Chapter 10: Natural Resources

A. INTRODUCTION

This chapter assesses the potential for the proposed development program to affect the existing terrestrial and aquatic natural resources, water quality, and floodplains within the study area established for these resources. The purpose of the analysis is to:

- Describe existing natural resources (i.e., plants, wildlife, threatened or endangered species, plankton, macroinvertebrates, and fish) and floodplains on the development parcels;
- Provide a general description of aquatic resources (i.e., water quality and aquatic biota) of the East River in the vicinity of the development parcels;
- Assess natural resources, water quality and floodplain conditions that would occur in the future without the proposed development program;
- Assess the potential effects to natural resources from the proposed development program, including the potential habitat provided by additional open space;
- Assess the potential effects to aquatic resources of the East River associated with the proposed development program's incremental shadows.
- Assess the potential affects of the discharge of stormwater and sewage from the proposed development program to the municipal combined sewer system; and
- Identify and analyze practicable mitigation measures for any significant adverse impacts resulting from the proposed actions.

B. METHODOLOGY

This section presents the methodology used to describe natural resources within the study area under existing and future conditions, and to assess potential impacts to these resources from the proposed development program. The project site is defined as the four development parcels: 616 First Avenue, 685 First Avenue, 700 First Avenue (Waterside), and 708 First Avenue. Because of the highly developed land uses in this area, the study area for terrestrial resources and floodplains is comprised of the project site and the two blocks positioned between 616 and 700 First Avenue (see Figure 10-1). These blocks are included in the study area because of their proximity to the development parcels. The identification and evaluation of threatened or endangered species includes a more expansive area, covering a distance of at least 0.5 miles from the project site. Due to the proximity of the project site to the East River, the analysis also considers the potential for significant impacts to water quality and aquatic resources within the East River and the waterfront areas closest to the project site.

The analysis of potential impacts to natural resources considers the potential effects for the analysis year 2014, when construction of the proposed development program is expected to be completed. Construction of the proposed development program is expected to begin in 2008.

FIRST AVENUE PROPERTIES REZONING

Project Location
Figure 10-1

Existing conditions within the project site are summarized from information identified in literature sources, and observations made during the summer of 2005. Sources include the following:

- Responses to requests for information on rare, threatened or endangered species within the vicinity of the study area. These requests were submitted to the U.S. Fish and Wildlife Service (USFWS) and the New York Natural Heritage Program (NYNHP). NYNHP, a joint venture of the New York State Department of Environmental Conservation (NYSDEC) and The Nature Conservancy (TNC) since 1985, maintains an ongoing, systematic, scientific inventory of 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 the state program, the USFWS maintains information for federally listed threatened or endangered freshwater and terrestrial plants and animals, and the NMFS for federally listed, threatened, or endangered marine organisms.
- United States Geological Survey (USGS)—Topographic quadrangle map for Central Park Quad.
- NYSDEC—Breeding Bird Atlas, Bird Conservation Areas, Critical Environmental Areas, Tidal Wetlands Maps.
- Federal Emergency Management Agency (FEMA)-Flood Insurance maps.
- USFWS National Wetland Inventory (NWI) map for the Central Park USGS Central Park topographic quadrangle.
- Field observations.

The future conditions without the proposed development program are assessed by considering existing natural resources within the study area and assessing potential effects to these resources from projects proposed within and adjacent to the project site that are expected to occur independent of the proposed development program by the 2014 build year.

Potential impacts to natural resources, surface and ground water, floodplains and wetlands from the proposed development program are assessed for the 2014 build year using an approach that considered the following:

- The existing natural resources within and adjacent to the study area.
- Potential effects to aquatic resources from incremental shadows and the discharge of stormwater during construction of the upland components of the proposed development program.
- Potential long-term impacts to water quality and aquatic biota resulting from stormwater discharges during operation of the proposed development program.
- Impacts to terrestrial plants and wildlife associated with development of vacant land in the project site, and potential long-term beneficial impacts to plants and wildlife from the proposed additional open space.

C. EXISTING CONDITIONS

TERRESTRIAL RESOURCES

The project site comprises vacant lots and contains little vegetation. Plant species found here are commonly found in urban vacant lots[1] as described by Edinger et al. (2002)—they are generally fast growing and tolerant of harsh urban environments. Within the project site, plants occur along the fence of the parking lot at 685 First Avenue, and in small areas scattered within the vacant parcels. Examples of plant species include nightshade (*Solanum dulcamara*), mugwort (*Artemisia vulgaris*), and Japanese stiltgrass (*Microstegium vimineum)*. Terrestrial wildlife in the study area is generally limited to species tolerant of urban conditions, such as gray squirrel (*Sciurus carolinensis*), mice, rats and other small rodents. The N.Y. State Breeding Bird Atlas project provides records of birds that have the potential to breed within Block 5851C[2] (surveyed 2000 and 2004). Examples of birds within urban vacant lots and other intensely developed urban areas of New York City that have the potential to breed within the vicinity of the project site include: rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), chimney swift (*Chaetura pelagica*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), and American robin (*Turdus migratorius*) (NYSDEC 2004).

The bulkheaded and platformed shorelines to the east of the development parcels and the FDR Drive would be expected to provide resting and perching habitats for waterfowl and shorebirds. Waterfowl known to occur along the East River during the spring and fall migratory periods include American black duck (*Anas rubripes*), American widgeon (*Anas americana*), bufflehead (*Bucephala albeola*), canvasback (*Aythya valisineria*), Goldeneye (*Bucephala clangula*), greater scaup (*Aythya marila*), green-winged teal (*Anas crecca*), hooded merganser (*Lophodytes cucullatus*), lesser scaup (*Aythya affinis*), mallard (*Anas platyrhnchos*), northern shoveler (*Anas clypeata*), red-breasted merganser (*Mergus serrator*), and ruddy duck (*Oxyura jamaicensis*) (NOAA 2001). Waterfowl that might be expected to occur in the East River shoreline throughout the year include American black duck, Canada goose (*Branta canadensis*) and mallard (NOAA 2001).

FLOODPLAINS AND WETLANDS

Figure 10-2 presents the 100-year floodplain (area with a 1 percent chance of flooding each year) boundary within the study area. The two southernmost blocks located within the project site, from E.37th Street and south, are located within the 100-year floodplain boundary. The boundary here generally extends from the East River to slightly east of First Avenue.

The entire shoreline within the vicinity of the project site is engineered with bulkhead and platform. The USFWS National Wetlands Inventory (see Figure 10-3) classifies the waters in the East River adjacent to the study area as estuarine subtidal wetlands with unconsolidated bottom (E1UBL). Subtidal estuarine wetlands are continuously submerged areas with low energy and

[1] Described as an open site in a developed, urban area that has been cleared either for construction or following the demolition of a building. Vegetation may be sparse, with large areas of exposed soil and often with rubble or other debris.

[2] Block 5851C is a 5x5 km section that includes midtown Manhattan, the East River, and a portion of Queens.

Floodplains
Figure 10-2

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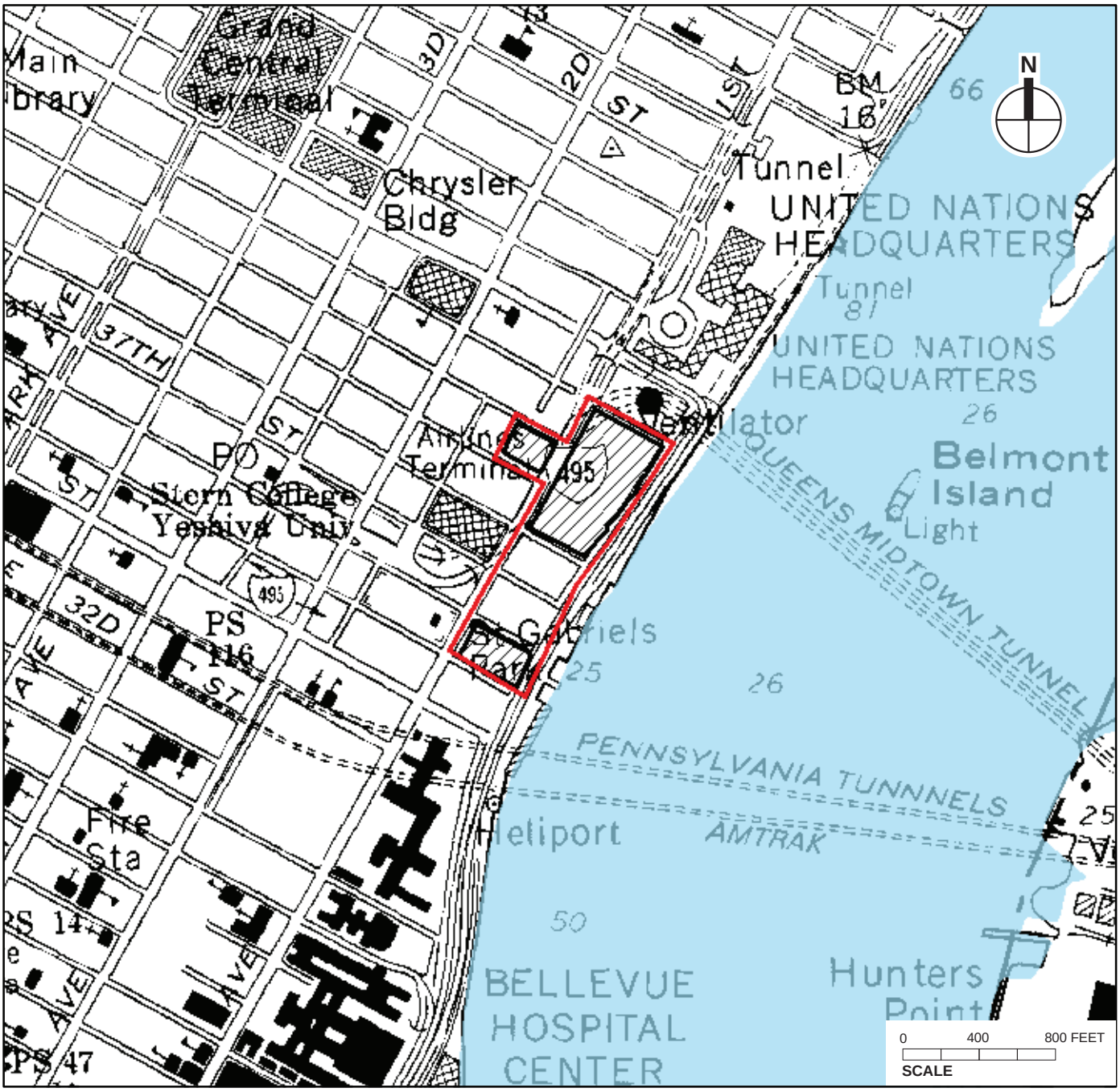
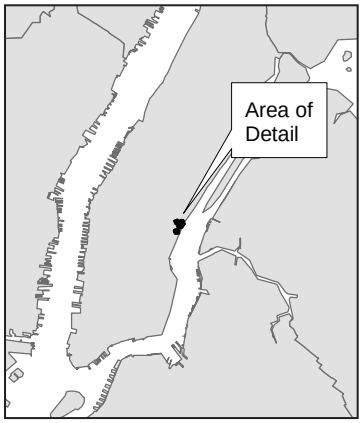


Project Site (Development Parcels)

Study Area Boundary

NWI Wetlands

E1UBL



FIRST AVENUE PROPERTIES REZONING

NWI Wetlands
Figure 10-3

variable salinity, influenced and often enclosed by land. Unconsolidated bottoms have at least 25 percent cover of particles smaller than 6 or 7 cm, and less than 30 percent vegetative cover. As shown in Figure 10-4, NYSDEC has mapped the entire East River in the vicinity of the project site as littoral zone tidal wetlands (shallow waters six feet or less in depth not included in other NYSDEC tidal wetland categories). However, littoral zone, as defined by NYSDEC regulations, is only present along the shoreline in those areas that are less than six feet in depth.

No NYSDEC mapped freshwater wetlands are located in the study area.

AQUATIC RESOURCES

WATER QUALITY

As discussed in further detail in Chapter 12 "Infrastructure," the development parcels are located within the service area of the Newtown Creek Water Pollution Control Plant (WPCP). The development parcels are served by combined sewers that collect runoff and sanitary sewage and carry it to the Newtown Creek WPCP. Sanitary sewage flows into sewer mains located under the streets. These sewer mains and the stormwater flow from the catch basins serving the site discharge through regulators into interceptor sewers, which flow directly to the WPCP or to pump stations. The interceptor sewer system, sized to accommodate waste water flows of 175 gallons per person per day and to optimally operate at 70 percent of its capacity, currently operates well below these design criteria. The sewage flows from the development parcels are not measured and are considered to be negligible.

At times during wet weather, the interceptor sewers and the Water Pollution Control Plants (WPCP) are unable to handle the flow volumes entering the system. When this occurs, the excess mixture of sanitary sewage and stormwater overflows into the East River, and the event is referred to as a combined sewer overflow (CSO). Six WPCP's (Tallmans Island, Bowery Bay, Hunts Point, Wards Island, Newtown Creek, and Red Hook) discharge into the East River, and well over 300 CSO discharge points are found in the East River. CSO events occur at almost every precipitation event (rain, snow, sleet, etc.), which happen every three days on average, or just over 100 times per year. Stormwater flow from the undeveloped site is about 15.5 cubic feet per second (cfs) into the combined sewer system.

The East River is a tidal strait and experiences peak flows of about 16,000 cubic feet per second (cfs) during a normal tide and about 20,000 cfs during a spring tide, which occur several times a month. The total existing flow of stormwater from the approximately 8.7-acre project site is estimated to be about 15.5 (cfs). When Consolidated Edison was operating on the project site, the runoff was about 47.6 cfs.

Surface Water Quality

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 East River is use classification Class I. Best usages for Class I waters are secondary contact recreation and fishing. Water quality should be suitable for fish survival and propagation. Water quality standards for fecal and total coliform, dissolved oxygen (DO), and pH for Use Class I waters are as follows (there are no New York State standards for chlorophyll *a* or water clarity):

- Fecal coliform—Monthly geometric mean less than or equal to 2,000 colonies/100 milliliters (mL) from five or more samples.

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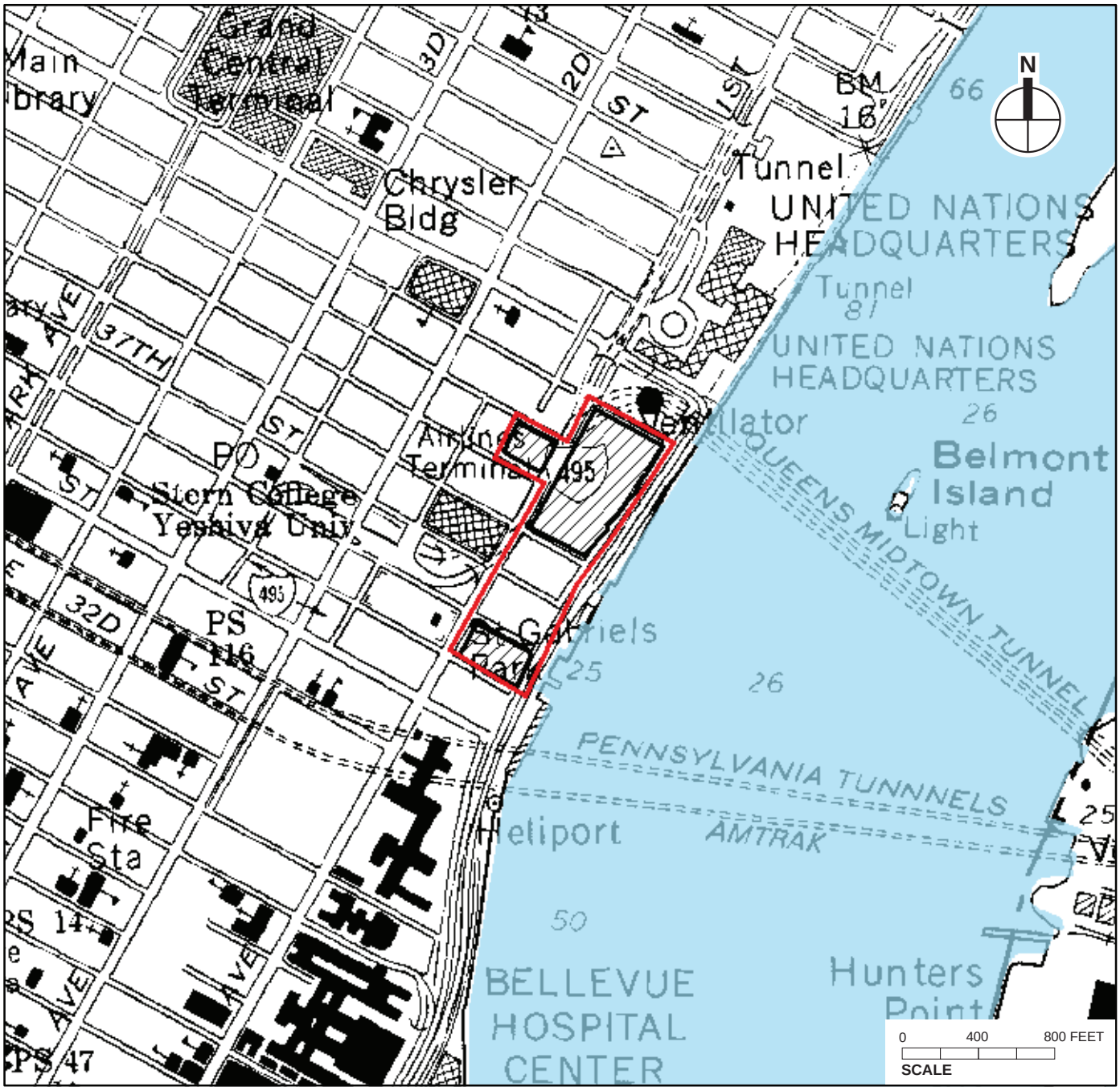
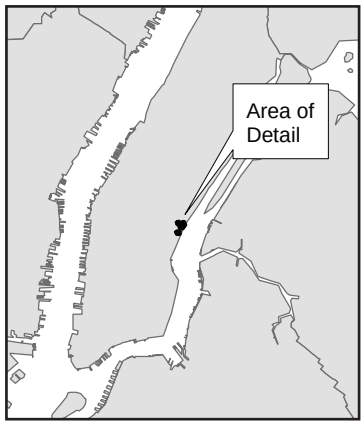


Project Site (Development Parcels)

Study Area Boundary

Littoral Zone



DEC Tidal Wetlands

Figure 10-4

- Total coliform—The monthly geometric mean from a minimum of five examinations shall not exceed 10,000 colonies/100 mL.
- DO—Never less than 4 milligrams per liter (mg/L).
- pH—The normal range shall not be extended by more than 0.1 of a pH unit.

The City of New York has monitored Harbor Estuary water quality with an annual survey (Harbor Survey) for over 90 years. New York City Department of Environmental Protection (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 New York Bay-Raritan Bay, and Jamaica Bay (NYCDEP 2004b). The Upper East River-Western Long Island Sound Area includes the study area. 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*, DO, and Secchi transparency.

The results of recent Harbor Surveys (NYCDEP 2004a, b) suggest that the water quality of the Harbor Estuary 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 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 year-round disinfection requirement for discharges to waters within the Interstate Environmental Commission's (IEC) district (including the New York Harbor Estuary) has contributed significantly to water quality improvements in coliform counts since the requirement went into effect in 1986 (IEC 2004).

The following provides a brief summary of the water quality conditions in the sampling region (Inner Harbor Area) of the Harbor Survey which includes the study area. The closest sampling station (E2) is located to the south of the project site at East 23rd Street. Table 10-1 presents a summary of water quality measurements at this station between 2000 and 2004.

Table 10-1
2000-2004 NYCDEP Water Quality Data for the East 23rd Street Sampling Station

Parameter	Surface			Bottom		
	Min	High	Mean	Min	High	Mean
Total Fecal Coliforms (per 100 mL)	1	1020	139	NM	NM	--
Dissolved Oxygen (mg/L)	2.4	12.7	5.8	2.2	12.6	5.5
Temperature (°C)	1.2	25.5	17.1	1.07	25.46	17.1
Salinity (ppt)	5.9	28.0	22.8	8.1	28.1	23.4
Chlorophyll *a* (µg/L)	0.5	19.9	3.0	NM	NM	--
Secchi Transparency (ft)	2.0	11.0	5.0	NM	NM	--

Note: NM = Not Measured.
Source: NYCDEP 2004a.

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. Overall, fecal coliform concentrations in the New York Harbor Estuary have declined, improving water quality from the early 1970s when levels were routinely well above 2,000 colonies/100 mL. However, temporary increases in fecal coliform concentrations may occur during periods of intense precipitation and runoff due to increased fecal coliform loadings. The East River is not listed as impaired for water quality in the

September 24, 2004 Final Section 303(d) List of Impaired Waters requiring a Total Maximum Daily Load (TMDL) development, but is identified as impaired for fish consumption because of PCBs, along with other waters of the Harbor Estuary.

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. 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 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. During the period from 2000 to 2004, the East River just southeast of the project site failed to meet the DO standard of 4 mg/L in 17 of 92 measurements in surface waters and in 22 of 90 measurements in bottom waters. As noted above, the East River is not considered impaired for water quality in the 2004 303(d) list.

Secchi transparency is a measure of the clarity of surface waters. Transparency greater than 5 feet is indicative of clear water. Decreased clarity can be caused by high suspended solid concentrations or blooms of plankton. Secchi transparencies less than 3 feet are generally indicative of poor water quality conditions. Average Secchi transparency near the project site between 2000 and 2004 was 5.0 feet (1.5 meters). One of the ninety-four measurements taken between 2000 and 2004 was less than 3 feet (0.9 meters), indicating that water quality in this area is rarely impaired by reduced water transparency (NYCDEP 2003). Chlorophyll a, a sign of eutrophication, or excessive plant growth, was also measured. Levels of chlorophyll a above 20 µg/l are generally considered an indication of enriched or eutrophic conditions. Measurements of chlorophyll a sampled in the Inner Harbor area during the summer months of 2002 did not exceed 10 µg/l, and are not indicative of a eutrophic state (NYCDEP 2003).

Sediment Quality

Upper New York Bay has a complex distribution of sediments in the area because of variable currents and a high degree of sediment input due to natural and human actions. The lower East River primarily has a hard, rock bottom consisting of gravel, cobble, rocks, and boulders covered with a shallow layer of sediment. The shallow sediment cover is caused by strong tidal currents in the river.

Typical of any urban watershed, New York Harbor Estuary sediments, including the lower East River, are contaminated due to a history of industrial uses in the area. Contaminants found throughout the New York Harbor Estuary included pesticides such as chlordane and DDT, 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. Within the New York Harbor Estuary, Adams et al. (1998) ranked Newark Bay as the most degraded area on the basis of sediment chemistry, toxicity, and benthic community, followed by the Upper Harbor, Jamaica Bay, Lower Harbor, Western Long Island Sound and the New York Bight Apex. Biological effects, identified based upon the benthic invertebrate community, were found to be associated with the chemical contamination. While the sediments of the New York Harbor Estuary are contaminated, the levels of most sediment contaminants (e.g., dioxin, DDT, and mercury) have decreased over the past 30 years (Steinberg et al. 2002). Between 1993 and 1998 the percentage of sediment sampling locations with benthic macroinvertebrate communities considered impacted, or of degraded quality, decreased throughout the New York/New Jersey

Harbor Estuary. Within the Upper Harbor, the percentage of benthic communities considered impacted decreased significantly from 75 percent in 1993 to 48 percent in 1998 (Steinberg et al. 2004).

AQUATIC BIOTA

The hydrodynamic and estuarine character of the East River, coupled with the numerous municipal and industrial discharges that have occurred in the river over many years, make this river a physically harsh environment; therefore, many of the species using the area are tolerant of highly variable conditions. The following sections provide a brief description of aquatic biota found within the study area. The descriptions are largely drawn from existing information on the Harbor Estuary's resources.

Primary Producers

Phytoplankton. Phytoplankton is 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.

Resident times of phytoplankton species within New York Harbor are short and species move quickly through the system. In a 1993 survey of New York Harbor, 29 taxa of phytoplankton were identified, with the diatom *Skeletonema costatum* and the green algae *Nannochlorus atomus* determined to be the most abundant species at the monitored sites (Brosnan and O'Shea 1995).

Submerged Aquatic Vegetation and Benthic Algae. Submerged aquatic vegetation (SAV) are rooted aquatic plants that are often found in shallow areas of estuaries. They are important because they provide nursery and refuge habitat for fish. Benthic algae are large multicellular algae that occur on rocks, jetties, pilings, and sandy or muddy bottoms. Since these organisms require sunlight as their primary source of energy, the limited light penetration in waters of the Harbor Estuary limits their distribution to shallow areas. No SAV is present within the project site.

Zooplankton

Zooplankton (early life stages of fish, decapods and barnacles; copepods, rotifers, cumaceaons, mysid shrimp, and amphipods [Stepien et al. 1981; USACOE 1984]) are another integral component of the aquatic food web. They are primary grazers on phytoplankton and detritus material, and are themselves consumed by 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. The most dominant species in the Harbor Estuary 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 Substrate type (rocks, pilings, sediment grain size, etc.), salinity, and DO levels are the primary factors influencing benthic invertebrate communities. Currents, wave action, predation, succession, and disturbance also influence the benthic community.

Over 100 benthic invertebrate taxa (mostly crustaceans or polychaete worms) have been identified in the East River (Coastal Environmental Services 1987). Within the portion of the Harbor Estuary comprising the Hudson River, East River and Upper New York Harbor, common infaunal macroinvertebrates collected within the Harbor Estuary 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 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).

Two separate but intermingled benthic invertebrate subcommunities have been identified in the East River on the basis of sediment hardness (Hazen and Sawyer 1983). The hard substrate community is characterized by organisms that are either firmly attached to rocks and other hard objects (e.g., mussels or barnacles), or that build or live in tubes. Other species of polychaetes and amphipods also occur on the hard bottom surfaces, and several species have adapted to the East River's hard bottoms and rapid currents by living within the abandoned tubes of other species. The soft substrate community occurs in the more protected areas within the East River where detritus, clay, silt, and sand have accumulated in shallow, low velocity areas near piers and pilings. Common soft substrate organisms included oligochaete worms, the soft shelled clam

Mya arenaria, and a variety of flatworms, nemerteans, polychaetes, and crustaceans (Hazen and Sawyer 1985).

Fish

New York City is located at the convergence of several major river systems, all of which connect to the New York Bight portion of the Atlantic Ocean. This convergence has resulted in a mixture of habitats in the East River that supports marine fish, estuarine fish, anadromous fish (fish that migrate up rivers from the sea to breed in freshwater), and catadromous fish (fish that live in freshwater but migrate to marine waters to breed). Table 10-2 lists fish that have the potential to occur in the East River.

Despite the relatively low value of the East River as residential fish habitat, the waterway serves as a major migratory route from the Hudson River to the Long Island Sound. Harsh conditions within the lower East River, including its swift currents, lack of shoals and protected habitat, reduced water quality, and possibly a lack of prey, probably explain why the East River experiences only limited utilization by fish at various times of the year. The swift currents act to scour the river bottom and prevent accumulation of sediment. Consequently, the benthic community in deeper channel areas is characterized by attached rather than infaunal species. During the summer months, diminished water quality—particularly low levels of dissolved oxygen—can also limit fish presence (PAS 1985a).

Table 10-2
Fish Species with the Potential to Occur in the East River

Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
American eel	*Anguilla rostrata*
American shad	*Alosa sapidissima*
Atlantic herring	*Clupea harengus*
Atlantic silverside	*Menidia menidia*
Atlantic tomcod	*Microgadus tomcod*
Bay anchovy	*Anchoa mitchilli*
Bluefish	*Pomatomus saltatrix*
Butterfish	*Peprilus triacanthus*
Mummichog	*Fundulus heteroclitus*
Northern searobin	*Prionotus carolinus*
Scup	*Stenotomus chrysops*
Striped bass	*Morone saxatilis*
Summer flounder	*Paralichthys dentatus*
White perch	*Morone Americana*
Winter flounder	*Pseudopleuronectes americanus*

Sources: Woodhead 1990; EEA 1988; EA Engineering, Science & Technology 1990; LMS 1994, 1999, 2002, 2003a, 2003b; Able et al. 1995.

Marine species present in the East River include winter flounder (*Pseudopleuronectes americanus*), scup (*Stenotomus chrysops*) and bluefish (*Peprilus triacanthus*). Winter flounder spawn in the lower estuary during winter and early spring (Bigelow and Schroeder 1953). Scup migrate inshore during late spring, and tend to stay close to the coast during the summer months before moving offshore during the fall to deeper waters. Bluefish were reported as an abundant species captured in the East River during the United States Army Corps of Engineers (USACOE) Westway study. Bluefish is a pelagic fish whose young migrate into estuaries and harbors along the coast during late spring or early summer. Incidence of young bluefish in the East River is probably related to the migration pattern of young moving from spawning grounds in the outer half of the continental shelf, to inshore waters in the late summer to feed (Bigelow and Schroeder 1953).

Estuarine species found in the East River include bay anchovy (*Anchoa mitchilli*), Atlantic silverside (*Menidia menidia*) and white perch (*Morone Americana*). These species are important as forage species for larger predator fish and are commonly used as bait by fishermen. They are resident estuarine fish although considered euryhaline (PAS 1985b).

Anadromous species that use the East River include striped bass (*Morone saxatilis*), tomcod (*Microgadus tomcod*), and members of the herring family (*Clupea* sp.). Striped bass use the East River for migration from fall through spring, returning from marine waters to fresh water to spawn before migrating back to salt waters (PAS 1985a). The young then use the brackish waters as nursery and wintering area. Tomcods may spawn in marine waters but are typically anadromous and migrate into rivers and estuaries during late fall and winter to spawn. Two of

the common anadromous species are members of the herring family-alewife and American shad. These species live in the sea as adults and move into estuaries in spring on their spawning migrations (Bigelow and Schroeder 1953).

American eel (*Anguilla rostrata*) is the only catadromous species that occurs in the Harbor. Eels spawn at sea and the young move into the estuary as elvers in the spring, typically in February and March (EEA 1988).

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

The East River is not considered Significant Coastal Fish and Wildlife Habitat by the New York State Department of State (NYSDOS) (1992). Requests for information on rare, threatened or endangered species within the immediate vicinity of the project area were submitted to USFWS, NMFS, and the NYNHP. No records of rare, threatened or endangered species or sensitive habitats were reported by the USFWS (Olin 2005). The NYNHP records indicated that the peregrine falcon (New York State endangered) has nested at the Met Life Building within the last 10 years, approximately 0.43 miles from the closest development parcel (Ketcham 2006). Peregrines nest on ledges and small shallow caves on high cliff walls, man-made platforms, or in urban areas on bridges and tall buildings. In the New York City area, courtship occurs in February and March with egg laying in April and May. They typically return to the same nest every year.

No endangered or threatened species under the jurisdiction of the NMFS are known to occur within the project site. Several species of listed sea turtles are known to occur in the lower New York Harbor during the warmer months, but are not likely to occur in the East River or in proximity to the project site (Colligan 2005).

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

PROJECT SITE

In the future without the proposed development program, the project site will consist of urban vacant lots. The vegetation community within the urban vacant lots could continue to develop and mature, but would provide limited habitat for wildlife.

OUTSIDE PROJECT SITE

Projects that are expected to be developed in the future without the proposed development program that are adjacent to or in the vicinity of the project site include: improvements at the 34th Street Ferry Terminal, the 34th Street Metroport (Heliport), and reconstruction of the FDR Drive between 42nd and 25th Streets. Chapter 2, “Land Use, Zoning, and Public Policy,” discusses these land development projects that have been proposed outside the project site. These planned projects are not expected to significantly impact aquatic or terrestrial resources in the vicinity of the project site.

E. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

TERRESTRIAL RESOURCES

Given the disturbed, urban environment within which the project site resides, no significant adverse impacts to vegetation and wildlife habitats would occur in the study area. Plants and

animals found in this area are limited and would likely be tolerant of any increased disturbance created by the project.

The Proposed Actions would result in a net gain of 4.84 acres of publicly accessible open space (including 3.35 acres of bonusable publicly accessible open space and 1.49 acres of non-bonusable publicly accessible open space). This open space would provide areas for both passive and active recreation and would open up views to the East River (see Chapter 5, "Open Space" for a detailed description of the proposed open space resources). While some wildlife individuals located on the project site would have the potential to be adversely impacted during the construction phase of the proposed development program, the new open space areas would result in a net gain in terrestrial habitat for wildlife species commonly found in urban environments. The proposed open space areas include lawn areas, trees, and a water element, all of which would be expected to attract wildlife species found in urban environments.

The increased habitat that would be present as a result of the proposed development program also would have the potential to provide resting or stop-over habitat for migratory songbirds during the spring and autumn migrations, which is not present under current conditions. However, this increase in bird habitat for resident and migratory species would have the potential to result in bird strikes on glass surfaces associated with the proposed development.

The Proposed Development Program includes eight buildings, with the highest points ranging from approximately 123 feet (5 stories) to 721 feet (69 stories). The structures would likely feature predominately reflective glass facades. Building height, nighttime lighting, and the reflective nature of glass façades would affect the potential for the proposed buildings to result in collisions by birds migrating at night (Schmidt-Keonig 1979, Ogden 1996, Avery et al. 1976 in Ogden 1996, Martin 1990 in Ogden 1996). Additionally, landscaping design and the design of the lower building stories would affect the potential for the proposed buildings to result in daytime bird strikes.

Approximately 75 percent of nocturnally migrating songbirds migrate at altitudes of between 500 and 2,000 feet (600 meters) above the surface (Deinlein undated, and Kerlinger 1995). Table 10-3 presents the most current bird strike data compiled by the New York City Audubon Society (NYCAS) for buildings near the project site. The collection period for the bird strike data presented in Table 10-3 is different for each building, ranging from a period of a month or less to just over four years. Birds reported in building collisions in Manhattan were primarily migratory songbirds, mostly warblers and sparrows, but also included representatives from other groups. During the 2001 through 2005 period, the most recent period for which data are available within the vicinity of the project site, the 15 bird species reported by NYCAS in highest numbers of bird strikes for all buildings included white-throated sparrow (*Zonotrichia albicollis*), common yellowthroat (*Geothlypis trichas*), dark-eyed junco (*Junco hyemalis*), ovenbird (*Seiurus aurocapillus*), Nashville warbler (*Vermivora ruficapilla*), American woodcock (*Scolopax minor*), hermit thrush (*Catharus guttatus*), ruby-crowned kinglet (*Regulus calendula*), blackpoll warbler (*Dendroica striata*), black-and-white warbler (*Mniotilta varia*), yellow-bellied sapsucker (*Sphyrapicus varius*), gray catbird (*Dumetella carolinensis*), northern flicker (*Colaptes auratus*), swamp sparrow (*Melospiza georgiana*), and golden-crowned kinglet (*Regulus satrapa*).

Comparisons to buildings similar in height to those of the proposed development program suggest that losses of migratory birds due to collisions with the proposed structures would be small (see Table 10-3). While the proposed building heights would result in losses of some bird individuals due to building collisions, the losses would be small, and would not result in

significant adverse impacts to populations of songbirds migrating through New York City. However, measures to reduce potential bird strikes, such as minimizing nighttime interior and exterior lighting during the migratory period (Ogden 1996), would be considered in the development of the design for these structures. Measures already under consideration include: utilizing building glass with low reflectivity; exterior sun shading systems that would visually break up the building glass and make it more visible to birds; and minimizing external façade lighting on the residential buildings.

Table 10-3
Bird Strike Data Compiled by NYCAS for Buildings in the Vicinity of the Project Site

Building	Location	Height (feet)	Bird Strikes	Period of data collection
JP Morgan Chase World Headquarters	270 Park Ave. at E. 47th St.	707	35 over 36-month period	10/02-10/05
Park Avenue Plaza	55 E. 52nd St, AON Center	574	8 over 18-month period	04/03-10/04
Empire State Bldg.	350 Fifth Ave.	1,250	7 over 7-month period	10/01-5/02
345 Park Ave	345 Park Ave	634	6 over 17-month period	5/03-10/04
Citigroup	399 Park Ave at 53-54 St.	915	6 over 30-month period	4/03-10/05
Seagram Building	375 Park Ave. at E. 52nd Street	515	5 over 50-month period	9/01-11/05
Mutual of America	320 Park Ave.	476	3 over 5-month period	5/04-10/04
299 Park Ave.	299 Park Ave.	574	2 over 16-month period	5/03-9/04
United Nations	1st Ave. at E. 42nd St.	503	1 over 1-month period	5/03
750 Third Ave.	750 Third Ave, 46 & 47th Sts.	436	1 over 1-month period	9/05

Source: New York City Audubon.

FLOODPLAINS AND WETLANDS

As described previously, certain areas of the proposed development program would be located within the 100-year floodplain. These areas will include appropriate drainage systems. All areas developed within the project site would be constructed with appropriate stormwater management measures, discussed below. The proposed development program would comply with all applicable statutes governing the construction of residential and non-residential buildings in flood hazard areas (e.g. NY City Building Code, Title 27, Subchapter 4, Article 10). Construction of some of the proposed structures and open space areas within the 100-year floodplain would not adversely affect the floodplain's ability to contain flood waters or exacerbate flooding conditions within the project area or its immediate vicinity.

The existing hard-stabilized shoreline within the study area would not be altered by the proposed development program. As the proposed development program does not call for in-water work, the littoral zone tidal wetlands located within the study area are not expected to be adversely

affected during construction or operation. Therefore, the proposed development program is not expected to result in significant adverse impacts to NYSDEC tidal wetlands.

AQUATIC RESOURCES

WATER QUALITY

Implementation of erosion and sediment control measures and stormwater management measures as part of the Stormwater Pollution Prevention Plan (SWPPP) during construction of the proposed development program would minimize potential impacts to the combined sewer system as well as potential water quality impacts to the East River associated with stormwater runoff. Groundwater recovered during any construction dewatering would be treated, as necessary, prior to discharge to the combined sewer system. As discussed in Chapter 12, "Infrastructure," sewage from the proposed development program would be treated at the Newtown Creek WPCP. The wastewater resulting from the proposed development program, representing approximately 0.32 percent of the Newtown Creek WPCP's permitted capacity, is not expected to affect the WPCP's capacity or its treatment efficiency or water quality of the East River.

The proposed development program is expected to discharge stormwater to the existing combined sewer system through new on-site pipes. No new outfalls are expected to be built as part of this proposed development program. The stormwater flows from the project site are expected to increase from 15.5 cfs under current conditions to 43.9 cfs, an increase of 28.4 cfs. However, the proposed diversion of stormwater from the developed 700 and 708 First Avenue parcels would reduce the flows into the combined sewer system to 11.7 cfs, a reduction of 3.7 cfs. This diversion of stormwater is expected to reduce the frequency and volume of CSO events. These stormwater flows would occur only during a peak precipitation event, which DEP defines as a rainstorm with an intensity of 5.95 inches per hour. A rain storm of this intensity is rare in New York City. Compared to the tidal flows of 16,000 to 20,000 cfs in the East River, an increase of 28.4 cfs into the East River during a rare event is minimal. As described in Chapter 12, "Infrastructure," the new stormwater flows from the redeveloped parcels are not expected to have a significant adverse impact on the New York City stormwater system or the water quality of the East River.

AQUATIC BIOTA

The proposed development program's buildings would cast shadows on portions of the East River. Shadows were analyzed on four representative days of the year: March 21st, which is the equivalent of September 21st, the equinoxes; May 6th, which is the equivalent of August 6th, the midpoints between the summer solstice and the equinox; June 21st, the summer solstice and the longest day of the year; and December 21st, the winter solstice and shortest day of the year. All shadows would begin at 3:30 PM in March, May, and June (see Figures 6-6, 6-12, and 6-16 of Chapter 6, "Shadows"), and 2:30 PM for December (see Figure 6-21). Incremental shadows from the proposed buildings are relatively small and of short duration in June, December, and May. The proposed buildings would create the largest incremental shadows over portions of the East River in March.

At the time of greatest shadow (March, 5:29 PM—see Figure 6-7) cast by the proposed buildings, the incremental shadows would occur on a portion of the East River for only a short

time in the late afternoon. Therefore, the shadows would not be expected to have significant adverse effects on the use of these areas by fish or other aquatic biota.

The decrease in light intensity over portions of the East River in March, which is prior to the period of high primary productivity, would not be expected to result in significant adverse impacts to phytoplankton. The tidal currents within the East River would move phytoplankton quickly through the shaded areas and would not be expected to affect primary productivity. Benthic macroalgae attached to hard surfaces in any given portion of the East River within the area shaded by the proposed buildings would not be in shadow long enough to affect the suitability of the attachment location or primary productivity.

As discussed above, stormwater runoff discharged to the combined sewer system from the proposed development program would not be expected to result in a significant adverse impact on the water quality of the East River. Therefore, the proposed development program is not expected to have a significant adverse impact on aquatic biota in the East River.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

As discussed previously, the East River is not considered Significant Coastal Fish and Wildlife Habitat by NYSDOS. No federally listed or proposed endangered or threatened species under the jurisdiction of the USFWS are known to be in the project area. While NYNHP records indicate the presence of a peregrine falcon at the Met Life Building at 200 Park Avenue, which is approximately 0.43 miles from the closest development parcel, the Endangered Species Unit of NYNHP does not anticipate any adverse impacts to the nest site (Loucks 2006). The nest has been inactive in the last year and not productive for some time. Because of the distance between the nesting location and the development parcels, the proposed development program would not be expected to adversely affect future use of this nesting location. Therefore, the proposed development program is not expected to result in significant adverse impacts to any federally or state-listed endangered species.

F. FUTURE CONDITIONS WITH THE UNDC PROJECT

In the FGEIS, the proposed UNDC project at East 41st Street and First Avenue was considered as part of the baseline condition in the Future Without the Proposed Actions section. However, because the UNDC project is complex and requires approvals from the New York State Legislature, the New York City Economic Development Corporation, and possibly other public agencies, including its own environmental review, it is uncertain whether the project will be completed by 2014 or, in fact, ever built. Therefore, the Future Without the Proposed Actions section in this SEIS does not include the UNDC project. The site for the UNDC project is currently fully covered with impermeable surfaces, and the runoff from the site discharges into the combined sewer system. If the UNDC project were to be built, the site would remain fully covered with impermeable surfaces, and the runoff would continue to enter the combined sewer system. Therefore, development of the UNDC project would not alter the conclusion that the Proposed Actions would not result in significant adverse on natural and aquatic resources impacts. ✷