Chapter 9: Natural Resources

A. INTRODUCTION

The *City Environmental Quality Review (CEQR) Technical Manual* defines natural resources as New York City's "biodiversity (plants, wildlife and other organisms); any aquatic or terrestrial areas capable of providing suitable habitat to sustain the life processes of plants, wildlife, and other organisms; and any areas capable of functioning in support of the ecological systems that maintain the City's environmental stability." Under CEQR, a natural resources assessment should be prepared if natural resources are present on or near a project site and disturbance to those natural resources have the potential to occur due to a proposed project.

This chapter describes existing natural resources in the natural resources study area, as defined below, and evaluates the potential effects resulting from implementation of the Long Island City Neighborhood Plan (the Proposed Actions) in accordance with the New York State Environmental Quality Review Act (SEQR) and CEQR. These natural resources include floodplains, groundwater, wetlands, aquatic resources (i.e., surface waters, water quality, sediment quality, and aquatic biota), essential fish habitat (EFH), terrestrial resources (i.e., wildlife and ecological communities), and protected species.

B. PRINCIPAL CONCLUSIONS

The Proposed Actions would not result in significant adverse impacts to floodplains or exacerbate flooding in the study area (as defined below in "Methodology"). Much of the southwestern portion of the study area in the vicinity of Anable Basin and along the East River falls within the 1 percent annual chance floodplain (Zone AE and Zone VE) and 0.2 percent annual chance floodplain (Zone X). The East River is a tidal strait, whose water level is controlled by the tidal conditions within the New York Bay and the Atlantic Ocean. The floodplain within the study area is affected by coastal flooding and would not be affected by construction or regrading/filling of the floodplain resulting from the Proposed Actions. Construction facilitated by the Proposed Actions would not adversely affect the local hydrology or the floodplain, nor would it exacerbate flooding conditions in neighboring locations. Future developments would be required to have finished floor elevations at or above the most restrictive design flood elevation in compliance with the New York City Building Code.

The Proposed Actions would not result in significant adverse impacts to groundwater. Groundwater is not used as a potable water supply in New York City; therefore, construction facilitated by the Proposed Actions would not result in potential impacts to drinking water supplies. (E) Designations would ensure contaminated sites are remediated under the New York City (E) Designation Program. Groundwater recovered during construction would be treated in accordance with the New York City Department of Environmental Protection (DEP) and the New York State Department of Environmental Conservation (DEC) requirements prior to discharge. Belowground structures (e.g., parking or basements) would not impede groundwater flow to the East River.

The Proposed Actions would not result in significant adverse impacts to wetlands, water quality, aquatic resources, essential fish habitat, or aquatic threatened and endangered species. DEC-regulated littoral zone tidal wetlands are present in the East River and Anable Basin. The Proposed Actions have the potential to facilitate in-water construction associated with shoreline and bulkhead improvements that would affect tidal wetlands, water quality, and aquatic biota. The

shoreline and bulkhead improvements would result in new structures placed within the East River and Anable Basin; however, the loss of any littoral zone or aquatic habitat would be small when compared to other available habitat in the East River. Construction would be required to avoid and minimize impacts to wetlands and water quality in accordance with U.S. Army Corps of Engineers (USACE) and DEC permits, including with the implementation of erosion and sediment control measures. The Proposed Actions would result in a reduction of CSO discharges to the East River. In addition, the Bowery Bay Wastewater Resource Recovery Facility (WRRF) has sufficient capacity to treat sanitary wastewater from the projected developments under the Proposed Actions in accordance with its State Pollutant Discharge Elimination System (SPDES) permit prior to discharging it the East River. The Proposed Actions have the potential to result in increased shadows on the East River and Anable Basin; however, the affected habitat would still receive several hours of direct sunlight on all but the shortest days of the year and in-water habitat and fish behavior is not expected to be significantly impacted by the increased shadows. For these reasons, the Proposed Actions would not have the potential to result in impacts to aquatic threatened and endangered species, including Atlantic sturgeon (*Acipenser oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), or listed sea turtles that may be found in the East River and Anable Basin.

The Proposed Actions would not result in significant adverse impacts to ecological communities within the study area. Terrestrial ecological communities within the study area are limited to terrestrial cultural ecological communities that provide limited habitat value to wildlife. Tree clearing, protection, and replacement plans would be developed to address tree impacts to trees under NYC Parks jurisdiction, including street trees. Trees, plants, and other landscaping features required by applicable zoning provisions would improve ecological communities within the study area.

The Proposed Actions would not result in significant adverse impacts to wildlife and terrestrial threatened and endangered species within the study area. Wildlife in the study area is limited to urban-adapted, disturbance-tolerant species. Construction activities have the potential to displace wildlife due to temporary habitat loss and noise; however, similar habitat would be available in the vicinity of the study area and the temporary disturbance of individuals of urban-adapted species would not result in adverse impacts to wildlife. Developments facilitated by the Proposed Actions would be required to comply with New York City building code requirements for the use of bird-friendly materials, and as such, will not increase the potential for daytime bird collisions with buildings. The levels of noise and human activity associated with the Proposed Actions would be comparable to levels of disturbance that the urban-adapted wildlife in the study area would be accustomed. Trees, plants, and other landscaping features implemented as part of the Proposed Actions would improve wildlife and pollinator habitat within the study area.

C. REGULATORY CONTEXT

FEDERAL

CLEAN WATER ACT (33 UNITED STATES CODE [USC] §§ 1251 TO 1387)

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. It regulates point sources of water pollution, such as discharges of municipal sewage, industrial wastewater, and stormwater runoff; the discharge of dredged or fill material into navigable waters and other waters of the United States; and non-point source pollution (e.g., runoff from streets, construction sites, etc.) that enter waterbodies from sources other than the end of a pipe. Section 404 of the Act requires authorization from the Secretary of the Army, acting through the USACE, for the discharge of dredged or fill material into waters of the United States.

RIVERS AND HARBORS ACT OF 1899

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through USACE, for the construction of any structure in or over any navigable water 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. Any structures placed in or over navigable waters, such as pilings, piers, or bridge abutments up to the mean high water (MHW) line, are regulated pursuant to this Act.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 USC §§ 1801 TO 1883)

Section 305(b)(2)-(4) of the Magnuson-Stevens Fishery Conservation and Management Act outlines the process for the National Oceanic and Atmospheric Administration (NOAA) Fisheries 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 EFH. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC §1802[10]).

Adverse impacts on EFH, as defined in 50 CFR 600.910(A), include any impact that reduces the quality and/or quantity of the EFH and may include:

- Direct impacts, such as physical disruption or the release of contaminants;
- Indirect impacts, such as the loss of prey or reduction in the fecundity (number of offspring produced) of a managed species; and
- Site-specific or habitat-wide impacts that may include individual, cumulative, or synergetic consequences of a federal action.

MIGRATORY BIRD TREATY ACT (16 USC §§ 703 TO 712)

The Migratory Bird Treaty Act states that, unless permitted, it is unlawful to pursue, hunt, take, capture, kill, or sell any of the species listed in Code of Federal Regulations Title 50 §10.13. Over 800 species are currently protected under the Act.

ENDANGERED SPECIES ACT OF 1973 (16 USC §§ 1531 TO 1544)

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

FISH AND WILDLIFE COORDINATION ACT (PL 85-624; 16 USC 661-667D)

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

NEW YORK STATE

ENDANGERED AND THREATENED SPECIES OF FISH AND WILDLIFE; SPECIES OF SPECIAL CONCERN NEW YORK ENVIRONMENTAL CONSERVATION LAW [ECL], SECTIONS

11-0535[1]-[2], 11-0536[2], [4], IMPLEMENTING REGULATIONS 6 NEW YORK CODE OF RULES AND REGULATIONS [NYCRR] PART 182)

These regulations prohibit the taking, import, transport, possession, or selling of any endangered or threatened species of fish or wildlife, or any hide, or other part of these species as listed in 6 NYCRR § 182.6, and the adverse modification of occupied habitat of endangered or threatened species without authorization from DEC.

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

The Protection of Waters Permit Program regulates activities that affect surface waters (streams, lakes, and ponds) of New York State. Surface water and groundwater quality standards and effluent limitations in New York State are regulated pursuant to 6 NYCRR Parts 701 and 703. Part 701, Classifications–Surface Waters and Groundwater, assigns specific categories to New York waters. These standards establish the designated uses to be achieved and specify the water quality criteria necessary to protect surface waters.

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) (ECL ARTICLE 3, TITLE 3; ARTICLE 15; ARTICLE 17, TITLES 3, 5, 7, 8; ARTICLE 21; ARTICLE 70, TITLE 1; ARTICLE 71, TITLE 19; IMPLEMENTING REGULATIONS 6 NYCRR PART 750)

Title 8 of ECL Article 17 authorizes the creation of SPDES to regulate discharges to New York State's waters. Activities requiring a SPDES permit include point source discharges of wastewater into surface or groundwater of the State, including the intake and discharge of water for cooling purposes, constructing or operating a disposal system, discharge of stormwater runoff, and construction activities that disturb one or more acres.

TIDAL WETLANDS ACT (ECL ARTICLE 25, 6 NYCRR PART 661)

Tidal wetland regulations apply anywhere tidal inundation occurs on a daily, monthly, or intermittent basis. In New York, tidal wetlands occur along the tidal waters of the Hudson River up to the salt line and along the saltwater shores, bays, inlets, canals, and estuaries of Long Island, New York City, and Westchester County. Tidal wetlands within the East River are present within and adjacent to the Project Area. DEC administers the tidal wetlands regulatory program and the mapping of the State's tidal wetlands. A permit is required for activities that would alter DEC mapped tidal wetlands or tidal wetland adjacent area (TWAA).

GRANTS OF LANDS UNDER WATER (PUBLIC LANDS LAW, SECTION 75)

Underwater lands, unless otherwise granted, are held in trust for the people of the State of New York and managed by the Office of General Services. Section 75 of the Public Lands Law authorizes grants, leases, easements, and lesser interests, including permits, for the use of state-owned land underwater consistent with the public interest in the use of state-owned lands underwater for purposes of navigation, commerce, fishing, bathing, and recreation; environmental protection; and access to the navigable waters of the state; with due regard for the need of affected owners of private property to safeguard their property. Permission may be required to build on these lands, including docks, boathouses, or marinas, or to install utilities over or through such lands.

NEW YORK CITY

TITLE 56 CHAPTER 5 OF THE RULES OF NEW YORK CITY, NYC PARKS

The Title 5 Chapter 56 Rules require the review and approval of tree removals and restitution for trees under the jurisdiction of NYC Parks. NYC Parks has jurisdiction over trees growing in the public right-of-way, including trees along streets and parkways, and in City parks. NYC Parks Forestry Division evaluates the trees proposed for removal and determines the restitution value.

In addition to the Rules, work within 50-feet of a street or park tree requires a Tree Work Permit from NYC Parks prior to the start of construction to ensure measures such as tree protection are made to avoid unsafe or hazardous conditions that may be detrimental to any City tree.

LOCAL LAW 15 (INT. NO. 1482-B)

Local Law 15 of 2020 amended Section 28-101.4.3 of the Administrative Code of the City of New York to require all new construction and renovation projects (where glazing is to be replaced) to use bird-friendly materials. Local Law 15 also amends Section 1402.1 of the New York City Building Code by adding bird-friendly building design and construction requirements. The law applies to all projects filed on or after January 10, 2021.

D. METHODOLOGY

STUDY AREA

The study area for the natural resources assessment was generally determined to be the Project Area, an approximately 54-block area in the vicinity of Long Island City's East River Waterfront in Queens, New York, as shown in Figures 1-1 and 1-2 in Chapter 1, "Project Description." The Project Area is generally bounded by the midblock between 39th Avenue and 40th Avenue, between 21st Street and 23rd Street, and Queens Plaza South to the north, the East River, Anable Basin and 5th Street to the west, 47th Avenue, 46th Avenue, 46th Road, and the midblock between 44th Drive and 45th Avenue to the south, and 11th Street, 23rd Street, 24th Street, and the midblock between 24th Street and Crescent Street to the east. The study area is primarily a highly developed and disturbed urban environment with paved surfaces, urban buildings, urban vacant lots, street tree pits, and narrow, landscaped greenspaces. The study area for threatened, endangered, and special concern species and significant natural communities is the Project Area and the surrounding 0.5-mile area. The study area for aquatic resources includes the East River and Anable Basin within and adjacent to the Project Area.

EXISTING CONDITIONS

Existing conditions in the study area were determined based on information from the following databases and resources:

- DEC Environmental Resource Mapper, tidal wetland maps, 2000-2005 Breeding Birds Atlas Results for Block 5851, 2020-2024 Breeding Bird Atlas results for the Central Park SW and Brooklyn NY United States Geological Survey (USGS) Quadrangles, and Herp Atlas Project results for the Brooklyn and Central Park USGS Quadrangles;
- NOAA Fisheries EFH Mapper and Endangered Species Act (ESA) Section 7 Mapper;
- U.S. Environmental Protection Agency (EPA) "How's My Waterway" analysis tool;
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapper and Information for Planning and Consultation (IPaC) System list of federally endangered, threatened, proposed, and candidate species and list of migratory birds (accessed April 16, 2025);
- Federal Emergency Management Agency (FEMA) preliminary Flood Insurance Rate Maps (FIRMs);
- New York City Department of Environmental Protection (DEP) Harbor Survey water quality data;

- New York State Environmental Assessment Form (EAF) Mapper for information about rare, threatened, endangered, and special concern species and significant natural communities (accessed April 16, 2025); and
- Site reconnaissance conducted by AKRF ecologists within the study area on January 15, 2025.

THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

In the future without the Proposed Actions (No Action condition), the identified projected development sites are assumed to either remain unchanged from existing conditions or become occupied and/or redeveloped as-of-right under existing zoning. It is expected that there would be no improvements to the shoreline or waterfront under the No Action condition. It is anticipated that under the No Action condition, the existing natural resources available within the study area would be expected to remain unchanged.

THE FUTURE WITH THE PROPOSED ACTIONS (WITH ACTION CONDITION)

The Proposed Actions would allow for the development of new uses and higher densities at the projected and potential development sites (see Figure 1-11 in Chapter 1, "Project Description)." The With Action condition would rezone portions of the study area to allow for the development of residential units in areas that previously only allowed manufacturing or limited housing production. The With Action condition would enhance the flexibility for permitted commercial and manufacturing uses within the Project Area. It would develop an updated Waterfront Access Plan (WAP), which would expand the open space network along the waterfront and establish stricter resiliency measures along the waterfront, helping to protect the neighborhood from coastal flooding events. It is anticipated that the 52 projected development sites are considered more likely to be developed within the 10-year analysis period for the Proposed Actions (i.e., by the analysis year 2035), while 15 potential sites are considered less likely to be developed over the approximately 10-year analysis period.

The Proposed Action's potential impacts to natural resources were evaluated by considering:

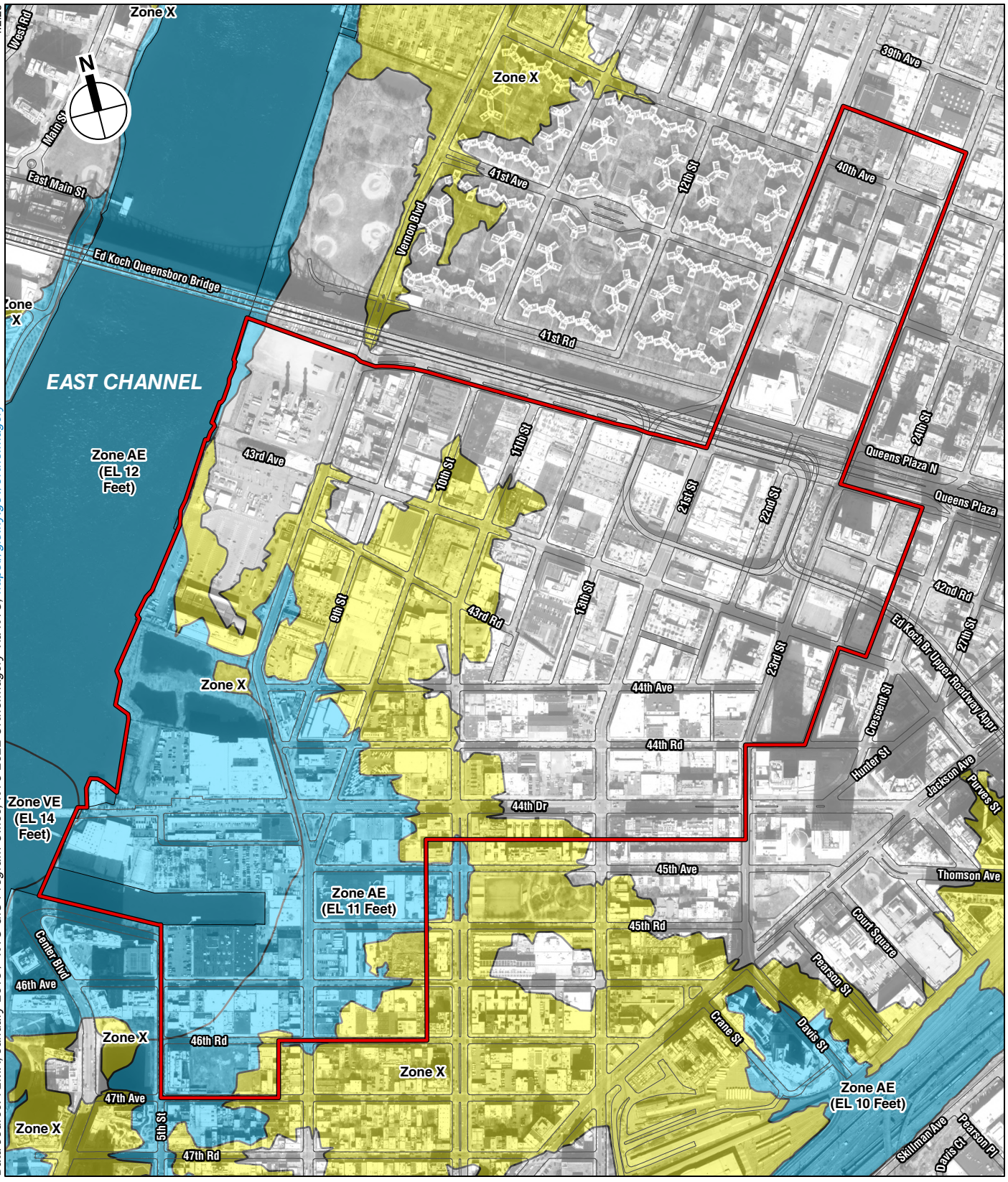
- Direct and indirect impacts on groundwater and floodplain resources within the study area;
- Direct and indirect impacts on the East River, Anable Basin, and tidal wetlands within the study area; and
- Direct and indirect impacts on ecological communities and the wildlife using these habitats wildlife, including resident or migratory species, endangered, threatened, or rare animal species or species of special concern.

E. EXISTING CONDITIONS

FLOODPLAINS

New York City flood conditions include local or street flooding (e.g., flooding due to short-term, high-intensity rain events coupled with inadequate drainage), fluvial flooding (e.g., rivers and streams overflowing their banks), and coastal flooding (e.g., high tides or winds that cause flooding along the City's tidal zones). In New York City, coastal flooding is the primary cause of areawide flooding (FEMA 2013). The East River is tidal and the floodplains within the study area are controlled by tidal conditions and affected by coastal flooding caused by long- and short-wave surges.

FEMA released preliminary FIRMs on January 30, 2015, that are subject to future adoption of final FIRMs. The preliminary FIRMs represent the best available flood hazard data. FEMA encourages communities to use the preliminary FIRMs when making decisions regarding floodplain management until final maps are completed. As shown in **Figure 9-1**, portions of the study area fall within the 1 percent annual chance flood hazard (Zone AE and Zone VE; 100-year floodplain)



FEMA Preliminary FIRM 2015

LONG ISLAND CITY NEIGHBORHOOD PLAN

Figure 9-1

and 0.2 percent annual chance flood hazard (Zone X; 500-year floodplain). The Base Flood Elevations (BFE) on **Figure 9-1** identify the elevation of flooding for the 1 percent annual chance floodplains.

Based on the 2015 FEMA preliminary FIRMs, portions of the study area are in Zone AE with BFEs ranging from +10 feet to +12 feet North American Vertical Datum of 1988 (NAVD88). The +10-foot BFE is located southeast of the Project Area, in the vicinity of Skillman Avenue, with higher BFEs mapped closer to the East River. A small portion of the study area to the southeast of the Project Area, along the shoreline of the East River, is in Zone VE (the area of high flood risk subject to inundation by the 1 percent annual chance flood with additional hazards due to storm induced velocity wave action) with a BFE of +14 feet NAVD88. Zone VE marks the area exposed to wave heights of 3 feet or more.

GROUNDWATER

As described in Chapter 10, "Hazardous Materials," groundwater in the study area is expected to be encountered at just below grade to approximately 20 feet below grade (generally a few feet above sea level) and expected to flow in a generally westerly and/or northwesterly direction toward the East River and Anable Basin. Actual groundwater flow and depth may be affected locally by other factors, such as bulkheads and utilities. The study area is located within the limits of the EPA-designated Brooklyn-Queens sole source aquifer. Groundwater is no longer used as a potable drinking water supply in New York City. The Groundwater Supply System was a group of privately owned wells in southeastern Queens that was obtained by the City in 1996; in 2007, the System stopped distributing water to New York residents. Since 2007, there have been no wells in operation in New York City (DEP 2024a). The New York City Water Supply System consists of the Catskill/Delaware Water Supply System and Croton Water Supply System to supply drinking water to the City (DEP 2024b).

WETLANDS

Within the study area, the East River is mapped by NWI as an estuarine subtidal wetland with an unconsolidated bottom (E1UBL) and Anable Basin is mapped as an excavated estuarine subtidal wetland with an unconsolidated bottom (E1UBLx) (see **Figure 9-2**) The East River and Anable Basin are mapped by DEC as littoral zone (see **Figure 9-3**). The East River would be regulated by USACE as a water of the United States (WOTUS), but USACE would not regulate the East River as a wetland because it does not fit the definition[1] of a wetland under Section 404 of the Clean Water Act, due to the lack of vegetation.

AQUATIC RESOURCES

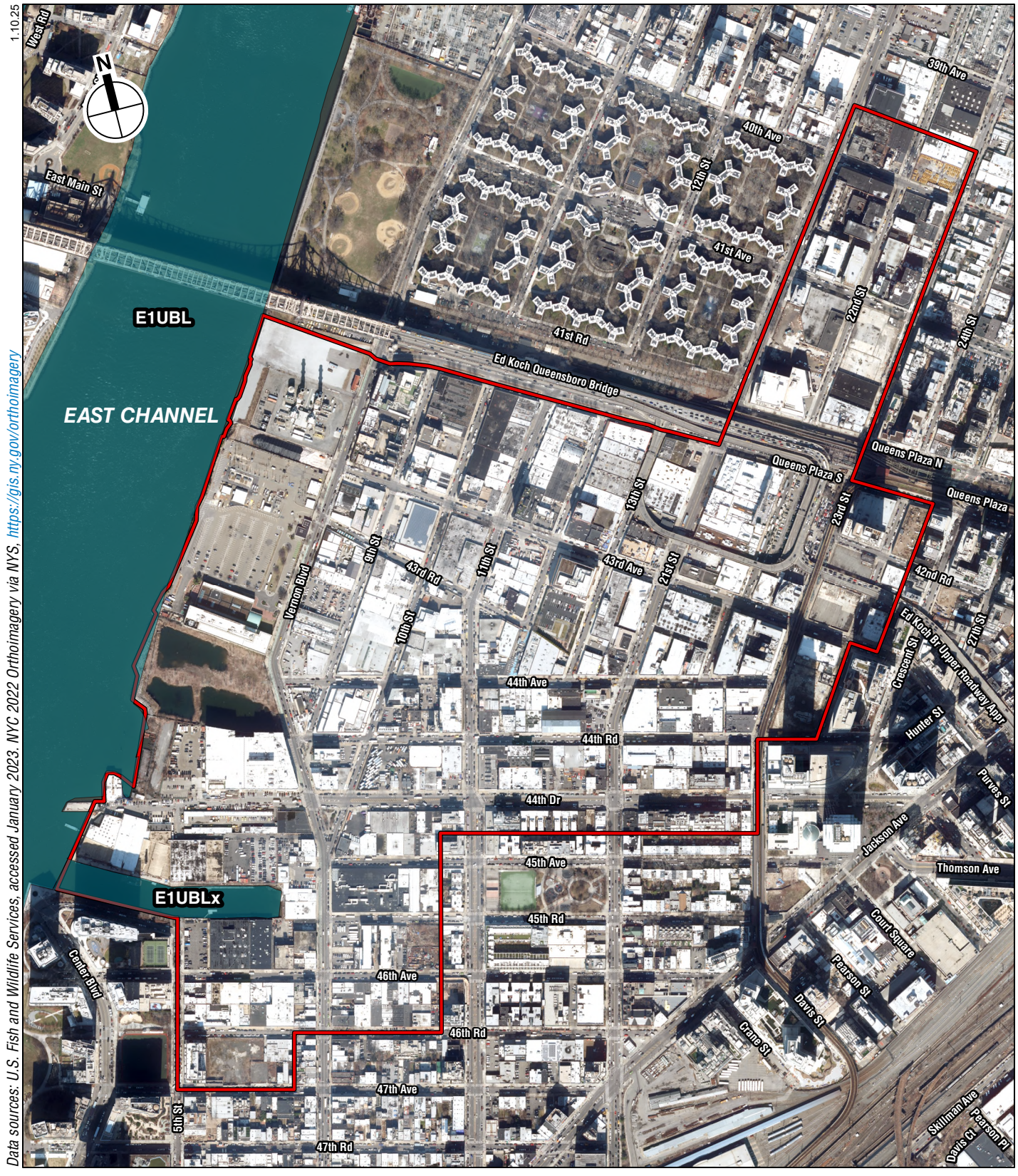
SURFACE WATERS

The surface waters within the study area include the lower East River and Anable Basin, an approximately 140-foot-wide and 1000-foot-long artificial inlet of the East River cut into the industrial shoreline of Long Island City. The Project Area is directly east of Roosevelt Island, and the East Channel of the East River within the study area ranges in width from approximately 800 feet to 1100 feet, with depths ranging from approximately 23 to 30 feet at Mean Lower Low Water (MLLW) (USACE 2023). The East River is a tidal strait connecting Long Island Sound to the Upper New York Bay with an average tidal range between 4 and 5 feet (NOAA 2024). The salinity of the East River varies daily with the tidal cycle and seasonally with the volume of freshwater entering

[1] As defined under Section 404 of the Clean Water Act, wetlands that would be regulated by USACE "are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."



DEC Tidal Wetlands



NWI Wetlands

from the upper reaches of the watershed including from the Hudson River by way of the Harlem River.

DEC classifies the East River and Anable Basin as Class I saline surface waters (see **Figure 9-4**). Under 6 NYCRR Part 701, the best usages of Class I waters are secondary contact recreation and fishing, with water quality suitable for fish, shellfish, and wildlife propagation and survival.

WATER QUALITY

The Final 2020-2022 Section 303(d) List of Impaired Waters lists the lower East River as impaired for dissolved oxygen (DO), garbage and refuse, and polychlorinated biphenyls (PCBs) and other toxins (DEC 2022). The City of New York monitors New York Harbor water quality through its Harbor Survey Program conducted by DEP. Harbor Survey data shows that water quality has improved significantly throughout the Harbor Estuary since the 1970s following the upgrade of both City-operated and regional wastewater treatment plants. These water quality improvements include both reductions in fecal and total coliform and significant increases in DO concentrations.

DEP monitors water quality in New York Harbor, including the East River, through its annual Harbor Survey. The DEP Harbor Survey water quality monitoring station nearest to the study area is Station E2 in the lower East River. The results of the Station E2 data analysis for the years 2013 through 2023 are shown in **Table 9-1**.

Table 9-1
DEP Harbor Survey Water Quality Data for Sampling Station E2 (2013 to 2023)

Parameter [Use Class I Standard]	Surface Waters			Bottom Waters		
	Min	Max	Avg	Min	Max	Avg
Temperature (F) [*No standard*]	34.2	77.9	64.6	33.8	77.4	64.4
Salinity (psu) [*No standard*]	5.9	28.0	22.4	8.1	28.1	22.7
Fecal coliform (colonies per 100 mL) [*Monthly geometric mean less than or equal to 2,000 colonies/100mL from five or more samples*]	1	10,200	217	–	–	–
Dissolved oxygen (mg/L) [*Never less than 4 mg/L*]	3.3	12.8	6.6	3.4	14.1	6.5
Secchi transparency (ft) [*No standard*]	0.5	8.0	3.5	–	–	–
Chlorophyll-*a* (µg/L) [*No standard*]	0.4	72.1	5.2	–	–	–

Notes:
psu = practical salinity unit
Compliance with the fecal coliform standard is based on a monthly geometric mean (for which the data are not available to calculate) and not based on the maximum fecal coliform value presented here, which is the maximum fecal coliform value obtained during weekly sampling events.
Source: DEP 2024 Harbor Water Quality Data.

Water quality at Station E2 in the lower East River generally meets the standards for Class I waters, except for dissolved oxygen. Surface water temperatures ranged from about 34°F to 78°F with an average of about 65°F, with comparable temperatures in bottom waters. Salinity levels recorded near Station E2 in the lower East River ranged from 5.9 to 28 psu with an average of 22.4 psu at the surface and 22.7 psu at the bottom. Average dissolved oxygen levels ranged from 3.3 mg/L to 12.8 mg/L, with an average of 6.6 mg/L in surface waters, and from 3.4 mg/L to 14.1 mg/L, with an average of 6.5 mg/L in bottom waters. Dissolved oxygen levels fell below the 4.0 mg/L standard in just four surface water samples and eight bottom water samples recorded between 2013 to 2023. Average fecal coliform levels ranged from 1 to 10,200 cfu/100mL with an



DEC Surface Water Classification

average of 217 cfu/100mL at Station E2. Data were not sufficient to determine compliance with the local fecal coliform standard;[2] however, DEP (2022) indicates that fecal coliform levels have remained well below DEC standards for recreational use throughout the Harbor since the early 1990s. Secchi transparency, a measure of surface water clarity, averaged 3.5 feet over the sampling period and is typical of estuarine waterbodies. Though New York State does not currently have a set water quality standard for Secchi transparency, high Secchi transparency is generally considered as depths of 5 feet or greater, while low Secchi transparency is a depth of 3 feet or less (DEP 2022). Chlorophyll-a, an indicator of excess nutrients, averaged 5.2 µg/L over the sampling period which is well below the threshold for eutrophication of 20 µg/L.

SEDIMENT QUALITY

Sediments throughout the New York/New Jersey Harbor Estuary have a long history of contamination from industrial uses. Contaminants found throughout the New York/New Jersey Harbor Estuary include pesticides, such as chlordane and dichlorodiphenyltrichloroethane (DDT), metals such as mercury, cadmium, lead, and copper, PCBs, and polycyclic aromatic hydrocarbons (PAHs) (Rohmann and Lilienthal 1987). 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. In addition, tidal resuspension, estuarine circulation, burial of contaminated sediments by “cleaner” sediments and sediment resuspension have been found to control the long-term trapping of particle-bound contaminants in the New York/New Jersey Harbor Estuary and lower the surface-level contaminated sediments over time. Historic contamination has been found to be the more significant source of these contaminants than current external sources (Lodge et al. 2015). While the sediments in the lower East River are likely contaminated, the levels of most sediment contaminants (e.g., dioxin, DDT, PCBs, and mercury) have decreased on average by an order of magnitude over the past several decades mainly due to control measures implemented through the Clean Water Act (Steinberg et al. 2002, 2004).

AQUATIC BIOTA

The New York/New Jersey Harbor Estuary, including the lower East River, supports a diverse and productive aquatic community of over 100 species of finfish, more than 100 invertebrate species, and a variety of phytoplankton and zooplankton. The following sections summarize the aquatic biota of the study area in the lower East River.

Primary Producers

Phytoplankton

Phytoplankton are microscopic plants whose movements in the system are largely governed by prevailing tides and currents. Light penetration, turbidity, and nutrient concentrations are important factors in determining phytoplankton productivity and biomass. Diatoms such as *Skeletonema costatum* and *Thalassiosira* spp. generally dominate the phytoplankton community in the study area, with lesser contributions from dinoflagellates and green algae (Brosnan and O’Shea 1995). From 1991 to 2000, DEP documented 107 phytoplankton taxa in the East River, more than any other sub-region of New York Harbor. The most frequently collected species were *Nannochloris atomus*, *Skeletonema costatum*, *Rhizosolenia delicatula*, and *Prorccentrum redfieldii* (DEP 2007).

[2] DEC’s standard for fecal coliform requires a minimum of 5 samples per month to determine whether a site meets the monthly geometric mean designated as the standard for the appropriate water quality classification. Between 2013 to 2023, samples were taken one to five times per month. However, within that timeframe, there were only five instances where the minimum five samples were collected within a one-month period.

Submerged Aquatic Vegetation and Benthic Macroalgae

Submerged aquatic vegetation (SAV) is rooted aquatic plants that are often found in shallow water zones and provide nursery and refuge habitat for fish. Limited light penetration, extensive shoreline development, and swift currents limit the growth of SAV within the Harbor Estuary, including the lower East River. As of September 2022, there is no documented SAV in the East River, and SAV has not been observed in the study area (USACE 2022, NYSDEC 2018).

Zooplankton

Zooplankton are primary grazers on phytoplankton and detritus material and are preyed upon by organisms of higher trophic levels. The higher-level consumers of zooplankton typically include forage fish, such as bay anchovy (*Anchoa mitchilli*), as well as commercially and recreationally important species, such as striped bass (*Morone saxatilis*) and white perch (*Morone americana*) during their early life stages. Crustacean taxa are the most abundant group of zooplankton throughout New York Harbor (Stepien et al. 1981, Lonsdale and Cosper 1994). The most dominant species collected in the Harbor Estuary include the copepods *Acartia tonsa*, *Acartia hudsonica*, *Eurytemora affinis*, and *Temora longicornis*, with each species being prevalent in certain seasons (Stepien et al. 1981, Lonsdale and Cosper 1994, Perlmutter 1971, Lauer 1971, Hazen and Sawyer 1983). Sampling from 1991 to 2000 by DEP found 20 zooplankton taxa in the East River; the most dominant taxa were *Tintinnopsis* spp., Nauplius of copepods, and *Eutreptia* spp. (DEP 2007).

Benthic Invertebrates

Benthic invertebrates inhabit the sediments and surfaces of submerged objects, such as rock pilings or debris, and are a food source for fish and waterfowl throughout New York Harbor. Common groups collected in the Harbor Estuary, including the lower East River, include aquatic earthworms (oligochaetes), segmented worms (polychaetes), snails (gastropods), bivalves, barnacles, cumaceans, amphipods, isopods, crabs, and shrimp (EEA 1988, EA 1990, Coastal 1987, PBS&J 1998). Benthic and epibenthic sampling by DEP in the lower East River documented nine benthic macroinvertebrate taxa, including annelids, arthropods, and mollusks. The annelid *Haploscoloplos robustus* and mollusks *Melampus bidentatus* and *Mulinia lateralis* were found in the highest densities (DEP 2007).

Fish

The East River is 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 New York–New Jersey Harbor Estuary that support marine fish, estuarine fish, anadromous fish (i.e., fish that migrate up rivers from the sea to breed in freshwater), and catadromous fish (i.e., fish that live in freshwater but migrate to marine waters to breed). Fish species such as hogchoker (*Tinectes maculates*), tomcod (*Microgadus tomcod*), winter flounder (*Psuedopleuronectes americanus*), white perch, bay anchovy, Atlantic menhaden (*Brevoortia tyrannus*), alewife (*Alosa pseudoharengus*), American eel (*Anguilla rostrata*), porgie (*Sparidae*), and striped bass are commonly found within the lower East River during at least one life stage (DEP 2007, USACE 2022). Atlantic silverside (*Menidia menidia*), mummichog (*Fundulus heteroclitus*), northern pipefish (*Syngnathus fuscus*), striped killifish (*Fundulus majalis*), and three-spined stickleback (*Gasterosteus aculeatus*) are common to the East River year-round (NOAA 2001, NYSERDA 2011). Among breeding finfish of the lower East River, ichthyoplankton tow sampling (DEP 2007) found egg density to be greatest for cunner (*Tautogolabrus adspersus*; 337 eggs/100m^3), followed by tautog (*Tautoga onitis*; 30 eggs/100m^3). Other species' eggs that were found in relatively low abundance (fewer than 10 eggs/100m^3) included bay anchovy, herrings (Clupeidae), fourbeard rockling (*Enchelyopus cimbrius*), wrasses (Labridae), North American searobins (*Prionotus* spp.), and windowpane flounder (*Scophthalmus aquosus*). Winter flounder was the most abundant species collected at the larval stage. Other larvae found included American sand lance (*Ammodytes americanus*), bay anchovy, blennies (Blenniidae), Atlantic

menhaden, herrings, fourbeard rockling, true gobies (Gobiidae), sculpins (*Myoxocephalus* spp.), windowpane flounder, northern pipefish (*Syngnathus fuscus*), and tautog (DEP 2007).

ESSENTIAL FISH HABITAT

NOAA Fisheries defines EFH as waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. **Table 9-2** lists the species and life stages of fish NOAA Fisheries has identified as having EFH in the lower East River within the study area.

Table 9-2
Essential Fish Habitat Designated Species in the Study Area

Species	Eggs	Larvae	Juveniles	Adults
Atlantic butterfish (*Peprilus triacanthus*)		X		
Atlantic herring (*Clupea harengus*)		X	X	X
Bluefish (*Pomatomus saltatrix*)			X	X
Clearnose skate (*Raja eglanteria*)			X	X
Little skate (*Leucoraja erinacea*)			X	X
Longfin inshore squid (*Doryteuthis pealeii)*	X			
Red hake (*Urophycis chuss*)	X	X	X	X
Summer flounder (*Paralicthys dentatus*)		X	X	X
Windowpane flounder (*Scophthalmus aquosus*)	X	X	X	X
Winter flounder (*Pleuronectes americanus*)	X	X	X	X
Winter skate (*Leucoraja ocellata*)			X	X

Source: NOAA Fisheries Essential Fish Habitat Mapper (see Appendix F). Available from: https://www.habitat.noaa.gov/apps/efhmapper/ (Accessed December 11, 2024).

TERRESTRIAL RESOURCES

ECOLOGICAL COMMUNITIES

Ecological communities in the study area are primarily limited human-made landscapes, including urban buildings and lots, paved roads, riprap/artificial shorelines, and narrow greenspaces. The ecological communities in the study area are best described by Edinger et al. (2014) as terrestrial cultural[3] communities and include paved road/path,[4] urban structure exterior,[5] urban vacant lot,[6]

[3] Edinger et al. 2014 defines the terrestrial cultural subsystem of ecological communities as "communities that are either created and maintained by human activities or are modified by human influence to such a degree that the physical conformation of the substrate, or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence."

[4] Edinger et al. 2014 defines the paved road/path ecological community as "a road or pathway that is paved with asphalt, concrete, brick, stone, etc. There may be sparse vegetation rooted in cracks in the paved surface."

[5] Edinger et al. 2014 defines the urban structure exterior ecological community as "the exterior surfaces of metal, wood, or concrete structures (such as commercial buildings, apartment buildings, houses, bridges) or any structural surface composed of inorganic materials (glass, plastics, etc.) in an urban or densely populated suburban areas. These sites may be sparsely vegetated with lichens, mosses, and terrestrial algae; occasionally vascular plants may grow in cracks. Nooks and crannies may provide nesting habitat for birds and insects, and roosting sites for bats."

[6] Edinger et al. 2014 defines the urban vacant lot ecological community 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."

flower/herb garden,[7] riprap/artificial shoreline[8], and mowed lawn with trees.[9] Most of the study area is occupied by buildings and impervious surfaces, with limited vegetated ecological communities. Projected Development Site 69 is an approximately 5-acre urban vacant lot along the East River that has been cleared for development; there are portions of the site landward of the stabilized shoreline that have standing water.See **Figure 9-5** for a key to the photographs and **Figure 9-6** for photographs. The mowed lawn with trees communities within the study area are found in narrow vegetated strips along the East River Waterfront, in parkland medians, and in landscaped spaces on commercial properties. Dominant vegetation in the mowed lawn with trees ecological community includes honeylocust (*Gleditsia triacanthos*), Callery pear (*Pyrus calleryana),* pin oak (*Quercus palustris*), littleleaf linden (*Tilia cordata*), ginkgo (*Ginkgo biloba*), and common boxwood (*Buxus sempervirens*). The flower/herb garden ecological community is present in narrow greenspaces and the landscaped Gordon Triangle on 44th Drive between Vernon Boulevard and 10th Street, and dominant vegetation included crape myrtle (*Lagerstroemia indica*), ornamental cabbage (*Brassica oleracea*), and purple coneflower (*Echinacea purpurea*). The urban vacant lot ecological community is present at undeveloped sites throughout the Project Area, including Projected Development Site 69 and Site 9. Dominant vegetation within the urban vacant lot communities included tree of heaven (*Ailanthus altissima*), white mulberry (*Morus alba*), and common mugwort (*Artemisia vulgaris*). Vegetation observed throughout the Project Area during the January 15, 2025 site reconnaissance is included in **Table 9-3**.

Table 9-3
Vegetation Observed in the Study Area

Common Name	Scientific Name	Stratum
American arborvitae	*Thuja occidentalis*	Tree
American elm	*Ulmus americana*	Tree
American holly	*Ilex opaca*	Tree
Amur maackia	*Maackia amurensis*	Tree
Callery pear	*Pyrus calleryana*	Tree
Cockspur hawthorn	*Crataegus crus-galli*	Tree
Crabapple	*Malus sp.*	Tree
Eastern cottonwood	*Populus deltoides*	Tree
Eastern red cedar	*Juniperus virginiana*	Tree
Eastern redbud	*Cercis canadensis*	Tree
Ginkgo	*Ginkgo biloba*	Tree
Honeylocust	*Gleditsia triacanthos*	Tree
Japanese pagoda tree	*Styphnolobium japonicum*	Tree
Japanese tree lilac	*Syringa reticulata*	Tree
Japanese zelkova	*Zelkova serrata*	Tree
Kwanzan cherry	*Prunus serrulata 'Kanzan'*	Tree
Littleleaf linden	*Tilia cordata*	Tree
Lombardy poplar	*Populus nigra*	Tree
London planetree	*Platanus × acerifolia*	Tree
Pin oak	*Quercus palustris*	Tree
Princess tree	*Paulownia tomentosa*	Tree

[7] Edinger et al. 2014 defines the flower/herb garden ecological community as “residential, commercial, or horticultural land cultivated for the production of ornamental herbs and shrubs.”

[8] Edinger et al. 2014 defines the riprap/artificial shore ecological community as “a lake/pond shore, or stream/river shore that is covered with coarse stones, cobbles, concrete slabs, gabions, etc. placed for erosion control.”

[9] Edinger et al. 2014 defines the mowed lawn with trees ecological community as “residential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and forbs, and it is shaded by at least 30 percent cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50 percent cover. The groundcover is maintained by mowing and broadleaf herbicide application.”

1.16.25



0 1,000 FEET

Project Area

Photograph Reference Number and View Direction



Key to Photographs



View of East River and Anable Basin shorelines and urban structure exterior ecological community in Projected Development Site 63, facing northeast. January 15, 2025. **1**



View of Anable Basin and shoreline along Projected Development Sites 63 and 65, facing east. January 15, 2025. **2**



View of East River shoreline, facing northeast. The urban structure exterior ecological community in Project Development Site 67 and urban vacant lot ecological community in Projected Development Site 69 are visible. January 15, 2025. **3**



View of East River shoreline and Projected Development Site 67, facing northeast. January 15, 2025. **4**



View of the urban vacant lot ecological community present in Projected Development Site 69, facing west. January 15, 2025. **5**



View of the East River shoreline in the vicinity of the Queensboro Bridge, facing south. January 15, 2025. **6**



View of the flower/herb garden ecological community in the Gordon Triangle, facing north. January 15, 2025. **7**



View of the mowed lawn with trees ecological community on 13th Street, facing south. January 15, 2025. **8**



View of the paved road/path and urban structure exterior ecological communities on 22nd Street, facing south. January 15, 2025. 9

Table 9-3
Vegetation Observed in the Study Area

Common Name	Scientific Name	Stratum
Red maple	*Acer rubrum*	Tree
Siberian elm	*Ulmus pumila*	Tree
Silver linden	*Tilia tomentosa*	Tree
Sweetgum	*Liquidambar styraciflua*	Tree
Tree of Heaven	*Ailanthus altissima*	Tree
White mulberry	*Morus alba*	Tree
Yew	*Taxus baccata*	Tree
Common boxwood	*Buxus sempervirens*	Shrub
Crape myrtle	*Lagerstroemia indica*	Shrub
Hydrangea sp.	*Hydrangea sp.*	Shrub
Japanese euonymus	*Euonymus japonicus*	Shrub
Japanese rose	*Rosa rugosa*	Shrub
Common crabgrass	*Digitaria sanguinalis*	Herb
Common lavender	*Lavandula angustifolia*	Herb
Common mugwort	*Artemisia vulgaris*	Herb
Common reed	*Phragmites australis*	Herb
English plantain	*Plantago lanceolata*	Herb
Goldenrod sp.	*Solidago sp.*	Herb
Japanese knotweed	*Fallopia japonica*	Herb
Lily turf	*Liriope muscari*	Herb
Marginal wood fern	*Dryopteris marginalis*	Herb
Ornamental cabbage	*Brassica oleracea*	Herb
Purple coneflower	*Echinacea purpurea*	Herb
Asiatic bittersweet	*Celastrus orbiculatus*	Vine
English ivy	*Hedera helix*	Vine
Poison ivy	*Toxicodendron radicans*	Vine
Porcelain berry	*Ampelopsis brevipedunculata*	Vine
Virginia creeper	*Parthenocissus quinquefolia*	Vine

Source: Site reconnaissance on January 15, 2025.

The ecological communities present in the study area are common to New York City. The highly developed conditions and limited vegetation in the terrestrial study area provide habitat for disturbance-tolerant, generalist wildlife species, nearly all of which are non-native.

WILDLIFE

The study area comprises a highly developed and disturbed urban area and wildlife habitat is limited. As such, primarily urban-adapted, generalist species that can tolerate developed environments and human activity are present, although the bordering waters of the East River would have potential to provide habitat for a larger variety of wildlife. A more detailed description of potential birds, reptiles and amphibians, and mammals in the study area is provided below.

Birds

The New York State Breeding Bird Atlas (BBA) is a periodic census of the distribution of breeding birds across New York State. The census was last completed from 2000 to 2005, and a recent census was conducted from 2020 to 2024. The 2000 to 2005 census documented a total of 44 species as confirmed or probable/possible breeding birds in Block 5851C, which contains the study area. The ongoing Third BBA identified 138 confirmed or probable/possible breeding birds within the Brooklyn NW and Central Park SW survey blocks in which the study area is located. **Table 9-4** lists the species identified in both censuses as of November 18, 2024. The survey blocks, which are significantly larger than the study area, comprise diverse habitat types and contain larger, less disturbed areas (e.g., Riverside Park, Central Park, Mill Rock Park, and

Corlears Hook Park), with sufficient habitat to support these species. Bird species considered most likely to use the limited, and highly disturbed, habitat available within the study area for breeding purposes include European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*) and rock pigeon (*Columba livia*). Bird species observed during the January 15, 2025 site reconnaissance are included in bold type in **Table 9-4** below. It is unlikely that the study area contains suitable habitat for bald eagle,

Table 9-4
Birds Documented during the NYS 2000-2005 Second BBA (Block 5851C) and 2020-2024 Third Breeding Bird Atlas (Brooklyn NW & Central Park SW)

Common Name	Scientific Name	2000-2005	2020-2024
Red-winged blackbird	*Agelaius phoeniceus*	X	X
Wood duck	*Aix sponsa*		X
Mallard	***Anas platyrhynchos***	X	X
American black duck	*Anas rubripes*		X
Ruby-throated hummingbird	*Archilochus colubris*		X
Great egret	*Ardea alba*		X
Great blue heron	*Ardea herodias*		X
Cooper's hawk ^	*Astur cooperii* ^		X
Tufted titmouse	*Baeolophus bicolor*	X	X
Cedar waxwing	*Bombycilla cedrorum*	X	X
Brant	*Branta bernicla*		X
Canada goose	***Branta canadensis***	X	X
Great horned owl	*Bubo virginianus*		X
Bufflehead	*Bucephala albeola*		X
Red-tailed hawk	*Buteo jamaicensis*	X	X
Green heron	*Butorides virescens*	X	X
Canada warbler	*Cardellina canadensis*		X
Wilson's warbler	*Cardellina pusilla*		X
Northern cardinal	*Cardinalis cardinalis*	X	X
Veery	*Catharus fuscescens*		X
Hermit thrush	*Catharus guttatus*	X	X
Gray-cheeked thrush	*Catharus minimus*		X
Swainson's thrush	*Catharus ustulatus*		X
Brown creeper	*Certhia americana*		X
Chimney swift	*Chaetura pelagica*	X	X
Northern flicker	*Colaptes auratus*	X	X
Rock pigeon	***Columba livia***	X	X
Eastern wood-pewee	*Contopus virens*	X	X
Ruby-crowned kinglet	*Corthylio calendula*		X
American crow	***Corvus brachyrhynchos***	X	X
Common raven	*Corvus corax*		X
Fish crow	*Corvus ossifragus*		X
Blue jay	*Cyanocitta cristata*	X	X
Mute swan	*Cygnus olor*	X	X
Downy woodpecker	*Dryobates pubescens*	X	X
Hairy woodpecker	*Dryobates villosus*		X
Gray catbird	*Dumetella carolinensis*	X	X
Least flycatcher	*Empidonax minimus*		X
Acadian flycatcher	*Empidonax virescens*		X
Rusty blackbird	*Euphagus carolinus*		X
Merlin	*Falco columbarius*		X
Peregrine falcon †	*Falco peregrinus †*	X	X
American kestrel	*Falco sparverius*	X	X
Red-throated Loon	*Gavia stellata*		X
Mourning warbler	*Geothlypis philadelphia*		X

Table 9-4
Birds Documented during the NYS 2000-2005 Second BBA (Block 5851C) and 2020-2024 Third Breeding Bird Atlas (Brooklyn NW & Central Park SW)

Common Name	Scientific Name	2000-2005	2020-2024
Common yellowthroat	*Geothlypis trichas*		X
House finch	*Haemorhous mexicanus*	X	X
Purple finch	*Haemorhous purpureus*		X
Bald eagle *	*Haliaeetus leucocephalus* *		X
Worm-eating warbler	*Helmitheros vermivorum*		X
Barn swallow	*Hirundo rustica*	X	X
Wood thrush	*Hylocichla mustelina*	X	X
Baltimore oriole	*Icterus galbula*	X	X
Orchard oriole	*Icterus spurius*	X	X
Dark-eyed junco	*Junco hyemalis*		X
Herring gull	***Larus argentatus***	X	
Ring-billed gull	*Larus delawarensis*		X
Great Black-backed gull	*Larus marinus*		X
American herring gull	*Larus smithsonianus*		X
Orange-crowned warbler	*Leiothlypis celata*		X
Tennessee warbler	*Leiothlypis peregrina*		X
Nashville warbler	*Leiothlypis ruficapilla*		X
Laughing gull	*Leucophaeus atricilla*		X
Hooded merganser	*Lophodytes cucullatus*		X
Gadwall	*Mareca strepera*		X
Belted kingfisher	*Megaceryle alcyon*		X
Eastern screech-owl	*Megascops asio*	X	
Red-bellied woodpecker	*Melanerpes carolinus*	X	X
Swamp sparrow	*Melospiza georgiana*		X
Lincoln's sparrow	*Melospiza lincolnii*		X
Song sparrow	*Melospiza melodia*	X	X
Red-breasted merganser	*Mergus serrator*		X
Northern mockingbird	*Mimus polyglottos*	X	X
Black-and-white warbler	*Mniotilta varia*		X
Brown-headed cowbird	*Molothrus ater*		X
Great crested flycatcher	*Myiarchus crinitus*	X	X
Double-crested cormorant	*Nannopterum auritum*	X	X
Black-crowned night heron	*Nycticorax nycticorax*		X
Ruddy duck	*Oxyura jamaicensis*		X
Osprey ^	*Pandion haliaetus* ^		X
Louisiana waterthrush	*Parkesia motacilla*		X
Northern waterthrush	*Parkesia noveboracensis*		X
House sparrow	***Passer domesticus***	X	X
Fox sparrow	*Passerella iliaca*		X
Indigo bunting	*Passerina cyanea*		X
Rose-breasted grosbeak	*Pheucticus ludovicianus*		X
Eastern towhee	*Pipilo erythrophthalmus*		X
Scarlet tanager	*Piranga olivacea*		X
Summer tanager	*Piranga rubra*		X
Black-capped chickadee	*Poecile atricapillus*		X
Blue-gray gnatcatcher	*Polioptila caerulea*		X
Prothonotary warbler	*Protonotaria citrea*		X
Common grackle	*Quiscalus quiscula*	X	X
Golden-crowned kinglet	*Regulus satrapa*		X
Eastern phoebe	*Sayornis phoebe*		X
American woodcock	*Scolopax minor*		X
Ovenbird	*Seiurus aurocapilla*		X

Table 9-4
Birds Documented during the NYS 2000-2005 Second BBA (Block 5851C) and 2020-2024 Third Breeding Bird Atlas (Brooklyn NW & Central Park SW)

Common Name	Scientific Name	2000-2005	2020-2024
Northern parula	*Setophaga americana*		X
Black-throated blue warbler	*Setophaga caerulescens*		X
Bay-breasted warbler	*Setophaga castanea*		X
Cerulean warbler ^	*Setophaga cerulea* ^		X
Hooded warbler	*Setophaga citrina*		X
Yellow-rumped warbler	*Setophaga coronata*		X
Prairie warbler	*Setophaga discolor*		X
Yellow-throated warbler	*Setophaga dominica*		X
Blackburnian warbler	*Setophaga fusca*		X
Chestnut-sided warbler	*Setophaga pensylvanica*		X
Yellow warbler	*Setophaga petechia*		X
Pine warbler	*Setophaga pinus*		X
American redstart	*Setophaga ruticilla*		X
Blackpoll warbler	*Setophaga striata*		X
Cape may warbler	*Setophaga tigrina*		X
Black-throated green warbler	*Setophaga virens*		X
Red-breasted nuthatch	*Sitta canadensis*		X
White-breasted nuthatch	*Sitta carolinensis*	X	X
Northern shoveler	*Spatula clypeata*		X
Yellow-bellied sapsucker	*Sphyrapicus varius*		X
American goldfinch	*Spinus tristis*		X
Clay-colored sparrow	*Spizella pallida*		X
Chipping sparrow	*Spizella passerina*		X
Field sparrow	*Spizella pusilla*		X
Northern Rough-winged swallow	*Stelgidopteryx serripennis*		X
Common tern *	*Sterna hirundo* *		X
European starling	***Sturnus vulgaris***	X	X
Tree swallow	*Tachycineta bicolor*	X	
Carolina wren	*Thryothorus ludovicianus*	X	X
Brown thrasher	*Toxostoma rufum*		X
House wren	*Troglodytes aedon*	X	X
Winter wren	*Troglodytes hiemalis*		X
American robin	*Turdus migratorius*	X	X
Eastern kingbird	*Tyrannus tyrannus*	X	X
Golden-winged warbler ^	*Vermivora chrysoptera* ^		X
Blue-winged warbler	*Vermivora cyanoptera*		X
Yellow-throated vireo	*Vireo flavifrons*		X
Warbling vireo	*Vireo gilvus*	X	X
White-eyed vireo	*Vireo griseus*		X
Red-eyed vireo	*Vireo olivaceus*	X	X
Blue-headed vireo	*Vireo solitarius*		X
Mourning dove	*Zenaida macroura*	X	X
White-throated sparrow	*Zonotrichia albicollis*		X
White-crowned sparrow	*Zonotrichia leucophrys*		X

Table 9-4
Birds Documented during the NYS 2000-2005 Second BBA (Block 5851C) and 2020-2024 Third Breeding Bird Atlas (Brooklyn NW & Central Park SW)

Common Name	Scientific Name	2000-2005	2020-2024

Notes:
The NYS 2020-2024 Third BBA is ongoing. Available data are uploaded by volunteer citizen scientists and occasionally reviewed by eBird regional reviewers. Survey blocks are roughly 9 square miles and are a subset of the 7.5' USGS Topo Quad in which the survey block is located (the USGS Topo Quads are broken up into six smaller blocks). The survey blocks from the Third BBA do not correlate directly with the Second Breeding BBA survey blocks. As of November 18, 2024, the Central Park SW block for the 2020-2024 BBA is considered "incomplete," while the Brooklyn NW block is "complete." Only birds identified to species and with "confirmed," "probable," or "possible" breeding evidence are included in this table.
† Indicates a state-listed endangered species.
* Indicates a state-listed threatened species.
^ Indicates a state-listed species of special concern.
Bold text indicates species that were observed during the January 15, 2025 site reconnaissance.
Sources:
NYS 2000-2005 Second Breeding Bird Atlas results for Blocks 5851C. Available from: dec.ny.gov/cfmx/extapps/bba/ (Accessed November 18, 2024). NYS 2020-2024 Third Breeding Bird Atlas results for Central Park SW & Brooklyn NW blocks. Available from: ebird.org/atlasny (Accessed November 18, 2024).

Reptiles and Amphibians

Because most of the study area is highly developed and primarily comprised of impervious surfaces, and surrounded by highly developed areas, suitable habitat is not available for reptiles and amphibians.

Mammals

Mammals with the potential to be present in the study area are limited to urban-adapted generalist species with a high tolerance for developed environments and human activity. Mammal species observed during the January 15, 2025 site reconnaissance include eastern gray squirrel (*Sciurus carolinensis*), and domestic cat (*Felis catus*). Other mammals with the potential to occur in the study area include Norway rat (*Rattus norvegicus*) and raccoon (*Procyon lotor*).

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES

The USFWS IPaC database identifies monarch butterfly (federally proposed threatened), piping plover (*Charadrius melodus*; federally threatened and state-listed endangered), roseate tern (*Sterna dougallii dougallii*; federally and state-listed endangered), and rufa red knot (*Calidris canutus rufa*; federally and state-listed threatened) as having the potential to occur within the study area or having the potential to be affected by a project in the study area (see Appendix F).

The DEC Environmental Resource Mapper (ERM) and EAF Mapper indicate the potential presence of loggerhead sea turtle (*Caretta caretta*; federally endangered and state-listed threatened), leatherback sea turtle (*Dermochelys coriacea*; federally and state-listed endangered), Kemp's ridley sea turtle (*Lepidochelys kempii*; federally and state-listed endangered), and green sea turtle (*Chelonia mydas*; federally endangered and state-listed threatened) within the waters of the study area (see Appendix F). No other state-protected threatened, endangered, or special concern species, or significant natural communities were identified by the DEC ERM or EAF Mapper within the study area.

The NOAA Fisheries Section 7 ESA Mapper identified the following federally listed aquatic species with the potential to be present within the waters of the study area include: subadult Atlantic sturgeon (federally endangered, and state-listed high priority Species of Greatest Conservation

Need [SGCN][10]), adult shortnose sturgeon (federally and state-listed endangered), and adult and juvenile green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle (see Appendix F).

MONARCH BUTTERFLY

Monarch butterflies in North America migrate in the fall to Mexico or southern California, sometimes traveling thousands of miles to overwinter with a reverse migration in the spring, with adult monarch butterflies spreading across the United States and Canada, where they feed and breed. Adult monarch butterflies feed on the nectar of a variety of flowers and are primarily attracted to meadows, grasslands, and roadside habitats across most of North America (NPS 2023). Monarch butterflies breed and lay eggs on milkweed (*Asclepias* sp.), the sole host plant for this species, which later provides a food source for larval development (USFWS 2024a). Adult breeding monarch butterflies and larvae use a variety of habitat types that provide access to larval host plants, including agricultural fields, prairies, pastures, gardens, roadsides, and urban and suburban areas. Monarch butterflies have the potential to occur within the study area as transient foraging adults, particularly, in garden beds that contain flowering plants suitable for pollinators. However, suitable breeding habitat for monarch butterflies is not present within the study area as no milkweed was observed during the January 15, 2025 site reconnaissance.

PIPING PLOVER

Piping plovers use wide, open expanses of unvegetated, coastal beach for habitat (Elliot-Smith and Haig 2004). The breeding range of the piping plover within New York State is limited to the coastlines of Long Island, where plovers nest from Queens to eastern Suffolk County (Wasilco 2008). Nesting of piping plovers within New York City is limited to a colony on Rockaway Peninsula in Queens County (Boretti et al. 2007, NYC Parks 2013) and a few individual pairs that have sporadically nested within the Jamaica Bay Unit of the Gateway National Recreational Area in Queens and Kings Counties on isolated occasions (Wells 1996, Wasilco 2008). Piping plovers also nest within the Sandy Hook portion of the Gateway National Recreational Area in New Jersey (NPS 2022). The study area lacks suitable habitat for piping plover and this species is not expected to be present within the study area.

ROSEATE TERN

Roseate tern nest almost exclusively on islands isolated from predators and human disturbance. Roseate tern typically nests in dense grass or under boulders but occasionally nest in more open areas. This shorebird builds nests from sand, shell, gravel, vegetation, or debris (NYNHP 2024a, DEC 2024a). The breeding range of the roseate tern within New York State is limited to a few island locations off the coast of Long Island, with the largest colony located at Great Gull Island, a rock island protected from human disturbance (NYSDOS 2002, DEC 2024a). The study area lacks suitable habitat for roseate tern and this species is not expected to be present within the study area.

RUFA RED KNOT

The rufa subspecies of the red knot migrates up to 30,000 miles round trip between primary wintering grounds in South America and breeding grounds in the high arctic, with conditions for refueling at staging areas along the Atlantic coast being critical determinants of migration and reproductive success and overall survival (Baker et al. 2004, Morrison et al. 2007). Red knots use beaches, bays, or estuaries as staging areas. Delaware Bay (between northwest shore of

[10] The DEC State Wildlife Action Plan (September 2015) identified high priority SGCN within New York State. High priority SGCN species are experiencing population decline or may be subject to identified threats that could lead to population decline. DEC determined that timely management intervention is needed for high priority SGCN species, or they are likely to reach critical population levels in New York.

Delaware and the south shore of New Jersey) is the most significant migration staging area for *rufa* red knots, which time their springtime arrival in the bay to coincide with the peak horseshoe crab spawning period (Baker et al. 2004, Niles et al. 2009). Red knots are dependent on a superabundance of horseshoe crab eggs as a food source to almost double their body mass and gain energy reserves for the remaining leg of their migration to the high arctic (Baker et al. 2004, Morrison and Hobson 2004). Delaware Bay is the only place in the Western Hemisphere where horseshoe crabs spawn in numbers that enable red knots to do so (Niles 1999). Steep declines in the number of horseshoe crabs spawning in Delaware Bay in recent decades, despite stricter harvest restrictions, has significantly hindered the ability of red knots to refuel at sufficient rates, and in turn, led to rapid population declines (Niles et al. 2008, 2009). Monomoy National Wildlife Refuge in Cape Cod, Massachusetts appears to be among the most significant staging areas for red knots during their southbound autumn migration (Harrington et al. 2010, Burger et al. 2012).

In addition to these primary staging areas in Delaware Bay and Cape Cod, migrating red knots may commonly stage, albeit in much lower densities, elsewhere along the Atlantic coast (Harrington 2010, Burger et al. 2012). Although migrating red knots are known to occur along Long Island, including within the Jamaica Bay complex (Tanacredi and Badger 1995:104, Fowle and Kerlinger 2001:81), none of its beaches, bays, or estuaries are known to be high-use staging areas that support large concentrations of individuals. Instead, red knots are usually seen on Long Island in small groups (e.g., Wells 1996:59) relative to the tens of thousands of birds observed staging together in Delaware Bay and Cape Cod. The study area lacks suitable habitat for red knot, and this species is not expected to be present within the study area.

ATLANTIC STURGEON

According to the NOAA Fisheries Section 7 Mapper, subadult and adult Atlantic sturgeon have the potential to be present in the lower East River study area for migration and foraging behaviors. Atlantic sturgeons spawn in freshwater sections of the Hudson River and overwinter throughout the New York Bight, off the south shore of Long Island, and throughout Long Island Sound (Bain 1997, Savoy and Pacileo 2003, Waldman et al. 1996). Atlantic sturgeon adults and subadults are expected to migrate and opportunistically forage in the waters of the East River and connected waterbodies year-round, as they connect the Hudson River to marine waters in the Atlantic Ocean and Long Island Sound (Savoy and Pacileo 2003, Tomichek et al. 2014). Atlantic sturgeons are most abundant in these waters from late September to late March (Dunton et al. 2010). Dunton et al. (2010) identified the Atlantic waters off Rockaway Peninsula and Sandy Hook, New Jersey as significant concentration areas of Atlantic sturgeon. Individuals moving between Hudson River spawning grounds and these overwintering areas may occasionally pass through the East River in the vicinity of the Development Sites. Telemetry arrays on the east side of Roosevelt Island have recently detected radio-tagged Atlantic sturgeon moving through this area (Verdant Power 2013). Non-spawning Atlantic sturgeons prefer deep, open marine waters (Hatin et al. 2002, Hatin et al. 2007, Savoy and Pacileo 2003, Dunton et al. 2010) and as such, do not overwinter or otherwise spend prolonged periods of time in the East River. Therefore, Atlantic sturgeon are only expected to occur in the vicinity of the study area as transients.

SHORTNOSE STURGEON

According to the NOAA Fisheries Section 7 Mapper, adult shortnose sturgeon have the potential to be present in the lower East River study area for migration and foraging behaviors. The shortnose sturgeon is an anadromous bottom-feeding fish that, like the Atlantic sturgeon, migrates from the ocean to freshwater to spawn. Like Atlantic sturgeon, shortnose sturgeon prefer soft substrates and vegetated bottoms of deep water in larger rivers, estuaries, and bays (NYNHP 2024f). In New York State, shortnose sturgeon are found only in the Hudson River between the southern tip of Manhattan and the Federal Dam in Troy (NYNHP 2024f, DEC 2024f). Shortnose sturgeon spawning, rearing, and overwintering areas in the New York City region are located upstream along the Hudson and Connecticut Rivers (Bain 1997).

The East River in the vicinity of the study area can provide migrating and foraging habitat for adult shortnose sturgeon (Savoy 2004), most commonly from April through November, as per the NOAA Fisheries Section 7 Mapper results. Shortnose sturgeon eggs, larvae, and young-of-year life stages require low salinity waters and do not occur in the study area. New York Harbor, of which the East River is a part, is at the extreme southern limit of this population's overwintering range due to the intolerance of shortnose sturgeon to high salinity levels this close to the Atlantic Ocean (Dadswell et al. 1984, Jenkins et al. 1993). Waters anywhere below the Tappan Zee reach of the river are suboptimal for shortnose sturgeon (Bain 1997), and shortnose sturgeon are expected to only rarely occur as far south as the southern tip of Manhattan (FERC 2012). Shortnose sturgeon, are expected in the East River on rare and brief occasions as transients emigrating from the Hudson River to more southerly populations (Waldman et al. 1996, Kynard 1997). Therefore, shortnose sturgeon have limited potential to occur in the East River in the vicinity of the study area.

SEA TURTLES

According to the NOAA Fisheries Section 7 Mapper, DEC ERM, and EAF Mapper, four species of sea turtles have the potential to be present in the lower East River in the study area at juvenile and adult life stages for migration and foraging behaviors. Leatherback, green, loggerhead, and Kemp's ridley sea turtles can be found in the New York Bight and waters off Long Island where they can occur during the warmer months of summer and fall. The Kemp's ridley and leatherback sea turtles are federally and state-listed endangered species, and the loggerhead is federally and state-listed as threatened. The state-listed threatened green sea turtle has 11 distinct populations, with eight listed federally as threatened and three as federally endangered (DEC 2024g). Generally, sea turtle species prefer bays and other sheltered areas off Long Island's north and south shores (e.g., Great South Bay) and eastern end (e.g., Peconic Bay), which provide rich food sources (Standora et al. 1989, Morreale and Standora 1998). Except for the leatherback, nearly all sea turtles in these waters are juveniles or subadults (Morreale and Standora 1995). Sea turtles neither nest in the Upper New York Harbor, nor reside there year-round. Upper New York Harbor is generally considered to be of marginal quality or less as a sea turtle habitat, and evidence of sea turtles in the area is scarce despite extensive monitoring and sampling efforts (Ruben and Morreale 1999, USACE 2001). Any occurrence of green, loggerhead, and Kemp's ridley sea turtles in Upper New York Harbor is likely limited to rare and brief explorations by transient juveniles. Leatherback turtles typically remain off the coast in the deeper waters of the Atlantic Ocean rather than moving into harbors and bays (USACE 2001).

Any occurrence of sea turtles in the East River is likely limited to rare and brief explorations by transient juveniles. No sea turtles breed in the East River or reside there year-round. Overall, sea turtles have the potential to occur in the study area on rare occasions, and only as transient individuals, rather than for long-term occupation for breeding, wintering, or growth and development.

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

Under the No Action condition, the study area is assumed to either remain generally vacant and unchanged from existing conditions or become occupied by uses that are as-of-right under existing zoning, reflective of current trends.

G. THE FUTURE WITH THE PROPOSED ACTIONS (WITH ACTION CONDITION)

FLOODPLAINS

CONSTRUCTION

As discussed above in "Existing Conditions," and shown on **Figure 9-1**, much of the southwestern portion of the study area in the vicinity of Anable Basin and along the East River falls within the 1 percent annual chance floodplain (Zone AE and Zone VE) and 0.2 percent annual chance floodplain (Zone X). The East River is a tidal strait, the water level of which is controlled by the tidal conditions within the New York Bay and the Atlantic Ocean. The floodplain within the study area is affected by coastal flooding and would not be affected by construction or regrading/filling of the floodplain resulting from the Proposed Actions. Construction facilitated by the Proposed Actions would not adversely affect the local hydrology or the floodplain, nor would it exacerbate flooding conditions in neighboring locations. Construction documents would include measures to protect the construction zone in the event of a storm event. Therefore, construction facilitated by the Proposed Actions would not result in significant adverse impacts on flooding or floodplains.

OPERATION

Tidal flooding is the primary cause of flood damage in New York City. While the Proposed Actions would result in the placement of additional structures within the 1 percent and 0.2 percent annual chance floodplains, the floodplain within and adjacent to the study area is affected by coastal flooding and would not be affected by the additional structures facilitated by the Proposed Actions. Future developments would be required to have finished floor elevations at or above the most restrictive design flood elevation in compliance with the New York City Building Code. In addition, the WAP would establish stricter coastal resiliency measures along the waterfront to help protect the study area from coastal flooding events. Therefore, operation of the Proposed Actions would not result in significant adverse impacts to floodplains or result in additional flooding of areas adjacent to the study area.

GROUNDWATER

CONSTRUCTION

Because groundwater is not used as a potable water supply in the area, construction facilitated by the Proposed Actions would not result in potential impacts to drinking water supplies. As described in Chapter 10, "Hazardous Materials," (E) Designations would be placed on the New York City Zoning Map for subsurface hazardous materials for all projected and potential development sites within the study area to ensure that, at minimum, they are remediated under the New York City (E) Designation Program.

If dewatering is required for construction, any groundwater recovered during dewatering activities would be treated in accordance with regulatory DEC requirements prior to discharge to the East River or DEP requirements prior to discharge to the combined sewer. Where required, a Long Island well permit or DEC Water Withdrawal permit and Industrial SPDES Permit to discharge treated groundwater recovered during dewatering would be obtained prior to construction minimize potential impacts to waters of Anable Basin and the East River.

Therefore, construction facilitated by the Proposed Actions would not be expected to result in significant adverse impacts to groundwater resources.

OPERATION

As discussed in Chapter 10, "Hazardous Materials," site remediation anticipated is expected to improve groundwater quality through chemical treatment programs and the removal of source material and groundwater contaminants. As groundwater is not used as a potable water supply in

New York City, any projected or potential development in the study area would not have the potential to affect drinking water supplies. Groundwater recharge would also not be affected by the Proposed Actions as the existing terrestrial communities within the study area are nearly entirely developed and comprised of impervious surfaces. Belowground structures (e.g., parking or basements) would not impede groundwater flow to the East River. Instead, groundwater would be expected to flow around these structures. Therefore, operation of the Proposed Actions would not be expected to result in significant adverse impacts to groundwater resources.

WETLANDS

CONSTRUCTION

NWI-mapped wetlands and DEC-regulated littoral zone tidal wetlands are present in the study area (see **Figures 9-2 and 9-3**). The Proposed Actions have the potential to facilitate in-water construction associated with shoreline and bulkhead improvements that would affect tidal wetlands. In-water construction would be required to first avoid and then minimize impacts to tidal wetlands and to comply with the conditions of USACE and DEC permits issued for projects implemented as a result of the Proposed Actions. Erosion and sediment control measures (e.g., temporary berms, hay bales, silt fences, catch basin and inlet protection, tracking pads, concrete truck wash areas, stabilized construction entrances, compost filter socks, etc.) implemented in accordance with Stormwater Pollution Prevention Plans (SWPPPs) prepared under the SPDES General Permit would minimize the discharge of sediment to the littoral zone tidal wetlands in the East River during construction activities.

Therefore, construction facilitated by the Proposed Actions would not result in significant adverse impacts to wetlands within the study area.

OPERATION

The Proposed Actions have the potential to result in permanent structures associated with shoreline and bulkhead improvements that would be placed in littoral zone tidal wetlands in the East River and Anable Basin. Potential impacts to littoral zone tidal wetlands would require coordination with DEC to avoid permanent unmitigated impacts as a result of the Proposed Actions. No vegetated wetlands would be impacted by the Proposed Actions.

As described in Chapter 11, “Water and Sewer Infrastructure,” the study area is served by combined sewers that convey stormwater and sanitary flows to the Bowery Bay WRRF. During storm events, excess flow is discharged to the East River as a combined sewer overflow (CSO). Because the City’s sewers are sized and designed based on the designated zoning of an area, related population density, and surface coverage characteristics, the Proposed Actions may result in development that is inconsistent with the design of the existing built sewer system. It is expected that an Amended Drainage Plan (ADP) will be prepared by NYCDEP for the study area, which may include upgrades to the sewer system.

Wastewater from the projected developments facilitated by the Proposed Actions would continue to be treated at the Bowery Bay WRRF. The projected developments under the Proposed Actions would increase sanitary flows to the City’s combined sewer system and the Bowery Bay WRRF. The increase in sanitary sewage conveyed to the Bowery Bay WRRF would not be expected to result in an exceedance of the WRRF’s permitted capacity of 150 million gallons per day (mgd) or adversely affect compliance of the WRRF effluent with its SPDES permit limits.

It is expected that the Proposed Actions would result in an overall decrease in the volume of CSO discharges to the East River during rain events. The Unified Stormwater Rule requires that redeveloped properties manage more total stormwater and manage it more efficiently than under pre-development conditions. As a result of these requirements, it is expected that there would be an increase in on-site stormwater detention and retention at the projected development sites because of the Proposed Actions, resulting in an overall reduction of stormwater discharge to the

combined sewer system. Some waterfront projected development sites would directly discharge stormwater to the East River, which would also reduce stormwater discharges to the combined sewer system. While the projected growth under the Proposed Actions would increase sanitary flows to the combined sewer system, the decrease in stormwater discharges to the combined sewer system is expected to offset the increase in sanitary flow. As such, the Proposed Actions are expected to reduce the likelihood of a CSO discharge to the East River during rain events. Therefore, operation of the Proposed Actions would not result in significant adverse impacts to littoral zone tidal wetlands in the East River and Anable Basin.

AQUATIC RESOURCES

WATER QUALITY

Construction

The Proposed Actions have the potential to facilitate in-water construction associated with shoreline and bulkhead improvements that would affect tidal wetlands. As discussed above, in-water construction would be required to first avoid and then minimize impacts to water quality and to comply with the conditions of USACE and DEC permits issued for projects implemented as a result of the Proposed Actions. As discussed above, if dewatering is required the recovered groundwater would be treated in accordance with applicable regulations and required permits prior to discharge to the Anable Basin, East River, or combined sewer. Erosion and sediment control measures (e.g., temporary berms, hay bales, silt fences, catch basin and inlet protection, tracking pads, concrete truck wash areas, stabilized construction entrances, compost filter socks, etc.) implemented in accordance with SWPPPs prepared under the SPDES General Permit would minimize the discharge of sediment to the East River during construction activities. Therefore, construction facilitated by the Proposed Actions would not have the potential to result in significant adverse impacts to water quality.

Operation

Stormwater discharge to the East River and Anable Basin would be treated in accordance with applicable DEP requirements. As discussed above and in Chapter 11, “Water and Sewer Infrastructure,” the Proposed Actions would result in a reduction of CSO discharges to the East River. The Bowery Bay WRRF has sufficient capacity to treat potential sanitary wastewater from the projected developments under the Proposed Actions in accordance with its SPDES permit prior to discharging it the East River. Therefore, operation of the Proposed Actions would not result in significant adverse impacts to water quality of the East River.

AQUATIC BIOTA

Construction

The Proposed Actions have the potential to facilitate in-water construction associated with shoreline and bulkhead improvements that would affect aquatic habitat. Construction would be required to comply with the conditions of applicable USACE and DEC permits, as needed. Erosion and sediment control measures (e.g., temporary berms, hay bales, silt fences, catch basin and inlet protection, tracking pads, concrete truck wash areas, stabilized construction entrances, compost filter socks, etc.) implemented in accordance with SWPPPs prepared under the SPDES General Permit would minimize the discharge of sediment that could potentially impact habitat for aquatic biota in the East River and Anable Basin. As discussed above, if dewatering is required, groundwater would be treated in accordance with applicable regulations and required permits prior to discharge to the Anable Basin, East River, or combined sewer. Therefore, construction facilitated by the Proposed Actions would not result in significant adverse impacts to water quality.

Operation

As discussed in Chapter 6, "Shadows," the Proposed Actions have the potential to result in incremental shadows in the East River and Anable Basin. However, the new shadow would not substantially alter the condition of the East River or Anable Basin, and most affected areas would continue to receive at least several hours of direct sunlight on all but the shortest days of the year.

Exposure to shadows can cause a decrease in light intensity and potentially affect primary productivity within the shaded waters. Primary productivity within the aquatic study area is generated mainly from phytoplankton. However, light requirements for phytoplankton are low, and the reduction in light within the shadow footprint would have a negligible impact on phytoplankton populations. In addition, the current speeds of the East River in the vicinity are swift (2.5-3.0 knots) and would quickly carry any light-dependent phytoplankton through the newly shaded areas to areas outside the shadow exposure, limiting their exposure to shaded conditions to a relatively short period of time. Therefore, shadows resulting from the Proposed Actions would not be expected to have a significant adverse impact on primary productivity in the East River and Anable Basin.

Shading can influence fish behavior and habitat use. Fish are generally less abundant in shaded areas under overwater structures as they are in unshaded habitat (Able et al. 2013, Grothues et al. 2016). The avoidance of these shaded areas may be due to decreased visual performance which can impair feeding and predator avoidance (Munsch et al. 2017). Such avoidance has the potential to disrupt movement and migration of some species (Toft et al. 2007). However, these changes in behavior and habitat use are typically observed with significant shading associated with piers and other overwater structures. Shadows, such as those cast by buildings along a shoreline, result in less reduction in light reaching the water surface than shading due to overwater structures, and affect different areas over the course of the day, further reducing the potential to affect aquatic biota.

Fish would be expected to avoid areas where shadows temporarily resulted in low light but would have ample areas of the East River available for foraging and to maintain anadromous fish migration. The incremental shadows resulting from the Proposed Actions would not have a significant effect on fish migration, movement or spawning in the East River.

Anable Basin is a small extension of the East River with no upstream water source; and would not, therefore serve as a migratory pathway by anadromous fish species. Due to the temporary nature of shadows on a particular portion of the basin, the ability of fish to avoid low light levels, shadows resulting from the Proposed Actions would not have a significant effect on fish movement while foraging into and out of Anable Basin or the portion of the lower East River adjacent to the Project Area. Though portions of the river and basin would be temporarily shaded during certain times of the day, Anable Basin is only expected to be used intermittently as foraging habitat, and the majority of the East River would remain unshaded by the Proposed Actions. When considered with the abundance of foraging habitat available within the East River, any temporary reduction of suitable foraging habitat within Anable Basin would not result in significant adverse impacts to fish species of the Hudson-Raritan Estuary.

Spawning behavior for some species is triggered or affected by light intensity and could be affected by reduced light levels within shadows in the lower East River and Anable Basin resulting from the Proposed Action. Six species, scup, winter flounder, windowpane flounder, king mackerel, Spanish mackerel, and cobia, have designated EFH for eggs in the area that includes the study area. However, king mackerel, Spanish mackerel, and cobia are not inshore spawners (USACE 2000, FAO 2007) and would not have the potential to spawn in Anable Basin. While scup would have the potential to spawn in the basin, the portion of the basin in shadow would change over the course of the day and would not preclude some spawning activity in the morning when this species spawns (Ferrarro 1980). The potential loss of some portion of the basin to reduced light levels would represent a de minimis reduction of spawning habitat when compared to the amount

of spawning habitat available within the Hudson-Raritan Estuary and would not adversely affect the scup population within the estuary. The two other species that could potentially spawn in the study area, winter flounder and windowpane flounder, are nighttime spawners (Stoner et al. 1999, VIMS 2018) and do not use high light intensity as a spawning cue; therefore, shadows cast by buildings resulting from the Proposed Actions would have no impact on their spawning behavior.

Any minor impacts on other fish behaviors associated with visual performance or light cues would be limited temporally to the hours in which incremental shadows are cast by the buildings associated with the Proposed Actions and limited spatially to the areas shaded by the buildings. Given the temporary nature of the shadows that would be cast and the continued availability of unshaded habitat in Anable Basin and the East River, as well as the migratory characteristic of the shadows on the East River, shadows would not result in significant adverse impacts to fish in the study area.

In addition, as discussed above and in Chapter 11, "Water and Sewer Infrastructure," the Proposed Actions would result in a reduction of CSO discharges to the East River. The Bowery Bay WRRF has sufficient capacity to treat potential sanitary wastewater from the projected developments under the Proposed Actions in accordance with its SPDES permit prior to discharging it the East River. Therefore, the Proposed Actions would not result in significant adverse impacts to fish in the study area.

ESSENTIAL FISH HABITAT

For the reasons identified above, the Proposed Actions would not result in significant adverse impacts to water quality, aquatic habitat, or aquatic biota. Therefore, the Proposed Actions would not result in significant adverse impacts to EFH in the study area or have the potential to result in cumulative impacts to EFH during construction or operation.

TERRESTRIAL RESOURCES

ECOLOGICAL COMMUNITIES

Construction

Ecological communities within the terrestrial study area are limited to mowed lawn with trees, flower/herb garden, paved road/path, urban structure exterior, urban vacant lot, and riprap/artificial shore communities. These ecological communities, in addition to being common throughout New York City, are characterized by human disturbance and provide limited habitat value to wildlife in the area. Therefore, disturbance to existing vegetation in these portions of the study area during construction activities would not result in significant adverse impact to these or other ecological communities at a local or regional scale. Where applicable, construction facilitated by the Proposed Actions would be required to comply with Chapter 5 of Title 56 of the Rules of the City of New York and Local Law 3 of 2010, and tree clearing, protection, and replacement plans would be developed to address tree impacts to trees under NYC Parks jurisdiction, including street trees. Therefore, construction facilitated by the Proposed Actions would not result in any significant adverse impacts on terrestrial ecological communities.

Operation

The study area is in a predominantly urbanized area of Queens and contains limited natural ecological communities. Trees, plants, and other landscaping features required by applicable zoning provisions would improve ecological communities within the study area. Therefore, the Proposed Actions have the potential to enhance ecological communities and create new vegetated areas in the study area, and ultimately result in improved wildlife habitat.

Chapter 6, "Shadows," analyzes the potential adverse effects of shadows cast by the fully developed projected and potential development sites to nearby parks and natural areas. A detailed shadow analysis determined that development facilitated by Proposed Actions would create new

shadow on dozens of open space resources, including trees and landscaped greenspaces, though in most cases, the extent and/or duration of new shadow would be limited would not cause significant adverse impacts. However, as described in Chapter 6, “Shadows,” the creation of new shadows would be extensive enough to result in significant adverse impacts to several Greenstreets medians in Queens Plaza South between Vernon Boulevard and 13th Street; Gordon Triangle, a small public open space located on 44th Drive between Vernon Boulevard and 10th Street; and the 44th Drive Pier, a public open space located at the western end of 44th Drive. Potential measures to mitigate the significant adverse shadow impact are discussed in Chapter 22, “Mitigation.”

WILDLIFE

Construction

Wildlife in the study area is limited to the most urban-adapted, disturbance-tolerant species. Construction activities within the study area would alter previously disturbed ecological communities or wildlife habitat. Construction facilitated by the Proposed Actions would likely result in the temporary displacement of wildlife; however, similar habitat would be available in the vicinity of the study area and the temporary disturbance of individuals of urban-adapted species would not result in adverse impacts to wildlife. Indirect impacts to wildlife due to construction noise would also be minimal, as urban-adapted species are acclimated to the ambient noises of an urban environment. Therefore, construction facilitated by the Proposed Actions would not result in significant adverse impacts to wildlife.

Operation

Most bird collisions with buildings occur near ground level and during the daytime, because the glass reflects images of vegetation or sky that birds cannot distinguish from the real thing. Nighttime collisions with tall buildings are relatively uncommon (Gelb and Delacrétaz 2006, 2009, Klem et al. 2009, Loss et al. 2014). Any new buildings facilitated by the Proposed Actions would comply with New York City building code requirements for the use of bird-friendly materials, and as such, would not increase the potential for daytime bird collisions. Specifically, the exterior wall envelope and any associated openings would be composed of bird-friendly materials up to 75 feet above grade. Bird-friendly glass is defined as “glass or glazing that has, or has been treated to have, a maximum threat factor of 25 as defined by the Bird Collision Threat Rating Calculation Spreadsheet created by the American Bird Conservatory and adopted as pilot credit SSpc55 by the United States Green Building Council based upon the Council's Leadership in Energy and Environmental Design (LEED) credit system.” Bird-friendly glass types typically have low reflectivity; surface markings like etched or fritted lines, dots, or other markings; or reflect ultraviolet light that birds can see, which enables them to recognize the glass as a solid barrier to avoid. Materials other than bird-friendly materials would not exceed an aggregate of 10 square feet within any 10-foot-by-10-foot square area of exterior wall below 75 feet above grade. Building materials would be designed to be in full compliance with Section 1403.8 of the New York City building code to minimize the potential for bird collisions. Therefore, Proposed Actions would not result in significant daytime bird collisions.

In addition, the Proposed Actions are anticipated to result in heightened human activity through a projected increase of residents and workers in the study area, the levels of noise and human activity associated with the Proposed Actions would be comparable to levels of disturbance found throughout Long Island City and New York City. Trees, plants, and other landscaping features required by applicable zoning provisions would benefit some species of wildlife such as songbirds and pollinator species, providing them with suitable nest and breeding habitat as well as food sources. Therefore, operation of the Proposed Actions would not result in significant adverse impacts to wildlife.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES

CONSTRUCTION

As the study area is primarily comprised of impervious surfaces, potential suitable foraging habitat for monarch butterflies is limited to the flower/herb garden communities within the study area. As no milkweed was observed throughout the study area, any monarch butterflies that may be present are expected to be occasional transient individuals rather than breeding populations. Construction facilitated by the Proposed Actions would not have the potential to affect potential breeding habitat for monarch butterflies, and any transient adult monarch butterflies that may be present within the study area would not be affected by potential construction impacts to flower/herb gardens in the study area.

To minimize potential effects to Atlantic and shortnose sturgeon and sea turtle habitat in the East River, erosion and sediment control would be implemented in accordance with SWPPPs prepared under the SPDES General Permit to minimize the discharge of sediment that could potentially impact habitat and water quality. Therefore, construction facilitated by the Proposed Actions would have limited potential to result in adverse impacts to Atlantic sturgeon, shortnose sturgeon, and sea turtles. Therefore, with the above measures included as part of the Proposed Actions, it is concluded that project construction facilitated by the Proposed Actions would not result in significant adverse impacts on protected species.

OPERATION

There is no essential breeding habitat for monarch butterfly (i.e., milkweed plants) in the study area, and any monarch butterflies that may be present are expected to be occasional migratory individuals rather than breeding populations. As the study area is currently primarily comprised of impervious surfaces, and the Proposed Actions are anticipated to result in an increase in open spaces and parkland, there is potential for an increase in suitable monarch butterfly habitat in the vicinity of the study area.

Shortnose and Atlantic sturgeon and sea turtles are only anticipated to be present within the study area as brief and occasional transients. The surface waters present in the study area include the shorelines of the East Channel of the East River adjacent to Roosevelt Island and the narrow inlet of Anable Basin. These waters are relatively shallow therefore less suitable for foraging compared to the deep waters of the navigation channel. As described above, the Proposed Actions would not have the potential to result in adverse impacts to the aquatic biota or water quality that encompass sturgeon and sea turtle habitat.

Therefore, operation of the Proposed Actions would not result in any significant adverse impacts to monarch butterflies, shortnose sturgeon, Atlantic sturgeon, or sea turtles.

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