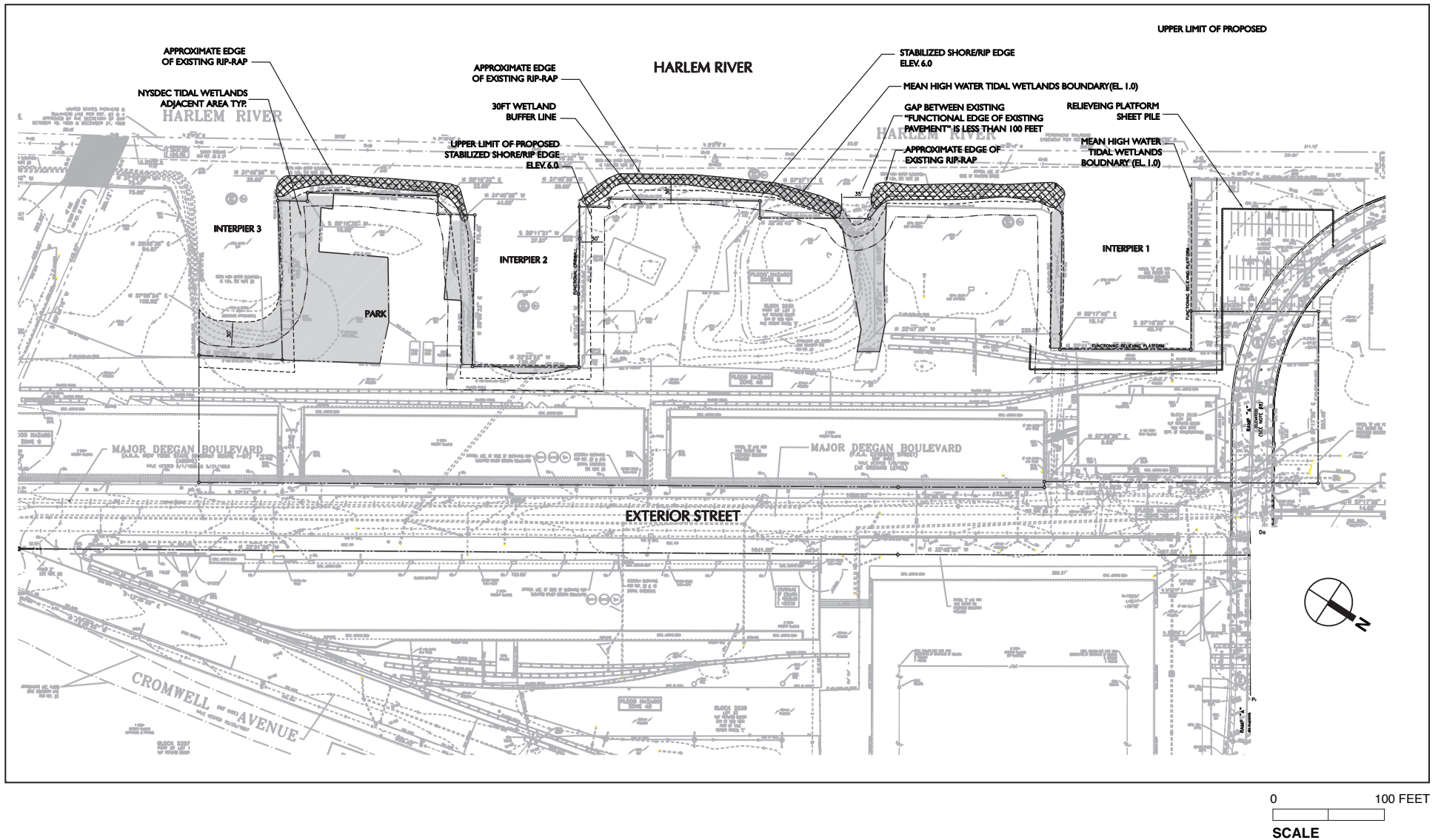
Table 10-1

NYSDEC Standards for Fresh and Saline Waters Found Within New York City

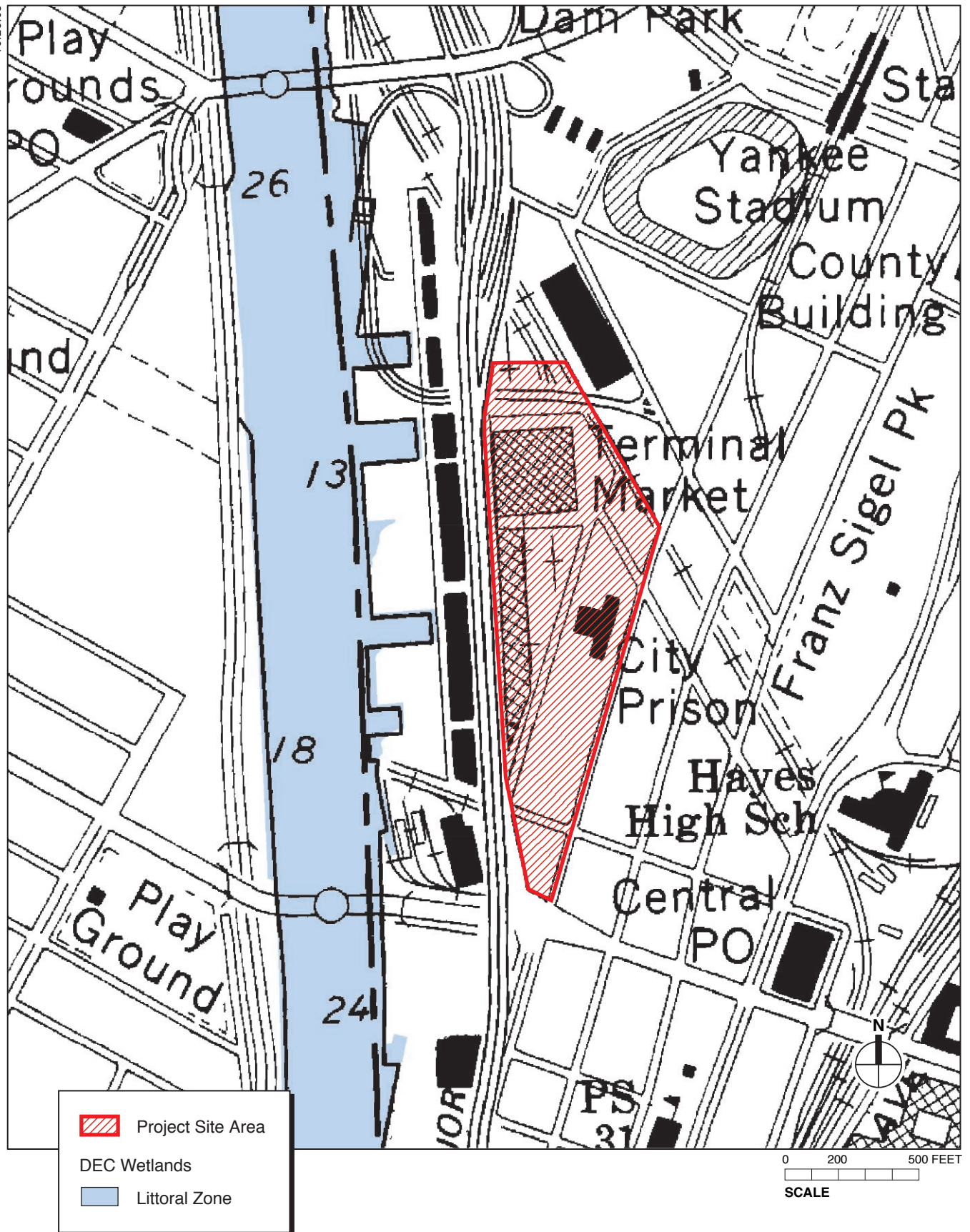
Class	Definition	Fecal Coliform	DO (never less than)	pH
I	Suitability only for fish survival and propagation.	Monthly geometric mean (5 examinations) shall not exceed 2,000 cells per milliliter.	4.0 milligrams per liter (mg/L)	The normal range shall not be extended by more than 0.1 of a pH unit.

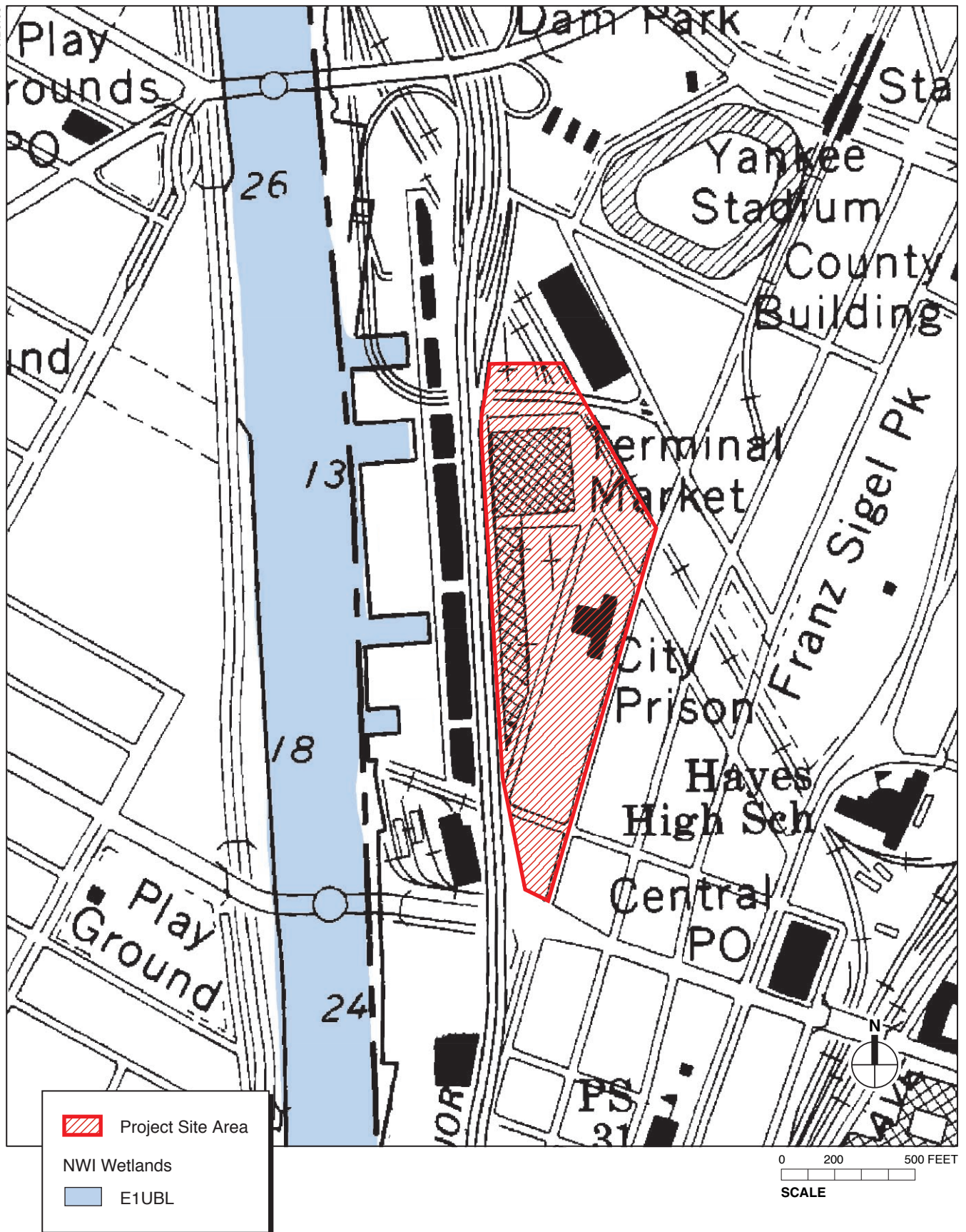
The City of New York has monitored New York Harbor water quality with an annual survey (Harbor Survey) for over 90 years. NYCDEP conducts the survey by collecting water samples at stations in four designated regions: Inner Harbor Area, Upper East River-Western Long Island Sound, Lower Harbor Area, and Jamaica Bay (NYCDEP 2003). The Upper East River-Western Long Island Sound Area includes the project site. Every year, NYCDEP produces a report summarizing the results of the current survey and providing a synopsis of recent trends in coliform counts, chlorophyll *a*, dissolved oxygen (DO), and Secchi transparency.

The results of recent Harbor Surveys (NYCDEP 2000, 2001, 2002, 2003) suggest that the water quality of New York Harbor has improved significantly since the 1970s as a result of measures undertaken by the City. These measures include eliminating 99 percent of raw dry-weather



Approximate Tidal Wetlands Adjacent Area
Figure 10-2





sewage discharges, reducing illegal discharges, increasing the capture of wet-weather related floatables, and reducing the toxic metals loadings from industrial sources by 95 percent (NYCDEP 2002). The 1999 and 2000 IEC 305(b) reports also indicate that the year-round disinfection requirement for discharges to waters within its district (including New York Harbor) has contributed significantly to water quality improvements since the requirement went into effect in 1986 (IEC 2000, 2001).

Salinity values vary at any given point within the Harbor Estuary depending on the amount of freshwater flow. As expected, average salinity values are highest in the Lower New York Harbor and Raritan Bay, decrease moving up-estuary to the Upper New York Harbor, the Lower Hudson River, and the Lower East River. The Upper New York Harbor is partially stratified—higher salinity water originating from the Atlantic Ocean at the mouth of the estuary tends to remain toward the bottom of the water column, while freshwater from the rivers draining to the estuary remains toward the top of the water column. Measurements taken in the Upper New York Harbor in 1998 and 1999 suggest that the salinity difference between surface and bottom waters can be as high as 10 parts per thousand (ppt) during periods of high river flow in the spring. Average salinity differences throughout the water column annually are generally between 1 and 3 ppt (USACOE 1999). Salinity measurements taken from the Harlem River, west of the project area at East 155th Street in 2001 by NYCDEP (2002) ranged from 19.4 to 27.2 ppt, with bottom water salinity generally greater than top water salinity. Salinity levels in 2003 decreased from above average levels in 2002 but were still above ten year monthly averages (NYCDEP 2004).

The following provides a brief summary of the water quality conditions in the sampling region (Upper East River) of the Harbor Survey that includes the project study area. The closest sampling station (H3) is located to the west of the project area at East 155th Street in Manhattan. Table 10-2 presents a summary of water quality measurements at this station in 2001.

Table 10-2

2002 NYCDEP Water Quality Data for the East 155th Street Sampling Station

Parameter	Surface			Bottom		
	Min	High	Mean	Min	High	Mean
Total Fecal Coliforms (per 100 mL)	3	878	366.9	50	878	—
Dissolved Oxygen (mg/L)	3.3	9.0	5.3	3.1	8.2	5.3
Chlorophyll a (µg/L)	1.5	24.4	5.6	NM	NM	—
Secchi Transparency (ft)	3.5	11.0	6.8	NM	NM	—
Note: NM = Not Measured; only one bottom water total fecal coliforms measurement was taken in 2001 mL = milliliter µg/L = micrograms per liter Source: NYCDEP 2002						

The presence of coliform bacteria in surface waters indicates potential health impacts from human or animal waste, and elevated levels of coliform can result in the closing of bathing beaches and shellfish beds. Temporary increases in fecal coliform concentrations may occur during wet weather due to increased fecal coliform loadings following a rain event. According to the 2003 New York Harbor Water Quality Report, although fecal coliform levels remain high in the Harlem River (H3 site) (compared to other parts of the Upper East River and Western Long Island Sound), the June average was recorded at 314 cells/100ml compared to the ten-year June average of 511 cells/100ml. Overall, fecal coliform concentrations in this area have declined,

improving water quality from the early 1970s, when levels were routinely well above 3,000 cells/100 ml (NYCDEP 2004).

Dissolved oxygen (DO) in the water column is necessary for respiration by all aerobic forms of life, including fish and such invertebrates as crabs, clams, and zooplankton. The bacterial breakdown of high organic loads from various sources can deplete DO to low levels, and 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. DO concentrations in the Upper East River – Western Long Island Sound area have increased over the past 30 years from an average that was approximately 3.5 mg/L in 1975 to above 5 mg/L in 2003, a value fully supportive of ecological productivity (NYCDEP 2004). However, concentrations below the “never less than 4.0 mg/L” criterion are still occasionally recorded, most often during the summer months.

SEDIMENT QUALITY

The Harlem River is a tidal strait that connects the Hudson and East Rivers. Sediments on the bottom of the Harlem River most likely consist of sand with traces of gravel and silt. Sediment samples collected in July 2002 at the 129th Street barge site were mostly silt and clay with some sand (Second Avenue Subway FEIS).

Typical of any urban watershed, New York Harbor Estuary sediments, including the Harlem River and interpier areas, are often contaminated due to a history of industrial uses in the area. Contaminants found throughout the New York Harbor Estuary include metals such as mercury and copper, and various polycyclic aromatic hydrocarbons. Adams et al. (1998) found the mean sediment contaminant concentration for 50 of 59 chemicals measured to be statistically higher in the Harbor Estuary than other coastal areas on the East Coast. While the sediments of the New York Harbor Estuary are contaminated, the levels of most sediment contaminants have decreased on average by an order of magnitude over the past 30 years (Steinberg et al. 2002).

GENERAL HABITAT DESCRIPTION

The New York Harbor Estuary supports a diverse and productive aquatic community of over 100 species of finfish and more than 100 different invertebrates. Aquatic organisms of commercial or recreational importance found within the Harbor Estuary include striped bass, winter flounder, blue crab, and the northern quahog or hard clam.

The Harlem River is a deepwater habitat, with varying depths but generally greater than 20 feet at mean low water. The three interpier areas, which are located near the proposed stormwater outfall, while formerly deep water habitats (dredged regularly to provide the necessary draft for ships/barges), have accumulated a significant amount of silt and sediment to the point that there are exposed mud flats at low tide through a significant portion of each interpier. Water depths in the interpiers at mean high water currently range from one to five feet.

AQUATIC BIOTA

The following sections provide a brief description of aquatic biota found within the project area. The descriptions are largely drawn from existing information on the New York Harbor’s resources prepared by the USFWS and NYCDEP, as well as a preliminary benthic and aquatic resource assessment conducted in the southernmost interpier near the proposed outfall site in fall

2003. In addition, NMFS has determined that anadromous and resident fish, forage and benthic species may be present in the project area.

Primary Producers

Phytoplankton. 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 New York Harbor are very high, low light penetration has often precluded the occurrence of phytoplankton blooms.

Resident times of phytoplankton species within New York Harbor are short and species move quickly through the system. Species found in the Harbor would also likely be present within the project area. In a 1993 survey of New York Harbor, 29 taxa of phytoplankton were identified, with the diatom *Skeletonema costatum* and the green algae *Nannochloris atomus* determined to be the most abundant species at the monitored sites (Brosnan and O'Shea 1995). The average summer cell counts in that year ranged from 6,300 to 97,000 cells/ml.

Submerged Aquatic Vegetation and Benthic Algae. Submerged aquatic vegetation (SAV) are rooted aquatic plants that are often found in shallow areas of estuaries; these organisms are important because they provide nursery and refuge habitat for fish. Benthic algae can be large multicellular algae that are important primary producers in the aquatic environment. They are often seen on rocks, jetties, pilings, and sandy or muddy bottoms. Since these organisms require sunlight as their primary source of energy, the limited light penetration of New York Harbor limits their distribution to shallow areas. Shallow water habitat occurs in the interpier areas however, SAV does not occur at the project site. Macroalgae was not observed on the intertidal "hard surfaces" (e.g. rip-rap, timber bulkheads, etc.) during the field investigation.

Zooplankton

Zooplankton are another integral component of aquatic food web. They are primary grazers on phytoplankton and detritus material, and are themselves used by organisms of higher trophic levels as food. The higher-level consumers of zooplankton typically include forage fish, such as bay anchovy, as well as commercially and recreationally important species, such as striped bass and white perch, during their early life stages.

Zooplankton include life stages of organisms such as fish eggs and larvae, decapod larvae, copepods, rotifers, barnacle larvae, cumaceans, mysid shrimp, and amphipods (Stepien et al. 1981; USACOE and USDOT 1984). Zooplankton studies conducted in New York Harbor found crustacean taxa to be the most prevalent form of zooplankton in collected samples. The most dominant species include the copepods *Acartia tonsa*, *Acartia hudsonica*, *Eurytemora affinis*, and *Temora longicornis*, with each species being prevalent in certain seasons.

Benthic Invertebrates

Invertebrate organisms that inhabit river bottom sediments as well as surfaces of submerged objects (such as rocks, pilings, or debris) are commonly referred to as benthic invertebrates. These organisms are important to an ecosystem's energy flow because they convert detrital and suspended organic material into biomass, and are also integral components of the diets of ecologically and commercially important fish and waterfowl species. Benthic invertebrates also promote the exchange of nutrients between the sediment and water column. They include those

that can be retained on a 0.5 mm screen (macroinvertebrates) as well as smaller forms retained on 0.04 - 0.2 mm sieves called meiofauna. 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.), salinity, and dissolved oxygen levels are the primary factors influencing benthic invertebrate communities; secondary factors include currents, wave action, predation, succession, and disturbance.

A literature review identified over 180 benthic taxa in the Hudson River, East River, and Upper New York Harbor (PBS&J 1998). Common infaunal macroinvertebrates collected within the New York Harbor system include aquatic earthworms, segmented worms, snails, bivalves and soft shell clams, barnacles, cumaceans, amphipods, isopods, crabs and shrimp (EEA 1988; EA Engineering, Science and Technology 1990; NJDEP 1984; Princeton Aqua Science 1985a & 1985b; LMS 1980 & 1984). Epifauna include hydrozoans, sea anemones, flatworms, oligochaete worms, polychaetes, bivalve, barnacles, gammaridean and caprellid amphipods, isopods, sea squirts, hermit crabs, rock crabs, grass shrimp, sand shrimp, blue crabs, mud dog whelks, mud crabs, horseshoe crabs, blue mussels, softshell clams, and sea slugs (EEA 1988; EA Engineering, Science and Technology 1990; Able et al. 1995; NYCDPR 1994).

The benthic invertebrate community in the Upper Harbor appears to be affected by the contaminants found in the bottom sediments (Adams et al. 1998). A survey of benthic habitats conducted in 1995 (Iocco et al. 2000) found that invertebrate communities in the Upper Harbor were dominated by pollution-tolerant or opportunistic species. Copepods (crustaceans) are the dominant group of zooplankton found in the New York Harbor Estuary system. Macroinvertebrates collected in July 2002 at 129th Street and Pier 6 included pollution tolerant and pollution sensitive organisms. Dominant macroinvertebrates were polychaetes in the *Capitellidae* and *Spionidae* families (Second Avenue FEIS).

A preliminary survey conducted in November 2003 in the southernmost interpier near the proposed outfall site and just waterward of the elevated Oak Point Link rail connection determined the presence of rock crabs, polychaete worms, snails and bivalve clams. Vertical surfaces at the project site such as the bulkheads, rip-rap slopes, and timber piles (associated with the relieving platforms) may offer some habitat for attached invertebrates such as mussels or barnacles.

Fish

A mixture of habitats in the Harlem and East Rivers supports marine, estuarine, anadromous, and catadromous fish. Despite the relatively low value of the Harlem and East Rivers as residential fish habitat, they together serve as a major migratory route for certain species from the Hudson River to the Long Island Sound. Winter flounder, scup, bluefish, Atlantic silverside, striped killifish, common killifish, striped bass, tomcod, members of the herring family, and American eel are among the species seasonally present in the Harlem and East Rivers. Essential Fish Habitat has been identified for 17 species in the East and Harlem Rivers.

Fish species collected during the November 2003 preliminary survey are identified below in Table 10-3.

Table 10-3
Fish Identified in Interpier Areas, Fall 2003

Species	Scientific Name
Blueback herring	<i>Alosa aestivalis</i>
Mumichug	<i>Fundulus heteroclitus</i>
Atlantic Silverside	<i>Menidia menidia</i>
Striped bass	<i>Morone saxatilis</i>
Winter flounder	<i>Pseudopluronectes americanus</i>
Source: Princeton Hydro (2003).	

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Requests for information on rare, threatened or endangered species within the immediate vicinity of the project area were submitted to USFWS, NMFS, and the New York Natural Heritage Program (NYNHP). NYNHP, a joint venture of NYSDEC and The Nature Conservancy (TNC) since 1985, maintains an ongoing, systematic, scientific inventory on rare plants and animals native to New York State. NYSDEC maintains the NYNHP files. The NYNHP database is updated continuously to incorporate new records and changes in the status of rare plants or animals. In addition to this state program, the USFWS maintains information for federally-listed threatened or endangered freshwater and terrestrial plants and animals, and NMFS for federally-listed threatened or endangered marine organisms.

The NYNHP and the USFWS have determined that there are no known occurrences of threatened or endangered species and there are no areas within the project area that are considered “critical habitat.”¹ The National Marine Fisheries Service has determined that shortnose sturgeon may be present within the Harlem River as possible (likely rare) transients.²

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

There would be minimal changes to the use of the project site in the future without the proposed actions.

Elements of the New York/New Jersey Harbor Estuary Program (HEP) and other programs that are specifically directed at improving biological resources and habitats are briefly 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. 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

¹ USFWS, letter to Langan Engineering, November 29, 2004. NYSDEC, letter to Langan Engineering, October 20, 2004.

² NMFS, letter to Langan Engineering, January 19, 2005.

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 area. The floatables action plan of the New York/New Jersey 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 (CSO) 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. The 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 (RPA) identified needs and opportunities for environmental restoration in the Hudson-Raritan Estuary. These sites are not local to the project site but 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.

NEW YORK CITY PROJECTS

USEPA's 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 1998-2008. This should result in some future improvement in coliform, DO, and floatables levels in the Harbor Area. The City also recently completed improvements to its wastewater treatment plants, which should lead to further decreases in coliform counts and floatables levels.

E. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

CONSTRUCTION IMPACTS

TERRESTRIAL RESOURCES

Currently, the project site provides minimal wildlife habitat other than vacant buildings that may be used by urban wildlife typical of highly developed portions of cities such as pigeons, starlings, house sparrows, and rodents. Therefore, the Proposed Project would have no significant impacts on the limited terrestrial natural resources occurring on the site.

WETLANDS/WATERS OF THE UNITED STATES

The project site is comprised of upland areas which are not regulated by NYSDEC or the USACOE under their respective regulatory programs. However, the new stormwater outfall would be constructed along the shoreline of the Harlem River, which is a regulated water of the U.S. and a mapped Tidal Wetland. The box culvert to the outfall would be constructed under the existing grade and the outfall would be placed below the high tide line at the shoreline, approximately 1,000 feet west of the intersection of River Avenue and 151st Street. As noted previously, the shoreline where the stormwater outfall is proposed is engineered with rip-rap slopes. USACOE has determined that the extent of federal jurisdiction on this off-site parcel is the spring high tide line along the shoreline, including the area where the outfall would be constructed. There are intertidal waters/mudflats (waters of the U.S.), which have developed in the intertidal areas west of the project site. NYSDEC has indicated through a Jurisdictional

Determination and based on a physical inspection of the site that state-regulated Tidal Wetlands (Littoral Zone) boundaries extend up to the mean high water line of the Harlem River. NYSDEC also regulates an adjacent area, or upland buffer, under the Tidal Wetland Regulations (see Figure 10-2, “Approximate Tidal Wetlands Adjacent Area”). The outfall would not be constructed in any of the interpier areas or in NYSDEC-regulated adjacent area; thus, the only potential short-term impacts would be to the waters of the U.S. and NYSDEC-tidal wetlands in the very limited area associated with outfall construction.

Tidal wetland adjacent area disturbance would occur during construction of the off-site public open space to be developed by the City. The disturbance would include replacement of existing-disturbed sparsely vegetated adjacent area with a landscaped public open space. This activity is expected to have no significant impacts and may have a beneficial ecological effect on the adjacent area.

FLOODPLAIN

The proposed ground elevations would remain close to the existing elevations. As discussed above, this area is subjected to coastal flooding, not riverine flooding. Because a major component of coastal flooding is caused by tides, this type of flooding can be predicted. Typically, several days of notice are available for coastal flooding. In that time, the project site could be secured from any damage from the flooding. The proposed buildings would not cause additional flooding because they would not block water from flowing around the area and would not reduce the ability of the floodplain to store water nor increase flooding risks to the surrounding area. Best engineering practices would be used to minimize flood damages to the buildings, roadways, and utilities located in the floodplain.

AQUATIC RESOURCES

Activities which could result in potential water quality impacts include the construction of a new outfall and upland construction activities.

The potential impacts would be associated with:

- Localized increases in suspended sediment; and
- Suspension of contaminated sediments.

Water quality changes associated with increases in suspended sediment and re-suspension of contaminated sediments from construction would be minimal and are expected to dissipate shortly after the outfall is installed.

A stormwater pollution prevention plan (SWPPP) would be prepared for the Proposed Project in accordance with established engineering practices as part of the SPDES permitting process. Implementation of best management practices for erosion and sediment control and other measures of the SWPPP (described further below) would minimize potential water quality effects associated with the discharge of stormwater during construction activities. Such measures would include the use of silt fencing and/or hay bales adjacent to upland limit of disturbance and a silt curtain for the “in-water” activities.

Construction of the new outfall would have the potential to result in temporary impacts to fish and benthic macroinvertebrates due to temporary increases in suspended sediment, potential release of contaminants from disturbed sediments, and noise associated with in-water

construction activities. These effects would be localized and would not be expected to significantly impact aquatic biota.

Life stages of estuarine-dependent and anadromous fish species, bivalves, and other macroinvertebrates have developed behavioral and physiological mechanisms for dealing with variable concentrations of suspended sediment, and thus are fairly tolerant of elevated suspended sediment concentrations (Birtwell et al. 1987; Dunford 1975; Levy and Northcote 1982 and Gregory 1990 in Nightingale and Simenstad 2001; LaSalle et al. 1991). Fish are mobile and generally avoid unsuitable conditions such as increases in suspended sediment and noise (Clarke and Wilber 2000), and also have the ability to expel materials that may clog their gills when they return to cleaner, less sediment-laden waters. Most shellfish are adapted to naturally turbid estuarine conditions and can tolerate short-term exposures by closing valves or reducing pumping activity. More mobile benthic invertebrates that occur in estuaries have been found to be tolerant of elevated suspended sediment concentrations.

The proposed construction of a new outfall at the shoreline would disturb a very small area of benthic habitat. Benthic organisms would be expected to recolonize these areas. Disturbance to benthic communities during construction would be minimal and would not significantly impact the food supply for fish foraging in the area. Under the Proposed Project, water quality should be improved as a result of the overall improvements to the stormwater management system.

The creation of the off-site public open space by the City could involve improvements to the water's edge; however, the plans for this area have not yet been developed.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

As described above, NYNHP and USFWS have determined that there are no known occurrences of threatened or endangered species and there are no areas within the project area that are considered "critical habitat." NMFS has determined that shortnose sturgeon may be present within the Harlem River as possible (likely rare) transients. As transients, the shortnose sturgeon would be unlikely to regularly occur near the project area. In any case, the Proposed Project would employ best management practices to minimize potential disturbances from construction of the outfall, and therefore no significant impacts would be expected during construction activities.

EROSION AND STORMWATER MANAGEMENT

During construction activities, there would be increased potential for on-site erosion and sedimentation where soils would be disturbed. A detailed SWPPP would have to be prepared under SPDES permitting requirements and would be implemented during construction. Stormwater management plans would be developed as part of the design process, with implementation to be carried out by the contractor under supervision of the owner, construction manager, and the SPDES permitting and enforcement program administered by NYSDEC.

The stormwater management program would contain appropriate requirements for erosion and sedimentation controls to be used during construction. Such controls may include structural as well as vegetative measures such as hay bales, silt fencing, vegetative covers, and slope and soil stabilization methods.

These measures would avoid adverse impacts to surface water and aquatic organisms of the Harlem River and the interpiers near the construction site.

OPERATIONAL IMPACTS

TERRESTRIAL RESOURCES

The Proposed Project would add vegetated areas within the landscaped areas of the site that have the potential to provide some limited habitat to bird species and other wildlife. Construction of the Proposed Project would result in an increase in the amount of green space on the site.

The open space to be developed in the future by the City also would add vegetated areas that have the potential to provide some limited habitat.

WETLANDS

No adverse impacts to wetlands are expected to occur from operation of the Proposed Project. In addition, there are no expected impacts to regulated adjacent areas.

FLOODPLAIN

The Proposed Project's buildings, roadways, and utilities would be located within the 100-year floodplain. The proposed ground elevations would remain close to the existing elevations, but the buildings would be built to above the floodplain level. Generally, the first floor elevation of the proposed buildings would be approximately 10 feet above Bronx Borough Datum and more than one foot above the 100-year floodplain elevation, complying with Local Law 33 of 1988. Therefore, operation of the Proposed Project would not be expected to result in significant adverse impacts to floodplains.

AQUATIC RESOURCES

The existing estimated stormwater discharge to the Harlem River is 146 cubic feet per second (cfs), and the estimated stormwater discharge to the Harlem River with the Proposed Project is 149 cfs. The proposed development would result in a nominal increase in stormwater discharge to the Harlem River. It is also anticipated that due to operational controls incorporated into the design of the proposed facilities, such as the use of Vortechtechnics™ and Stormceptor™ units, stormwater runoff quality would improve.

The New York City Department of Parks and Recreation implements an Integrated Pest Management (IPM) strategy for the management of all turf within its facilities. The IPM results in healthy grass areas with minimal use of fertilizers, pesticides, and herbicides and thus minimizes the discharge of pesticides to surface water from stormwater runoff generated within these open space areas. Implementation of the IPM strategy within the open space to be developed by the City would minimize potential adverse impacts to surface water quality from the discharge of stormwater generated in this area.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

As noted previously, NYNHP and USFWS have determined that there are no known occurrences of threatened or endangered species on the project site and there are no areas within the project area that are considered "critical habitat." NMFS has determined that shortnose sturgeon may be present within the Harlem River as possible (likely rare) transients. As transients, the shortnose sturgeon would be unlikely to regularly occur in the area of the proposed stormwater outfall. Under the Proposed Project, water quality should be improved as a result of the overall improvements to the stormwater management system.

F. MEASURES TO MINIMIZE IMPACTS

As required for construction activities that disturb one acre or more of land, a SWPPP would be prepared in accordance with established engineering practices. Implementation of best management practices for erosion and sediment control and other measures of the SWPPP would minimize potential water quality effects associated with the discharge of stormwater during upland construction activities. Best management practices would be used to prevent, or minimize, the potential disturbance from any work below mean high water. The repairs and improvements to the existing stormwater management system, including the elimination of four silted and clogged stormwater outfalls and the construction of a new stormwater outfall, would have a positive impact on water quality. *