A. INTRODUCTION

The *CEQR Technical Manual* defines a natural resource as a plant or animal species and any area that is "capable of providing habitat for plant and animal species or capable of functioning to support environmental systems and maintain the City's environmental balance." Included in these resources are surface and groundwaters, soils, wetlands, landscaped areas, gardens, parks, and built structures that are used by wildlife. This chapter characterizes existing terrestrial and marine ecology and other important natural features on and around the Project Site, based on field surveys, published information and agency consultation, and describes how these natural resources would change in the future, both with and without the Proposed Action.

New York State Department of Environmental Conservation (NYSDEC) and United States Army Corps of Engineers (USACE) permits will be required for construction work associated with the proposed Academy, specifically actions located near and within the "L-shaped" drainage ditch located on the eastern area of the Project Site. The drainage ditch, which is described in detail in this chapter and in Chapter 8, "Infrastructure," is the Project Site's sole non-structural, surface water feature and a critical component to the primary flood control and stormwater management system in the area. The ditch is part of the connection between Flushing Bay and the freshwater wetland area located approximately 0.3 miles northeast of the Project Site on the 78-acre former Flushing Airport site.

The purpose of this chapter is to:

- Identify and describe the Federal, State and New York City regulatory programs that may apply to the proposed Academy with respect to natural resources;
- Describe existing natural resources (e.g., plants, wildlife, and threatened or endangered species) on the Project Site; and
- Assess the potential impacts of the proposed Academy on natural resources on the immediate Project Site and the adjacent areas within a quarter-mile radius of the Project Site (Figure 5-1).

As mentioned in Chapter 1, "Project Description," the proposed Academy site is approximately 35 acres in size and is largely developed with the existing NYPD Tow Pound (Photograph 5-1), NYPD administration building, and features minimal natural resources. The Site also includes a 5.5 acre, City-owned strip of vacant land located between the Tow Pound and College by NYPD automobile Pound Lot and NYPD administrative building, an automotive repair and auto body shop and the drainage ditch. The proposed Academy would result in the construction of up to approximately 2.4 million gross square feet (gsf) of new development, which would include indoor training facilities, classrooms, and related support space, an indoor pistol training facility, a tactical village, an indoor track, a police museum, a visiting police/lecturer housing facility and 2,000 accessory parking spaces, including an above-grade parking facility for approximately 1,800 vehicles and 200 at-grade parking spaces to be located in parking lots or along the Academy's interior road network. In addition, the proposed Academy would remove two existing bridge crossings, culverts and two 84-inch tideflex valves (tide gates) currently located in the drainage ditch and construct a new pile supported bridge and a pedestrian bridge. The proposed Academy may include the installation of a new tide gate structure at another area of the ditch. In the event that the tide gate would be moved to the southernmost area of the ditch, the drainage ditch would become an entirely freshwater waterbody.

The analysis in this chapter concludes that the proposed Academy would not result in significant adverse impacts on natural resources. Further, development under the proposed Academy would offer benefits to natural resources, including improved habitat for birds and other wildlife and improve stormwater management within the Project Site and adjacent areas. In addition, the proposed Academy will be required to achieve a Leadership in Energy and Environmental Design Silver-rating certificate for New Construction (LEED-NC) as outlined by the United States Green Building Council (USGBC), under the provisions of Local Law 86[1]. As a Silver-rated LEED-NC project, the proposed Academy would incorporate sustainable energy and water use systems and design elements including green roofs, onsite storage and treatment facilities, graywater recycling, and bioswales and other sustainable features to provide additional benefits to natural resources in and around the Project Site.

Methodology

Existing conditions within the Project Site were summarized from information identified in literature sources. Sources included the following documents (reports and maps):

- United States Geological Survey (USGS)—Topographic quadrangle map for Central Park Quad;
- New York State Department of Environmental Conservation (NYSDEC)—Breeding Bird Atlas, Bird Conservation Areas, Critical Environmental Areas (CEAs);
- Aerial photographs;
- United States Fish and Wildlife Service (USFWS [NY office]), National Marine Fisheries Service (NMFS), and New York Natural Heritage Program (NYNHP)—Information on rare, threatened, or endangered species within the vicinity of the Project Site.
- The future conditions with and without the proposed Academy were assessed by considering existing natural resources within the Project Site and assessing potential significant adverse impacts on these resources on the immediate Project Site and within a quarter-mile radius that are expected to occur independent of the proposed Academy by 2014, the projected Build year.

B. REGULATIONS AND PERMITS

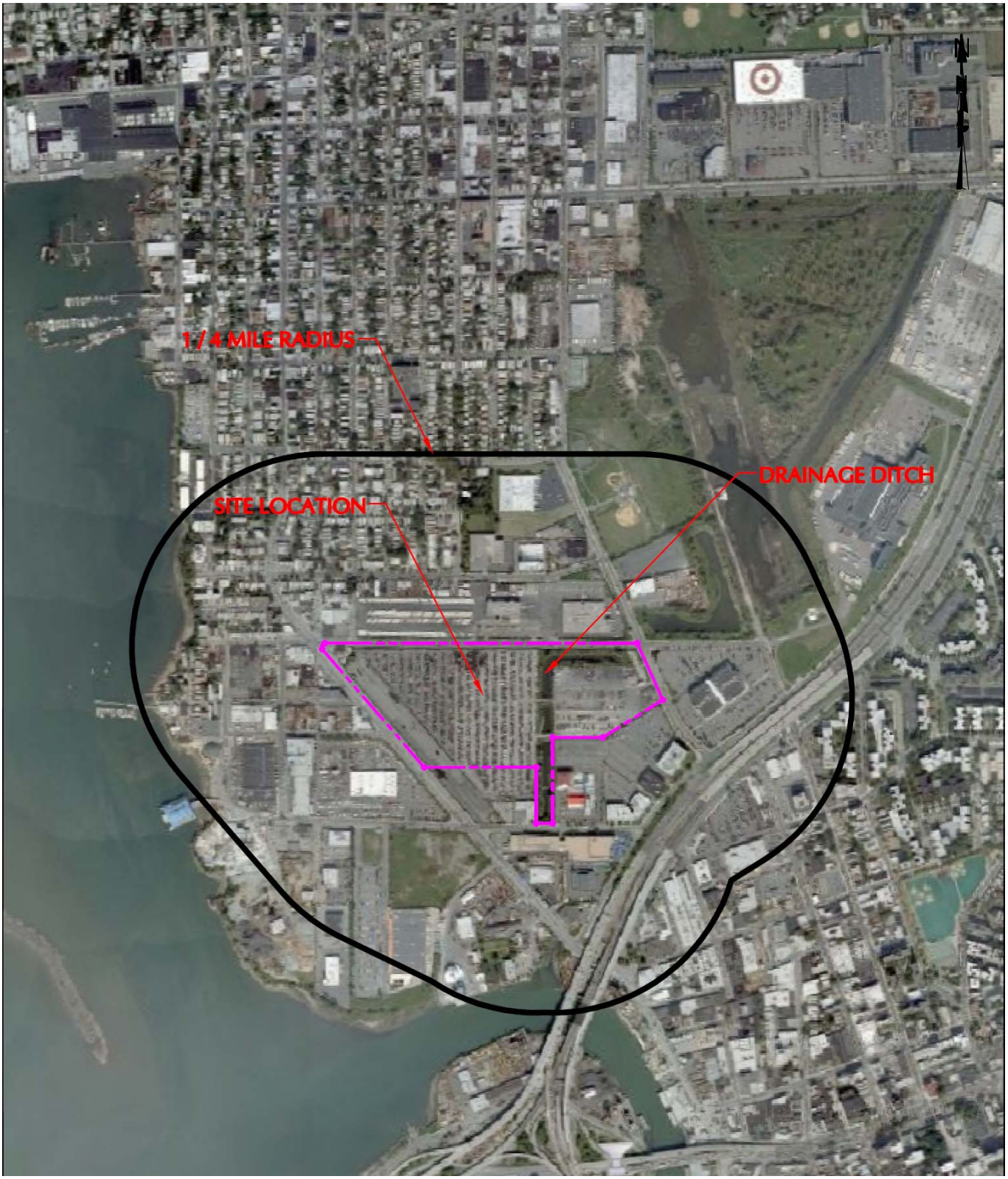
The following section briefly describes the federal, state and local laws, regulations and regulatory programs that may apply to the proposed Academy with respect to water quality and terrestrial and aquatic resources that are found within the study area. The regulations apply to the certain activities in coastal areas, surface waters and floodplains and protection of wildlife and species of special concern.

Federal Laws and Regulator Programs

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

The Federal Water Pollution Control Act, as amended, commonly referred to as the Clean Water Act (CWA), regulates point and non-point sources of water pollution and is designed to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The sections of the CWA with the potential to apply to the proposed Academy are Sections 401 and 404, which pertain to discharges of fill or dredged material in waters of the United States.

[1] Under New York City Local Law 86 (2005), which took effect in January 2007, persons who seek capital funds from New York City valued at either $10 million or 50% of the cost of the building construction or reconstruction must ensure the construction or reconstruction meets the Leadership in Energy and Environmental Design (LEED) green building guidelines of the United States Green Building Council (USGBC). In addition, new buildings and additions constructed by the City that cost more than $2 million must also be energy efficient and adhere to the LEED green building guidelines.



Map Reference: MSNLive Aerials

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ELMWOOD PK, NJ • NEW YORK, NY • PHILADELPHIA, PA • DOYLESTOWN , PA
NEW HAVEN, CT • MIAMI, FL • TRENTON, NJ

AERIAL MAP
NYPD ACADEMY
COLLEGE POINT

QUEENS **NEW YORK**

JOB NO.	DATE	SCALE	FIGURE NO.
170015802	**03/18/08**	**1" = 1000'**	**5-1**

NJ Certificate of Authorization No: 24GA27996400
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Site Photograph 5-1: NYPD Tow Pound looking northeast.

Site Photograph 5-2: Northeast area of drainage ditch at the 90 degree bend looking east, showing upland vegetation.

Section 401 of the CWA requires any applicant of a federal license or permit for an activity that may result in a discharge into navigable waters to provide a certification from the state in which the discharge would occur or from an interstate water pollution control agency, that the discharge would comply with Sections 301, 302, 303, 306, 307, and 316(b) of the Act. Applicants proposing discharges into waters in New York must obtain a Water Quality Certification from the NYSDEC.

Section 404 of the CWA regulates the permanent or temporary discharge of dredged or fill material into "waters of the United States". This Section is administered by the USACE. "Waters of the United States" are defined in 33 Code of Federal Regulations (CFR) 328.3 and includes all waters, currently and previously, used for interstate commerce; lakes; rivers; streams; mudflats; sandflats; wetlands; sloughs; prairie potholes; wet meadows; playa lakes; and natural ponds. Activities authorized under Section 404 of the CWA must comply with Section 401 of the CWA. Based on correspondence from the USACE, it is anticipated that the proposed Academy would require a Section 404 permit since the drainage ditch on site is under USACE jurisdiction as a "Water of the United States".

Rivers and Harbors Appropriations Act of 1899

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

The USACE has taken jurisdiction of the onsite drainage ditch as a navigable "Water of the United States". Therefore, a Section 10 permit is anticipated to be required for the proposed construction activities in and around the drainage ditch. These activities include the removal and replacement of outfalls, the removal of the existing tide gates and installation of a new tide gate apparatus at the southern end of the drainage ditch, the construction of water quality treatment facilities in the drainage ditch and various structural components of the proposed Academy that will span the drainage ditch.

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

The Coastal Zone Management Act of 1972 (CZMA) established a voluntary program to encourage coastal states to develop and implement coastal zone management plans to effectively protect and manage development in coastal zones. Federal permits issued in states with an approved coastal management program must be accompanied by a Coastal Zone Consistency Determination. The applicable project policies of New York's federally approved coastal zone management program, the revised Local Waterfront Revitalization Program (WRP), are described in Chapter 6, "Waterfront Revitalization Program." In New York State, the New York State Department of State (NYSDOS) is responsible for the consistency review. Since the proposed development occurs within the Coastal Zone of New York and requires a Federal permit, coastal consistency review by the aforementioned agencies will be required.

Endangered Species Act of 1973 (PL 93-205; 16 USC 1531 ET SEQ.)

The Endangered Species Act of 1973 (ESA) provides for the conservation of threatened or endangered species and their habitats. The Act prohibits the importation, exportation, taking, possession, and other activities involving illegally taken species covered under the Act, and interstate or foreign commercial activities. The Act also provides for the protection of critical habitats on which endangered or threatened species depend for survival. The USFWS (non-marine plants and animals) and NMFS (marine plants and animals) are responsible for administering the Act. Section 7(a) of the Act requires federal agencies to consult with the Secretary of the Interior (through USFWS and/or NMFS) before project implementation.

Magnuson-Stevens Act

Section 305(b)(2)-(4) of the Magnuson-Stevens Act outlines the process for the NMFS and the Regional Fishery Management Councils (in this case the Mid-Atlantic Fishery Management Council) to comment on activities proposed by federal agencies (issuing permits or funding projects) that may adversely impact areas designated as essential fish habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC 1802(10)). The USACE, in their permitting process, must either incorporate NMFS recommendations for minimizing effects to EFH (measures to avoid, minimize, or mitigate), or provide an explanation for not adopting them. Under the Magnuson-Stevens Act, NMFS and the eight regional Fishery Management Councils were directed to describe and identify EFH in the fishery management plans developed by each Council to reduce the adverse effects of fishing on EFH and encourage the conservation and enhancement of EFH.

New York State Laws and Regulatory Programs

State Pollutant Discharge Elimination System, Article 17, Title 8, New York State Environmental Conservation Law (ECL), Implementing Regulations 6NYCRR Parts 750 Through 757

Title 8 of Article 17, ECL, *Water Pollution Control*, was enacted to protect and maintain surface and ground water resources and authorized the creation of the State Pollutant Discharge Elimination System (SPDES) to regulate discharges to the state's waters. The following activities require SPDES permits: constructing or using an outlet or discharge pipe (point source) that discharges wastewater into surface or ground waters of the State; constructing or operating a disposal system (sewage treatment plant); or discharge of stormwater. Because construction activities for the proposed Academy would disturb more than one acre of land and the proposed Academy includes discharge of stormwater into the man-made drainage ditch on the Project Site, a SPDES permit will be required.

Protection of Waters, Article 15, Title 5, ECL, Implementing Regulations 6 NYCRR Part 608

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

Streams and small waterbodies connected to streams that are designated as C(T) or higher (i.e., C(TS), B, or A) are protected streams that are subject to the stream protection provisions of the Protection of Waters regulations. The Protection of Waters Permit Program regulates five different categories of activities: disturbance of the stream bed or banks of a protected stream or other watercourse; construction, reconstruction, or repair of dams and other impoundment structures; construction, reconstruction, or expansion of docking and mooring facilities; excavation or placement of fill in navigable waters and their adjacent and contiguous wetlands; and Water Quality Certification for placing fill or other activities that result in a discharge to waters of the United States in accordance with Section 401 of the Clean Water Act. Since the NYSDEC has taken jurisdiction of the drainage ditch as a "Water of the United States" pursuant to Use and Protection of Waters regulations, a Use and Protection of Waters Permit is expected to be required for the proposed Academy.

Freshwater Wetlands, Article 24, ECL, Implementing Regulations 6 NYCRR Parts 663, 664, and 665

The NYSDEC regulates freshwater wetlands under 6 NYCRR Parts 663, 664, and 665. Freshwater wetlands include marshes, swamps, sloughs, bogs, and flats which support aquatic or semi- aquatic vegetation. Regulated freshwater wetlands; under 6 NYCRR Parts 663, 664, and 665; consist of an area of at least 12.4 acres (approximately 5 hectares). Wetlands smaller than 12.4 acres may be protected if they exhibit an unusual local importance as determined by the Commissioner pursuant to Article 24 of the ECL. A permit or letter of permission is also required for activities within or adjacent to wetlands (100 feet from the wetland boundary). There are no mapped freshwater wetlands on or within 100 feet of the proposed project. As such, approval under the freshwater wetland regulation is not required from a wetland boundary.

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

The NYSDEC regulates tidal wetlands under 6 NYCRR Part 661. Tidal wetlands include coastal freshwater marshes; intertidal marshes; coastal shoals, bars and flats; littoral zones; high marsh or salt meadows; and formerly connected tidal wetlands. A permit is required for regulated activities to tidal wetlands or adjacent areas proposed on or after August 20, 1977. Adjacent areas are defined as up to 300 feet landward from the tidal wetland boundary, or up to 150 feet landward from the tidal wetland boundary within the City of New York. The proposed Academy is not located within an adjacent area of a mapped wetland boundary. The NYSDEC has not taken jurisdiction of the drainage ditch under this regulation, therefore, a tidal wetland permit will not be required for proposed work in and adjacent to the ditch.

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

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

The WRP, originally adopted in 1982, included 44 State policies and 12 City policies. It established the City's policies for development and use of the waterfront. A revised WRP, which simplified and clarified the review process, was approved by the City Council in October 1999. The new WRP consists of 10 New York City coastal zone policies. Any activity subject to review under federal, state, and city laws must be assessed with respect to consistency with the state CMP and the state and city policies. A number of the policies deal with protection of water quality and natural resources. Chapter 6, "Waterfront Revitalization Program," addresses the general consistency of the proposed Academy with the 10 City policies.

The NYSDOS has designated 15 Significant Coastal Fish and Wildlife Habitats within New York City. None are located within or within close proximity to the Project Site; therefore, this portion of the regulation does not apply to the proposed Academy site.

The New York City WRP designates three Special Natural Waterfront Areas (SNWA): East River and Long Island Sound; Jamaica Bay; and Northwest Staten Island Harbor Herons. None are located within close proximity to potential operation or construction activities associated with the proposed Academy; therefore, this portion of the regulation does not apply to the proposed Academy.

Floodplain Management Criteria for State Projects (6 NYCRR 502)

In accordance with 6 NYCRR 502, all State agencies will insure that the use of State lands and the siting, construction, administration and disposition of State-owned and State-financed facilities are

conducted in ways that will minimize flood hazards and losses. Alternate sites, not containing flood hazard areas, should be considered during project design stages. Proposed projects shall be designed and constructed to minimize flood damage; prevent flotation, collapse or lateral movement; and provide adequate drainage to reduce exposure to flood hazards. All public utilities and facilities are to be located and constructed to minimize or eliminate flood damage. Additionally, under 6 NYCRR 502, all non-residential structures "shall have the lowest floor, including basement, elevated or flood-proofed to not less than one foot above the base flood level, so that below this elevation the structure, together with attendant utility and sanitary facilities, is watertight, with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy." Further, no project shall be undertaken unless the cumulative effect of the proposed project and existing developments would not cause any material flood damage to such existing development. No portion of a project shall be placed within an adopted regulated floodway that would result in any increase in flood levels. The majority of the proposed Academy site is located within the 100-year floodplain as determined by the Federal Emergency Management Agency (FEMA). The floodplain in the vicinity of the Project Site has been determined to be elevation 13' using National Geodetic Vertical Datum 1929 (NGVD 29) and elevation 10.275' using Queens Borough Datum (QBD). As a non-residential, public facility, the proposed Academy would be required to comply with 6NYCCRR 502.

The New York State Environmental Quality Review Act (6 NYCRR Part 617, SEQRA)

Under the State Environmental Quality Review Act (SEQRA), local agencies may designate specific geographic areas as Critical Environmental Areas (CEAs). Jamaica Bay, located approximately eight miles south of the Project Site, is the closest CEA to the project area. No CEAs are located within the project area; therefore, this portion of the regulation does not apply to the proposed Academy.

Fish and Wildlife Act, Article 11, Title 20, ECL

This legislation, enacted in 1997, authorizes the commissioners of NYSDEC, NYSDOS, and the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to designate areas of state lands and waters that are particularly important to bird conservation. No Bird Conservation Areas (BCAs) are located in the study area; therefore, this portion of the regulation does not apply to the Proposed Project.

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

The Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern regulations prohibit the taking, importing, transporting, 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 Section 182.6. Threatened, endangered, and special concern species with the potential to occur in the project area are discussed in the, "Existing Conditions" and "Probable Impacts of the Proposed Project" section of this chapter.

New York City Laws and Regulatory Programs

Local Law 33 of 1988

In New York City, building in the 100-year floodplain (elevation 13' feet above sea level NGVD 29) is governed by Local Law 33 of 1988. This law prohibits the building of habitable structures in the 100-year floodplain unless it is elevated above the floodplain or is flood-proofed. The law requires that roadway and utility construction be designed to minimize or eliminate damage from flooding. This law is applicable to the proposed Academy.

C. EXISTING CONDITIONS

The Project Site is located on approximately 35 acres of City-owned land in College Point, Queens (Figure 5-1). Other than the man-made drainage ditch located in the eastern portion of the site, which also includes the site's only vegetation, the Project Site is entirely developed with buildings and parking lots including the NYPD Tow Pound, Ulmer Street entrance guard house and office, a City-owned administrative building with attached vehicle service station, and a private business operation; Corona Auto and Truck, located at the intersection of College Point Boulevard and 28th Avenue. Vegetation in the area near the man-made drainage ditch is typical of a disturbed, urban area. Wildlife that is expected to occur on the Project Site consists of species that are tolerant of urban conditions.

Terrestrial Resources

Vegetation

As stated previously, the majority of the Project Site is developed with parking lots and buildings and features very little vegetation. The Project Site features invasive upland plants and vegetation typical of a disturbed urban area with a dominance of impervious, paved surface. The drainage ditch described in the chapter introduction contains open water with upland vegetation along its edges (Photograph 5-2). The sloped banks of the ditch are sparsely vegetated with invasive, non-hydrophytic herbaceous and scrub/shrub vegetation. The vegetation was similar throughout the banks of the ditch. Trees are intermittently spaced along the top of the banks. Vegetative species on the banks include common mugwort (*Artemisia vulgaris*), tree-of-heaven (*Ailanthus altissima*r), common reed (*Phragmites australis*,), staghorn sumac (*Rhus typhina*), black cherry (*Prunus serotina*), and cottonwood (*Populus deltoids*). With the exception of black cherry, these species are common invasive upland plants that frequently grow in disturbed areas.

Wildlife

The potential for wildlife to use the Project Site is minimal due to the existing development on the site. Wildlife using the site are generally tolerant of urban conditions. The vegetation adjacent to the drainage ditch provides limited habitat for small mammals and song birds. Canada Geese (*Branta canadensis*) were observed during various site investigations. The New York Breeding Bird Atlas Block 5951C (2007) was reviewed to determine the potential of breeding birds within the Project Site. Table 5-1 lists birds identified as potentially breeding in urban habitats. Other wildlife observed on the Project Site includes various gull species typical of urban conditions.

Table 5-1: Birds With the Potential to Breed within the Project Site

Common Name	Scientific Name
Canada Goose	*Branta canadensis*
Killdeer	*Charadrius vociferous*
Rock Pigeon	*Columba livia*
Mourning Dove	*Zenaida macroura*
Chimney Swift	*Chaetura pelagica*
American Crow	*Corvus brachyrhynchos*
Barn Swallow	*Hirundo rustica*
American Robin	*Turdus migratorius*
Gray Catbird	*Dumetella carolinensis*
European Starling	*Sturnus vulgaris*
Song Sparrow	*Melospiza melodia*
Baltimore Oriole	*Icterus galbula*
House Finch	*Carpodacus mexicanus*
American Goldfinch	*Caruelis tristis*
House Sparrow	*Passer domesticus*
Sources: NYSDEC. *New York State Breeding Bird Atlas* [Internet]. 2008 [cited 2008 December 03]. http.//www.dec.ny.gov/animals/7312.html, Cornell Lab or Ornithology [Internet]. 2003 [cited 2008 December 03]. http://www.birds.cornell.edu/AllAboutBirds	

Geology and Soils

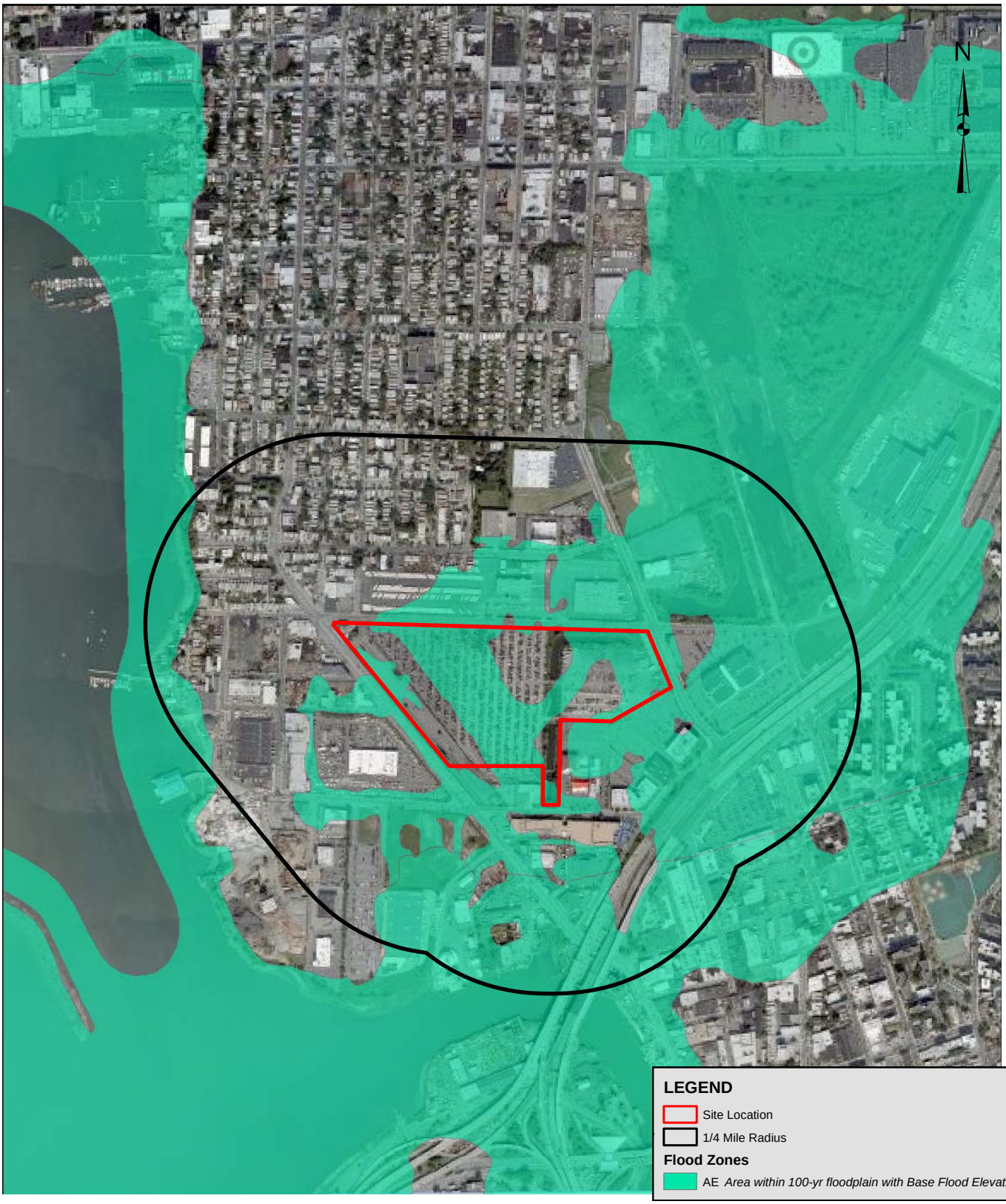
The U.S. Department of Agriculture, National Resources Conservation Service (NRCS) soil mapping identifies the Project Site as containing Urban Lands-Udorthents-Udipsamments. Soils in this classification are typically located on nearly level sites located in highly urbanized areas with more than 80 percent of the surface covered by impervious pavement and buildings. Soils onsite consist primarily of historic fill material located to a depth of between 16 to 32 feet below ground surface (bgs). The fill consists of multi-colored sand and gravel with some clay, brick, concrete, wood and asphalt fragments, plastic, and glass. Native soil identified beneath the fill layer is described as a gray/green/black silty clay.

The Project Site lies within the Atlantic Coastal Plain. The Atlantic Coastal Plain encompasses Long Island, a small portion of Staten Island, and all of southern New Jersey. The region is underlain by poorly consolidated sedimentary formations of Cretacious, Tertiary, and Quaternary age that gently dip seaward. The New York State Geological Survey Bedrock Geology for Lower Hudson indicates the predominant rock type beneath of the Project Site to be the Raritan Formation. The Raritan Formation consists of clay, sand, lignite, and gravels representing alluvial plains, coastal and nearshore marine environments. The surficial geology is mainly mapped as lacustrine delta with a small portion of the northwestern corner of the Project Site mapped as till. Lacustrine delta consists of stratified coarse to fine gravel and sand deposited at a lake shoreline with a thickness of 3-15 meters. Till consists of variable texture material (boulders to silt) deposited beneath glacier ice with a thickness 1-50 meters.

Groundwater

The Project Site is located within the Brooklyn-Queens Aquifer System. USGS investigations have shown that Queens County has an upper glacial aquifer which is underlain by two deeper aquifers, Jameco-Magothy and Lloyd. According to USGS descriptions, the upper glacial aquifer discharges into adjacent bays or the Long Island Sound. The USGS description of historical water resources in Queens County state that seeps and springs existed in the vicinity of the project area.

Phase II Environmental Site Investigations (ESIs) and other environmental studies conducted on the Project Site indicate groundwater depths ranging from approximately 9 to 15 feet bgs. Groundwater



Map Reference: New York State 2000 Digitally Enhanced Ortho Imagery; FEMA Q-3 Data NYC

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FEMA MAP
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under the Project Site flows in a southerly to southeasterly direction toward the Pound Lot. Groundwater samples indicated exceedences for VOCs, SVOCs, metals, PCBs, pesticides and New York City Department of Environmental Protection (NYCDEP) Limitations for Effluent to Sanitary or Combined Sewers. (See Chapter 7, "Hazardous Materials").

Historically, the Jamaica Water Supply Company supplied water to the southern portion of Queens County. In 1996, the City purchased the Queens portion of the Jamaica Water Supply Company and now provides drinking water to those communities previously served by the groundwater wells. Although groundwater is not used as a source of drinking water in the portion of Queens where the Project Site is located, it is the sole source of drinking water for Nassau and Suffolk Counties on Long Island and is protected as such in Kings and Queens Counties.

Floodplains

A majority of the Project Site and quarter -radius study area is located within a tidal floodplain associated with nearby water bodies including Flushing Bay, Flushing River and Mill Creek and the lower area of the former Flushing Airport site. As shown in Figure 5-2, the Project Site and adjacent areas to the north, east, south and southeast lie within Zone AE on the Flood Insurance Rate Map prepared by FEMA. Zone AE represents areas that have a 1% chance of flooding each year (100-year flood) that have been determined in the Flood Insurance Study by detailed methods of hydraulic analysis. The residential and commercial areas to the northeast of the Project Site are not located in the 100-flood plain. In the vicinity of the site, the 100-year floodplain elevation has been determined to be elevation 13' (NGVD 1929 [10.275' QBD]).

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

Wetlands

As shown in Figure 5-3, no NYSDEC regulated freshwater or tidal wetlands are located on the Project Site. The closest mapped NYSDEC tidal wetland is Flushing Creek/Flushing Bay, located within the quarter -mile radius study area, approximately 700 feet south of the Project Site. The closest mapped NYSDEC freshwater wetland is the former Flushing Airport site located approximately 0.3 miles northeast of the Project Site. Portions of the southern area of the former Flushing Airport site are located within the proposed Academy's quarter -mile radius study area.

The National Wetland Inventory (NWI) Map (Figure 5-4) indicates that palustrine, unconsolidated bottom, semi-permanently flooded (PUBF) wetlands and palustrine, seasonally flooded (PEM1C) wetlands are located on the Project Site and within the quarter -mile radius study area. However, based on Site investigations, (as discussed below) and information obtained from various area studies, the Site does not exhibit wetland characteristics. Further, the NWI map is not used to designate wetlands for regulatory purposes.

An inspection of the Project Site was performed on 19 March 2008 by wetland scientists from Langan Engineering & Environmental Services (Langan) to identify any potential wetland areas. The methodology used by Langan to evaluate wetlands on the project site was consistent with the USACE guidelines as specifically referenced in the 1987 Corps of Engineers Wetlands Delineation Manual. This methodology utilizes a three parameter approach to identifying and delineating wetlands. The technical criteria include:

- A the dominance of hydrophytic vegetation;
- The presence of suitable wetland hydrology; and

- The presence of hydric soils for a positive determination.

Based on 6 June 2008 correspondence, the USACE confirmed through a Jurisdictional Determination (JD) that wetlands are not present on the site and identified the ditch as Jurisdictional Waters of the United States. A JD is the formal process of identifying and locating jurisdictional "Waters of the United States" (including wetlands) regulated by the USACE under Section 404 of the Clean Water Act. The NYSDEC confirmed through a JD that it will take jurisdiction of the drainage ditch pursuant to 6NYCRR Part 608 – Use and Protection of Waters regulations.

Although it is tidally influenced, the downstream area of the drainage ditch, the area south of the tide gates (Figure 5-5 Photograph 5-3), is not officially mapped as a state regulated tidal wetland. Further, the freshwater upstream end of the ditch, north of the tide gates, is not mapped under NYSDEC's Freshwater Wetland regulations. Based on correspondence with the NYSDEC, the drainage ditch will not be regulated under Tidal or Freshwater Wetland regulations. However, since it is anticipated that the proposed Academy would include minor discharges, pursuant to the USACE Nationwide Permit Program (Sections 401 and 401 of the CWA) it is anticipated that a Water Quality Certification will be also required from the NYSDEC.

As mentioned previously in this chapter, the onsite drainage ditch is the only non-structural feature on the Project Site. Site field observations showed a low-lying isolated, area of water present in the central, north part of the Tow Pound. However, the area is likely a temporary ponding resulting from poor drainage after heavy rain events and is not subject to agency regulation. The drainage ditch contains open water with upland vegetation along its edges (Photographs 5-2, 5-3, 5-5, 5-6, 5-7 & 5-8). The banks of the ditch are sparsely vegetated with invasive, non-hydrophytic herbaceous and scrub/shrub vegetation. Trees are intermittently spaced along the top of the banks. Vegetative species on the banks include common mugwort (Artemisia vulgaris), tree-of-heaven (Ailanthus altissima), common reed (Phragmites australis), staghorn sumac (Rhus typhina), black cherry (Prunus serotina), and cottonwood (Populus deltoids). With the exception of black cherry, these species are common invasive upland plants that frequently grow in disturbed areas. The banks of the ditch do not exhibit wetland hydrology and are composed of a fill material that is not considered a hydric soil. A more detailed description of the detention ditch is provided below.

Man-made Drainage Ditch

As shown in Figure 5-5, the northeastern portion of the Project Site features an inverted "L" shaped, man-made drainage ditch that begins at the intersection of 28th Avenue and Ulmer Street and flows west for approximately 500 feet, then turns to the south and flows for another approximately 1,100 feet to 31st Avenue at the southeastern area of the Project Site. The drainage ditch is approximately 44' to 60' wide and approximately 1,600 feet long. According to the National Oceanic and Atmospheric Administration (NOAA), Mean High High Water in the ditch is measured at 0.731' Queens Borough Datum (QBD). MHHW is the average of the higher high water height of each tidal day observed by the National Tidal Datum. Mean High Water (MHW) in the tidal portion of the ditch is 0.621' (QBD).

The drainage ditch and the adjoining "V-shaped" detention pond located northeast of the immediate Project Site and within the quarter-mile radius, were constructed in the 1980's by the NYCEDC to allow the discharge of water from the former Flushing Airport to flow to the Flushing River/ Flushing Bay, when the original Mill Creek, which previously flowed to the east of the Project Site to the Flushing River, was blocked by development and redirected into the drainage ditch to open water in Flushing Bay. The onsite drainage ditch is the sole egress of water from the former Flushing Airport site freshwater wetland system to the open water in the Flushing River/Flushing Bay.

As shown in Figure 5-5, the ditch contains two internal road bridges, referred to as the northern bridge (Photo 5-5) and southern bridge, (Photo 5-3) that cross over and separate it into northern, central and

Map Reference: New York State 2000 Digitally Enhanced Ortho Imagery; NYSDEC 1974 Tidal Wetlands Inventory; NYSDEC 1999 Freshwater Wetlands – Queens County; USFWS 2007 National Wetlands Inventory Data

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NYSDEC WETLANDS MAP
NYPD ACADEMY
COLLEGE POINT

QUEENS **NEW YORK**

JOB NO.	DATE	SCALE	FIGURE NO.
170015802	**03/18/08**	**1" = 1000'**	**5-3**

NJ Certificate of Authorization No: 24GA27996400
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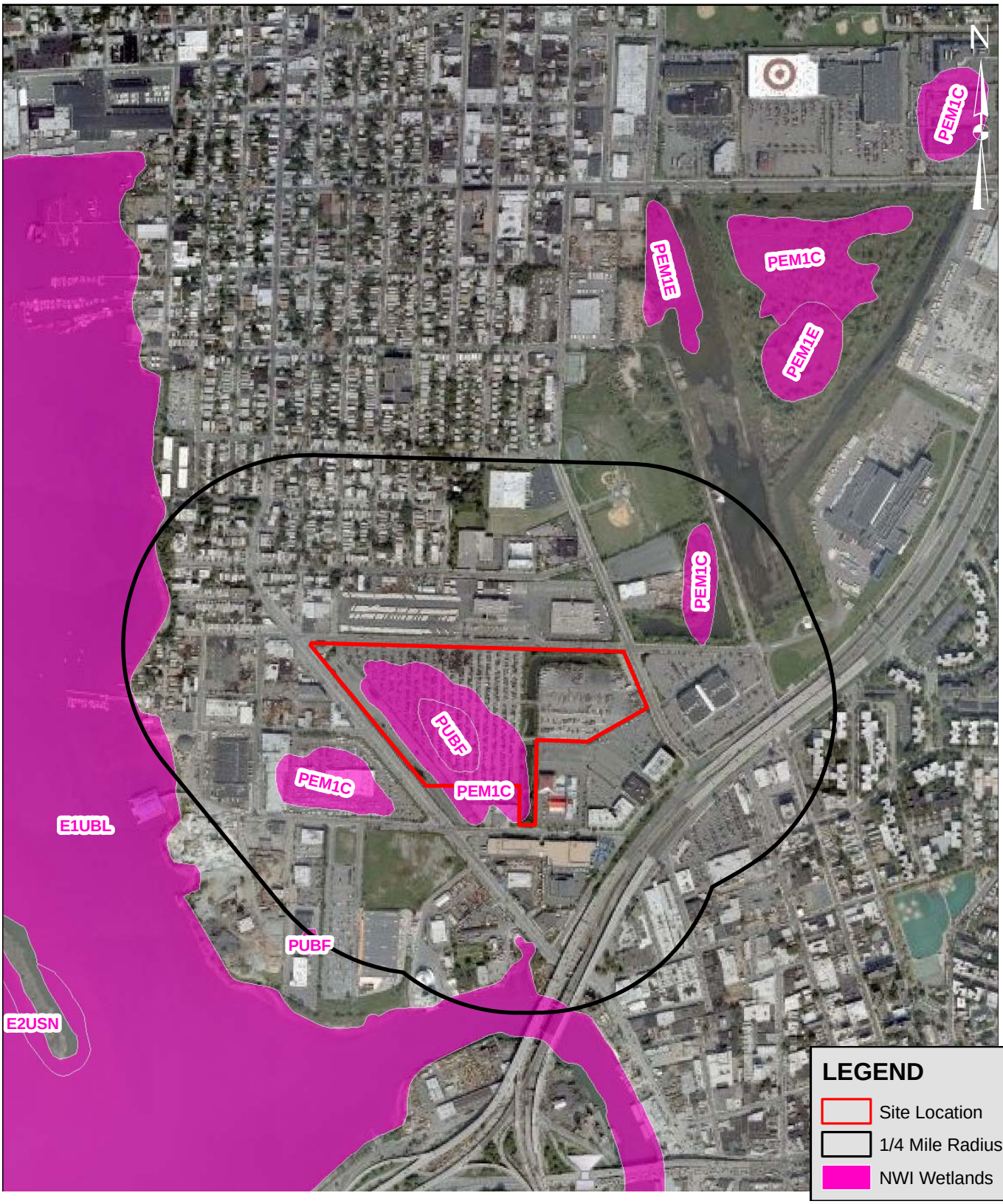

Map Reference: New York State 2000 Digitally Enhanced Ortho Imagery; USFWS 2007 National Wetlands Inventory Data

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NATIONAL WETLANDS INVENTORY MAP
NYPD ACADEMY
COLLEGE POINT

QUEENS **NEW YORK**

JOB NO.	DATE	SCALE	FIGURE NO.
170015802	03/18/08	1" = 1000'	5-4

NJ Certificate of Authorization No: 24GA27996400
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Map Reference: MSNLive Aerials

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DRAINAGE DITCH AERIAL MAP

NYPD ACADEMY

COLLEGE POINT

QUEENS **NEW YORK**

JOB NO.	DATE	SCALE	FIGURE NO.
170015802	**12/18/08**	**NTS**	**5-5**

NJ Certificate of Authorization No: 24GA27996400
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Site Photograph 5-3: Looking south from the northern crossing of drainage ditch. Water in photo is tidally influenced. Southern crossing is in the distance.

Site Photograph 5-4: Looking north at the northern crossing of drainage ditch. Note attached tide gates.

Site Photograph 5-5: Drainage ditch at 90 degree bend looking east.

Site Photograph 5-6: Drainage ditch at the 90 degree bend looking south at northern crossing.

Site Photograph 5-7: Looking south from the southern crossing of drainage ditch.

Site Photograph 5-8: Outfall into drainage ditch from western portion of NYPD Tow Pound.

Photo 5-9: Culverts in “V-Shaped” detention pond northeast of Project Site.

southern sections. As further described in Chapter 8, "Infrastructure", at the upstream end of the ditch, near the intersection of 28th Avenue and Ulmer Street, twin 84-inch culverts/storm sewers discharge drainage from offsite open waters and wetlands located to the northeast (Photo 5-6). The northern section of the ditch is connected via two 72-inch culverts located beneath the northern bridge (Photo 5-7). The tide gates are attached to these culverts on the downstream end of the crossing (Photo 5-5). The central and southern sections of the drainage ditch are connected via two 84-inch culverts located beneath the southern bridge (Photo 5-3). The ditch ultimately drains offsite via dual 56-inch by 81 inch pipes located at the southern boundary at 31st Avenue. Downstream and offsite, the drainage ditch is culverted for approximately 700 feet before it discharges to Flushing River/Flushing Bay (Photo 5-8).

Corrugated metal stormwater outfalls discharge stormwater runoff from the Pound Lot and other areas of the Project Site at several locations along the ditch (Photo 5-9). See Chapter 8 "Infrastructure" for an analysis of onsite stormwater runoff.

As mentioned above, the drainage ditch is an integral part of wetland maintenance, flood control and stormwater management in the Project Area, the adjacent development north of the Project Site and the area encompassing the former Flushing Airport site and the inverted "V" shaped detention pond located immediately northeast of the Project Site, north of 28th Avenue and east of Ulmer Street (Figure 5-1). The NYCEDC owns the entire drainage system located within College Point Industrial Park and has been responsible for its maintenance for approximately 30 years. The tide gates were previously located on the culverts beneath the southern ditch crossing. These were relocated to the current location in 2006 after they had become inoperable and allowed tidal water to flood areas north of the Project Site. Based on correspondence with NYCEDC officials, the 2006 tide gate relocation site was selected in part because it would be most effective and convenient to attach the new tide gate devices to the existing culverts at the new location. This action required Nationwide General Permit Numbers 3 and 7 from the USACE and an Environmental Conservation Law (ECL) Article 25 Tidal Wetlands Permit from the NYSDEC and met NYSDOS general consistency concurrence criteria.

In addition to run-off from the adjacent development north of the Project Site, the freshwater section of the drainage ditch located north of and "upstream" of the tide gate receives water from the former Flushing Airport Site wetland. This water flows through the "V-shaped" detention basin located north of 28th Avenue and Ulmer Street, and into the drainage ditch through 84" culverts (Photo 5-10). The volume of water in this section is dependent upon the opening and closing of the tide gate, which serves to prevent tidal waters from reaching upstream but allows the freshwater to drain downstream to Flushing River/Flushing Bay during low tide. Although this section of the drainage ditch is non-tidal, it has to some degree daily water level fluctuations. When the tide gates are closed at high tide, the freshwater does not flow, and the upper area of the drainage ditch becomes a stagnant water body. When the tide gates are open, the pressure in the freshwater section is relieved and water discharges downstream. However, when the tide gates are open, the water flow is slow due to the small size of the tide gate openings. The average daily water level variation due to the opening and closing of the gate, and alternation of restricted versus open-flow, is approximately 2 feet, and varies based on the amount of precipitation occurring in the watershed. It is estimated that downstream of the tide gate, where saltwater from Flushing River/Flushing Bay enters twice per day, the tidal delta (difference between high and low tide) is between 0 and 3 feet.

Water quality samples taken in October 2008 indicate that the water in the drainage ditch contains several contaminants listed in NYSDEC's *New York State Stormwater Management Design Manual*, including but not limited to, suspended solids, phosphorus, nitrogen, nitrite and nitrate, lead, oil and grease, biochemical oxygen demand (BOD), fecal coliform, fecal strep and chloride. However, the samples showed NYSDEC standards exceedences for total nitrogen, chloride and BOD.

Aquatic Resources

Surface drainage from the Project Site and off-site, upgradient areas drain to Flushing River, Flushing Bay, and the East River through the drainage ditch mentioned throughout this chapter. Because water quality within these water bodies could potentially be affected by the proposed Academy, the existing aquatic resources within these water bodies were examined to determine current conditions. A discussion of the general conditions, water quality, sediment quality and aquatic biota is provided below.

General Conditions

Flushing Bay is a tidal waterbody located on the south side of the upper East River. Historically the bay was much larger, but filling activities for the construction of LaGuardia Airport in the 1930's significantly lessened its size. The Bay primarily receives freshwater flows from the Flushing River and Mill Creek. The circulation and salinity of the bay are primarily determined by the conditions within the adjacent East River and the Long Island Sound. A salinity gradient exists along the East River due to the higher salinity content of the Long Island Sound.

In general, the water depths within Flushing Bay are shallow near the shore and approximately 15 feet near the Bay's confluence with the East River. A 150-foot wide artificial navigation channel is located in the center of the bay and maintained at a depth of 14.5 feet to promote the passage of boats to and from the East River. Water depth within the federal navigation channel of the East River is maintained at either 35 or 40 feet below the mean low water line depending on the section of the river. Portions of the East River are also much deeper than the maintained depth, in some cases reaching up to 100 feet deep. The Flushing Bay and East River shorelines are almost entirely bulkheaded or rip-rapped.

The East River is a tidal strait that connects New York Harbor with the western end of Long Island Sound. It is approximately 16 miles long and generally ranges from 600 to 4,000 feet in bank to bank width. Maximum current velocities in the East River range between approximately 5 and 6 knots (8 to 10 feet per second); however backwaters such as Flushing Bay typically have tidal currents that are considerably slower. The strong tidal currents in the East River are due to the differences in timing and amplitude of tides between Long Island Sound and the New York Harbor.

Water Quality

Sources of freshwater to the drainage ditch include the above-mentioned former Flushing Airport site, stormwater runoff from the site itself (currently the Tow Pound), stormwater from the off-site parking lot to the east, and runoff from streets north of 28th Avenue. The latter street runoff enters the drainage ditch via twin 84" culverts near to 28th Avenue at the 90° bend in the drainage ditch. All of these sources of water contribute sediment, nutrients and contaminants to the drainage ditch.

Flushing Bay is a shallow, highly impacted water body that has been greatly altered by human activities over the past century. The proposed Academy's impacts on stormwater management are described in Chapter 8, "Infrastructure". Given the fact that an undetermined drainage area flows through the site and directly into Flushing Bay, the Project Site is in a critical location to impact the quality of water that enters the bay.

The NYSDEC "Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations" (Title 6 of the NYCRR Part 703) provides surface water standards for each Use Class of New York surface waters. The Flushing Bay and Flushing River are classified as Use Classification I. The best usages for Class I waters are as secondary contact recreation and fishing. Water quality should be suitable for fish propagation and survival. Water quality standards for dissolved oxygen (DO) and total and fecal coliform for Use Class I waters are provided in Table 5-2 below. The NYSDEC does not have standards for chlorophyll or water clarity.

Table 5-2: NYSDEC Surface Water Standards for Use Class I

Class	Definition	Fecal Coliform	DO (never less than)	pH
I	Water quality should be suitable for fish propagation and survival.	The monthly geometric mean from a minimum of five examinations shall not exceed 2,000 colonies/100ml	Shall not be less than 4 milligrams per liter (mg/L).	The normal range shall not be extended by more than 0.1 of a pH unit.
Source: NYSDEC				

Water quality within the New York Harbor has been monitored by the NYCDEP for almost 100 years. The NYCDEP's "Harbor Survey" evaluates surface water quality in four regions: Inner Harbor Area, Upper East River-Western Long Island Sound, Jamaica Bay, and Lower New York Bay-Raritan Bay (DEP 2007). The Project Site is in the Upper East River-Western Long Island Sound, which includes the Flushing Bay and Flushing River area.

The most Recent Harbor Survey (DEP 2007) indicates that the water quality of New York Harbor has improved significantly since the 1970s as a result of measures undertaken by the City. These improvements are primarily attributed to regional decreases in municipal and industrial discharges that occurred through the construction and upgrading of Water Pollution Control Plants. While water quality continued to improve until the early 1990s, since that time improvements have been relatively small (DEP 2007).

Aerobic forms of aquatic life such as fish, crabs, clams, and worms require DO in the water column for respiration. The bacterial breakdown of high organic loads from various sources can deplete DO to low levels and persistently low DO can degrade habitat and cause a variety of sublethal or, in some cases, lethal effects. Consequently, DO is one of the most universal indicators of overall water quality in aquatic systems. Mean DO concentrations in the upper East River have increased over the past 30 years from an average that was below 3 mg/L in 1970 to above 5 mg/L in 2006, a value fully supportive of fishing and bathing (DEP 2007). In 2006, DO levels in the Upper East River and Western Long Island Sound were the lowest throughout the harbor. Summer DO averaged 5.3 mg/L and 4.9 mg/L for surface and bottom waters, respectively. These values are, however, above the 4 mg/L standard for Use Class I waters (DEP 2007).

When coliform bacteria is present in surface waters creates potential health impacts from human or animal waste, and elevated levels of coliform can result in the closing of bathing beaches and shellfish beds. In 2006, sanitary water quality continued to be good for Upper East River-Western Long Island Sound. Fecal coliform concentrations for all monitoring sites were in compliance with their specified best use classifications for fishing and bathing. The summer geometric mean for the region was 55 cells/100mL. Only two sites had summer geometric means greater than 100 cells/100 mL (DEP 2007). Overall, fecal coliform concentrations in this area have declined, significantly improving water quality from the early 1970s, when levels were well above 2,000 colonies/100 mL.

If nutrient levels become too high in the New York Harbor, it can lead to the excessive growth of phytoplankton, a minute free-floating aquatic plant that forms the basis of the food web. These organisms respond quickly to environmental changes and their abundance can serve as a measure of water quality and evidence of potential eutrophication and depletion of dissolved oxygen. Concentrations of the plant pigment chlorophyll-a in water can be used to estimate productivity and the abundance of phytoplankton. Chlorophyll-a concentrations greater than 20 micrograms per liter (µg/L) are often considered suggestive of eutrophic conditions. DEP is implementing a program to reduce nitrogen loadings from wastewater treatment plants to the East River. Upgrades implemented at four upper East River treatment plants have decreased nitrogen discharges from these plants by over 30,000

pounds per day since 1993. In 2006, the average concentration of chlorophyll-a in the upper East River region was 6.67 µg/L, which is well below the 20 µg/L threshold (DEP 2007).

The DEP uses a Secchi disk to estimate the clarity of surface waters. A high Secchi transparency (greater than 5 feet) typically indicates clear water. Decreased clarity can be caused by high suspended solid concentrations or blooms of plankton. Secchi transparencies less than 3 feet are generally indicative of poor water quality conditions. Average Secchi readings in the upper East River have remained relatively consistent since measurement of this parameter began in 1986, ranging between about 3.5 and 6 feet. Average Secchi transparency near the project area in 2007 was approximately 5 feet or greater.

The New York City combined sewer system discharges stormwater and raw sewage into the New York Harbor from 460 permitted outfalls. These outfalls, known as combined sewage overflows (CSOs), drain approximately 200,000 acres within the City during rain events. The discharges can result in localized water quality problems such as periodic high levels of coliform bacteria, floatables, depressed dissolved oxygen, sediment mounds, and unpleasant odors. As a result of the deteriorating water quality, DEP entered into an Administrative Consent Order with DEC in 1992 to guide the DEP's obligations for the CSO program. It required DEP to implement CSO abatement projects in nine facility planning areas for those areas where dissolved oxygen and coliform standards were being exceeded. A new Consent Order was created in 2004 to bring all CSO related matters into compliance with the provisions of the Clean Water Act (CWA) and the New York State Environmental Conservation Law (ECL). The 2004 Consent Order contains requirements to evaluate and implement CSO abatement strategies on an enforceable timetable for 18 water bodies. Flushing Bay is one of these water bodies.

Given the high amount of urban runoff that enters Flushing Bay, including that which flows from the Project Site's man-made drainage ditch, dissolved oxygen and coliform levels within the bay are periodically in non-compliance with the water quality standards. As part of the City's long term CSO planning effort, a Comprehensive Watershed Plan was developed for Flushing Bay in 2007. The plan was created to take a first step toward development of a long-term control plan (LTCP) for the bay, in accordance with the U.S. Environmental Protection Agency (USEPA) CSO Control Policy. The plan assesses the ability of the existing CSO Facility Plan for Flushing Bay and Flushing River to provide compliance with the existing water quality standards.

The DEC is attempting to reduce toxic chemicals in New York Harbor through a collaborative effort with New Jersey known as the Contamination Assessment and Reduction Project (CARP). The DEC developed a comprehensive, multi-media contaminant identification and trackdown program simultaneously with New Jersey and the CARP Work Group (a group of government, academic, and consultant experts). The states, together with the work group, are undertaking a variety of projects including studies of the water in the Harbor and tracking down contaminant sources in the surface water, groundwater, and wastewater of the Harbor. The overall goal of the initiative is to reduce the flow of contaminants to the Port of New York and New Jersey. The principal chemicals of concern include dioxins/furans, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), metals (mercury, cadmium, and lead), and pesticides (dieldrin and chlordane).

Sediment Quality

The highly urban areas that surround the Upper New York Bay, including the project study area, can contribute a large amount of sediment to the substrate of the bay. The distribution of the sediments within the bay is largely impacted by the strong tidal currents. The sediments in Flushing Bay vary from coarse sands and gravels in high energy areas to fine-grained silts and clays in low energy areas. The substrate of the upper East River is primarily a rock bottom consisting of gravel, cobble, rocks and boulders that are covered with a shallow layer of sediment. The areas that do not have the high velocity

tidal currents, such as Flushing Bay, tend to have a thicker layer of fine silts that are not washed away (USACE 1999).

Historically, the sediments within the New York Harbor have been considered highly contaminated due to the industrial and urban characteristics of the watershed. Contaminants of concern have typically been pesticides (chlordane and DDT), metals (mercury and copper), and PAHs. A USEPA study of the New York Harbor found that concentration of contaminants within the sediment was statistically higher than other coastal areas on the East Coast (Adams et al. 1998). The study examined sediment chemistry and toxicity and identified negative impacts on the benthic invertebrate community of the Harbor.

A benthic habitat mapping study was conducted in the New York/New Jersey Harbor in 1995 to assess the benthic habitat quality (Iocco et al. 2000). The study included Flushing Bay. The benthic habitat within Flushing Bay was classified as soft silt or as soft silt with infauna (organisms living within the sediments). Some sampled locations indicated the presence of "stressed silt", or silt with methane gas voids. The sediments in Flushing Bay were indicative of recently accumulated material that has limited potential to support a diverse benthic faunal community.

Aquatic Biota

As a result of the culverts, tide gates and other structural components that obstruct the connection between the Flushing Bay/Flushing River and the freshwater wetland at the Former Flushing Airport site, there is minimal opportunity for aquatic biota to survive in the onsite drainage ditch. Field observations at the Project Site indicated the occurrence of barnacles within the tidal area of the ditch and various parts of shellfish that may have been trapped within the culverts that connect the ditch with the Flushing Bay/Flushing River. A study of the marine biological resources in Flushing Bay was conducted in 1993 as part of an environmental impact analysis for a newly proposed New York City Department of Sanitation (DSNY) marine transfer station on the eastern shore of Flushing Bay (DSNY 2005). The study included monthly sampling for finfish eggs and larvae, and quarterly sampling for adult finfish, as well as benthic invertebrates. A total of eight species of finfish were collected during the study. The most abundant species were Atlantic silverside (Menidia menidia) and Atlantic herring (Clupea harengus). The most abundant finfish eggs collected were cunner (Tautogolabrus adspersus) and Atlantic menhaden (Brevoortia Tyrannus). The most abundant finfish larvae were a herring species (Clupea sp.), Atlantic menhaden, anchovy species (Anchoa sp.), winter flounder, and goby species (Gobiosoma sp.). The most abundant macroinvertebrate species collected were sevenspine bay shrimp (Crangon septemspinosa) and grass shrimp (Palaemonetes vulgaris). Two of the species that were collected are listed as having essential fish habitat for the adult life stages: Atlantic herring and winter flounder (Pleuronectes americanus).

As mentioned in the sediment quality section, a benthic habitat mapping project was conducted in 1995 to examine the overall condition of the benthic communities and sediments in Jamaica, Upper, Newark, Bowery, and Flushing Bays. The overall trends that were noted in all of the bays from June through October included increases in marine worm density, increasing depths at which sediments were oxidized, and changes in species dominance within communities. Within Flushing Bay, the benthic habitats were sampled in three areas; west of the main channel, east of the main channel, and the lower basin near the Flushing River. In all three areas, soft sediment habitats were predominately observed. Oyster beds, epifauna (organisms living upon the sediment) and infauna were present west of the main channel. Infaunal worms were observed east of the main channel. And the lower basin was dominated by bacteria habitats and associated gas void habitats. These gas void habitats typically contain a mixture of nitrogen and methane, are anaerobic, and are associated with high rates of bacterial metabolism. The high abundance of pollution-tolerant species and gas void habitats within Flushing Bay suggest that the benthic habitat quality within the bay is poor (Iocco et al. 2000).

Threatened, Endangered, and Special Concern Species

Requests for information on rare, threatened, or endangered species within the vicinity of the Project Site were submitted to the New York Natural Heritage Program (NYNHP) and the NOAA and National Marine Fisheries Service (NMFS). The NYNHP is a joint venture of NYSDEC and The Nature Conservancy (TNC) since 1985 that maintains an ongoing, systematic, scientific inventory on rare plants and animals native to New York State. The NYNHP database is updated continuously to incorporate new records and changes in the status or rare plants or animals.

According to NOAA, no endangered or threatened species are located in the immediate project area. However, diadromous and resident fish, forage and benthic species may occur in the general project area (this most likely refers to Flushing Bay/Creek). Also, according to NOAA, aquatic habitats in the project vicinity have been designated as Essential Fish Habitat (EFH) for one or more species. Once the permit applications have been submitted, it will be determined whether or not an EFH assessment will be required.

According to NYNHP, there are no records of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of the Project Site.

The United States Fish and Wildlife Service (USFWS) also maintains information on federally-listed threatened or endangered species in the vicinity of the Project Site. The USFWS species list for Queens County, NY contains two endangered species and two threatened species. Endangered species contained on the list consist of the roseate tern (Sterna dougallii dougallii) which typically inhabit rocky offshore islands, barrier beaches, and salt marshes; and the shortnose sturgeon (Acipenser brevirostrum) which primarily occurs in the Hudson River. Threatened species contained on the list consist of the piping plover (Charadrius melodus) which typically inhabit on sandy beaches; and the seabeach amaranth (Amaranthus pumilus) which typically grows on sandy beaches.

The NYSDOS Division of Coastal Resources on-line mapping system does not identify any Significant Coastal Fish and Wildlife Habitats in the vicinity of Flushing Bay, including the Project Site, or the adjacent portion of the upper East River (NYSDOS, 2008).

Essential Fish Habitat (EFH) is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity and "waters" include aquatic areas that are used by fish and may include aquatic areas that were historically used by fish where appropriate. Mapped information provided as part of the "Guide to Essential Fish Habitat Designations in the Northeastern United States" shows that there is EFH identified for a total of twenty federally managed fish and skate species that have been designated in the 10' x 10' square of latitude and longitude that contains the Project Site (Table 5-3). This area includes Atlantic Ocean waters within the Hudson River estuary affecting the following: Manhattan Island, New York City, College Point, Long Island City, Brooklyn, Port Morris, Unionport, Flushing Bay, Astoria, LaGuardia Airport, Badland Island, Rikers Island, Roosevelt Island, Wards Island, and Hell Gate, along with the East River, the Harlem River, and the Bronx River.

Table 5-3: Summary of Essential Fish Habitat (EFH) Designations

Species	Eggs	Larvae	Juveniles	Adults
Pollock (Pollachius virens)			X	X
Red hake (Urophycis chuss)		X	X	X
Winter flounder (Pleuronectes americanus)	X	X	X	X
Windowpane flounder (Scopthalmus aquosus)	X	X	X	X
Atlantic sea herring (Clupea harengus)		X	X	X
Bluefish (Pomatomus saltatrix)			X	X
Atlantic butterfish (Peprilus triacanthus)		X	X	X
Atlantic mackerel (Scomber scombrus)			X	X
Summer flounder (Paralicthys dentatus)		X	X	X
Scup (Stenotomus chrysops)	X	X	X	X
Black sea bass (Centropristus striata)	n/a		X	X
King mackerel (Scomberomorus cavalla)	X	X	X	X
Spanish mackerel (Scomberomorus maculatus)	X	X	X	X
Cobia (Rachycentron canadum)	X	X	X	X
Sand tiger shark (Odontaspis taurus)		X		
Dusky shark (Charcharinus obscurus)		X		
Sandbar shark (Charcharinus plumbeus)		X		X
Clearnose skate (Raja eglanteria)			X	X
Little skate (Raja erinacea)			X	X
Winter skate (Leucoraja ocellata)			X	X
Reference: NMFS, 2008				

D. THE FUTURE WITHOUT THE PROPOSED ACTION (NO-BUILD)

There would be minimal changes to the use of the Project Site in the Future Conditions Without the Proposed Action. Elements of the New York/New Jersey Harbor Estuary Program (HEP) and other ongoing projects aimed at improving water quality and aquatic resources in New York that have the potential to result in water quality and aquatic habitat improvements in Flushing Bay, the Flushing River, and the freshwater wetland area at the former Flushing Airport site. These projects are independent of the proposed Academy that would occur without the proposed Academy and are expected to continue through the proposed construction in 2010 to full operation of the project in 2014.

New York/New Jersey Harbor Estuary Program Projects

Several of the future water quality improvement efforts in the Lower Hudson River Estuary will be coordinated by the New York/New Jersey Harbor Estuary Program (HEP). The Final Comprehensive Conservation and Management Plan ([CCMP] NY/NJ HEP 1996) for the HEP included a number of goals to improve water quality and aquatic resources in the area. The CCMP outlines objectives for the management of toxic contamination, dredged material, pathogenic contamination, floatable debris, nutrients and organic enrichment, and rainfall-induced discharges. The HEP Habitat Workgroup has developed watershed-based priorities for identifying acquisition, protection, and restoration sites for the preservation and enhancement of tidal wetlands that will provide improved habitat for fish and macroinvertebrates as well as the birds, mammals, and reptiles that depend on these habitats. No NY/NJ HEP Acquisition and Restoration Sites have been identified within the project area.

The CARP, sponsored by PANYNJ, is a component of HEP focused on understanding the fate and transport of contaminants discharged to the estuary, and using this information to develop measures that may be necessary to reduce sediment contamination. The principal chemicals of concern include dioxins/furans, PCBs, PAHs, metals (mercury, cadmium, and lead), and pesticides (dieldrin and

chlordane). Continued research and monitoring programs are anticipated to play a role in the development of future management strategies for Harbor sediments (NY/NJ HEP undated, US ACE 1999).

New York City Projects

USEPA's National CSO Strategy of 1989 requires states to eliminate dry weather overflows of sewers, meet Federal and State water quality standards for wastewater discharges, and minimize impacts on water quality, plant and animal life, and human health. CSOs are the largest single source of pollutants and pathogens to the New York Harbor. DEP has taken several steps in recent years to mitigate discharges from CSOs, which, in combination with improvements that have been made to WPCPs, and the on-going Comprehensive City-Wide Floatables Abatement Plan, are expected to result in future improvement in coliform, dissolved oxygen, and floatables levels in the New York Harbor area. The Multi-Year Intended Use Plan of the New York City Municipal Water Financing Authority has identified several CSO improvement and abatement projects, which will be completed by 2010. As required by EPA's CSO Control Policy, DEP initiated the development of the Long Term Control Plan (LTCP) Project in 2004. The LTCP Project will integrate CSO Facility Planning Projects and the Comprehensive City-Wide Floatables Abatement Plan, incorporate ongoing Use and Standards Attainment Program (USA) Project work, and will develop Waterbody/Watershed Facility Plan Reports and the LTCP for each waterbody area, including Flushing Bay. The LTCP Project monitors and assures compliance with applicable Administrative Consent Orders between DEC and New York City for the CSO Abatement Program. To date, several initiatives have been undertaken as part of the 2004 Order to improve the quality of Flushing Bay, including approval of the Flushing Bay Watershed Plan (previously described in Section C), as well as several infrastructure improvements. DEP also plans to increase identification and control of pollutants of concern, including mercury, PCBs, and solvents.

Former Flushing Airport Wetland Mitigation Plan

The NYCEDC has sponsored the former Flushing Airport Wetland Mitigation Plan (Plan) on the approximately 78-acre former Flushing Airport site located approximately 0.3 miles northeast of the Project Site. The Plan, which is a priority project for the New York City Wetlands Transfer Task Force[2], is designed to improve wetland functions and values by enhancing 8.6 acres of existing degraded wetlands and creating 11.8 acres of restored wetlands at the former Flushing Airport site. The Plan will enhance water quality, improve flood storage, increase wildlife habitat values and improve overall aesthetic value of the area. The Plan will also create 5.6 acres of scrub/shrub floodplain, 4.7 acres of forested upland and 6.3 acres of grassland.

The Plan is required under the NYSDEC Order of Consent due to unpermitted, historic filling activities that occurred within the wetland areas for most of the 20th Century. The Plan also proposes to mitigate impacts to wetlands anticipated in connection with the planned commercial or industrial development in the former Flushing Airport area. These activities will include removing historic fills, abandoned buildings, and debris and creating open water areas, emergent wetlands, and associated floodplain and forested habitats. The function of the site as a wetland has been impeded by disturbed site conditions including, poor soil quality caused by historic filling activities, the domination of invasive species (ie Phragmites), poor water quality, limited flood storage and accumulating debris.

The drainage ditch on the proposed Academy Site is the sole means of drainage from the former Flushing Airport site wetland to the Flushing River/Flushing Bay. Therefore, the drainage ditch landscaping and water quality enhancement efforts should be consistent with NYCEDC's and the City's objectives for the

[2] The New York City Wetlands Task Force inventories City-owned wetlands in the New York metropolitan area and determines the technical, legal, environmental and economical feasibility of transferring these wetlands to the jurisdiction of NYC Department of Parks and Recreation.

Flushing Airport Freshwater wetland restoration, and consistent with NYCEDC's existing management objectives for the drainage ditch. A Joint NYSDEC and USACE Permit Application was submitted in April 2008 to implement the mitigation and restoration measures proposed in the Plan.

Additional Proposed Projects

Other proposed projects located outside the proposed Academy study area, but within the drainage area serviced by the Bowery Bay Water Pollution Control Plant (WPCP), have the potential to affect aquatic resources of Flushing Bay in the vicinity of the Project Site without the proposed Academy. Such projects would include those that would result in development of new uses and uses with greater densities. These projects have the potential to result in greater water volume needs and sewage discharges to the combined sewer system than current uses, and have the potential to result in increased sewage discharge to Flushing Bay from CSOs, which may affect water quality in Flusing Bay/Flushing River.

The Bowery Bay Water Pollution Control Plant (WPCP) is a conventional secondary wastewater treatment plant that has been in service since 1939. Its receiving waterbody is the upper East River. The existing plant has treatment facilities designed and permitted to treat an annual average dry weather flow of 150 million gallons per day (mgd), which would produce approximately 40 dry tons per day (dtd) of dewatered sludge. The plant has hydraulic capacity to convey and to provide primary treatment for 300-mgd of wet weather flow. The dewatered sludge is hauled off-site and further processed in accordance with DEP's Sludge Management Program. The average daily flow rate at the plant for the period between January 2001 and December 2001 was 101 mgd. DEP's projected dry weather wastewater flow to the Bowery Bay WPCP in 2011 is 122 mgd. With the additional treatment of waste from projects proposed outside of the proposed Academy Project Area, including the proposed Citi Field, the WPCP would still be within its permitted capacity. Therefore, no adverse environmental impacts on the water quality of Flushing Bay or River, or the upper East River are expected.

Terrestrial Resources

Terrestrial conditions on the Project Site will remain the same if the proposed Academy is not constructed. The majority of the Project Site is developed with paved parking areas and existing buildings. The drainage ditch provides minimal habitat for small terrestrial mammals and songbirds.

Wetlands and Waters of the United States

The majority of the Project Site is comprised of paved parking lots and buildings. The man-made drainage, the Project Site's only non-structural, surface water feature, is regulated by the USACE as a jurisdictional "Water of the United States". The ditch is also under jurisdiction of the NYSDEC as a "Water of the United States" under the Use and Protection of Waters regulations. In the Future Conditions Without the Proposed Project, the drainage ditch will continue to function as the sole connection between the Flushing Bay/Flushing River and freshwater wetlands located at the former Flushing Airport site and channel stormwater from onsite and adjacent urban areas and control tidal water from flooding into the adjacent freshwater wetland area. It will also continue to be maintained as both a tidally influenced and freshwater waterbody.

Floodplains

A majority of the Project Site and the area within the quarter -mile radius is within the FEMA 100-year floodplain and is highly developed. With the exception of the drainage ditch, the Project Site is dominated by asphalt parking lots and buildings. Under Future Conditions Without the Proposed Action, the majority of the Site would remain as asphalt and buildings and there would be no impacts to the existing floodplain.

Aquatic Resources

Under the Future Conditions Without the Proposed Action it is expected that the southernmost 5.5 acres of the Project Site will be redeveloped by a local manufacturing company based in accordance with the New York City Zoning Resolution and that the remainder of the Site (the Police Pound Lot) would also be developed according to permitted zoning. Under the existing conditions, the stormwater management facilities on the Project Site do not provide a high degree of pollutant removal prior to discharging runoff to Flushing Bay. The large number of automobiles on the site contribute non-point source pollutants (oil, grease, exhaust, leaking gas tanks, etc.) that are transported by overland flow and outflow pipes to the ditch, and then directly to Flushing Bay. Under the Future Conditions Without the Proposed Action, these conditions would likely improve assuming that the Site would not be used as a parking lot or a parking lot of similar size compared to the existing conditions. If the southern area of the Project Site is redeveloped by a local manufacturing company, stormwater management and the quality of runoff may also improve; however it would not likely be as beneficial as the Best Management Practices that are proposed by the proposed Academy and discussed below ("green roofs", bio-retention systems, bio-swales, and sediment removal devices).

Threatened, Endangered, and Special Concern Species

Since there are no threatened, endangered, and special concern species occurring on the vicinity of the Project Site, it is not expected that the Future Conditions Without the Proposed Action would result in any significant adverse impacts to these resources. Requests for information on rare, threatened, or endangered species within the vicinity of the Project Site were submitted to the NYNHP, NOAA and NMFS.

The NYNHP and USFWS have determined that there are no known occurrences of threatened or endangered species and there are no areas within the project area that are considered "critical habitat." According to the USFWS species list for Queens County, NY contains two endangered species and two threatened species. Endangered species contained on the list consist of the roseate tern (Sterna dougallii dougallii) which typically inhabit rocky offshore islands, barrier beaches, and salt marshes; and the shortnose sturgeon (Acipenser brevirostrum) which primarily occurs in the Hudson River. Threatened species contained on the list consist of the piping plover (Charadrius melodus) which typically inhabit on sandy beaches; and the seabeach amaranth (Amaranthus pumilus) which typically grows on sandy beaches.

As mentioned above, NOAA indicated that no endangered or threatened species are located in the immediate project area. However, diadromous and resident fish, forage and benthic species may occur in the general project area (this most likely refers to Flushing Bay/Creek). Also, according to NOAA, aquatic habitats in the project vicinity have been designated as Essential Fish Habitat (EFH) for one or more species. Once the permit applications have been submitted, it will be determined whether or not an EFH assessment will be required.

The NYSDOS Division of Coastal Resources on-line mapping system does not identify any Significant Coastal Fish and Wildlife Habitats in the vicinity of Flushing Bay or the adjacent portion of the upper East River (NYSDOS, 2008).

E. FUTURE CONDITIONS WITH THE PROPOSED ACTION (BUILD)

Proposed Action

Future conditions with the Proposed Action would result in the construction of up to approximately 2.4 million gsf of new development, which would include NYPD indoor training facilities, classrooms, and related support space, an indoor pistol training facility, a tactical village, an indoor track, a police museum, a visiting police/lecturer housing facility. It would also have 2,000 on-site

parking spaces, including an above-grade parking facility for approximately 1,800 vehicles and 200 additional parking spaces located in at-grade parking lots and along the Academy's interior road network. The proposed Academy would also include the removal of two existing culverted, earthern crossings of the ditch and replacing each with new pile supported, open span bridges. A new tide gate structure may be placed at or around the current location or may be placed at a different location along the drainage ditch. In the event that the tide gate is moved to its southernmost area, the drainage ditch would become an entirely freshwater waterbody. The proposed Academy will be certified as a Silver–Rated Leadership in Energy and Environmental Design New Construction (LEED-NC) project by the USGBC. As part of the USGBC requirements for LEED Silver Rating, the NYPD and NYCDDC will integrate several sustainable site-planning features that would benefit natural resources within and in the vicinity of the Project Site. These include green roofs, on-site storage and treatment facilities, graywater recycling, and bioswales to address stormwater management. The following section discusses the potential for natural resource impacts to occur as a result of the proposed Academy.

Terrestrial Resources

Currently, the Project Site provides minimal wildlife habitat, including the man-made drainage ditch. Therefore, the Proposed Action is not expected to result in a significant loss of wildlife habitat. The proposed museum at the northeastern corner of the Proposed Academy would remove a small area of vegetation. However, this area is disturbed and contains a significant amount of invasive vegetation. Wildlife currently using the habitat on the Project Site are typical of urban areas.

The proposed Academy would construct a grove area which would consist of native vegetation to mitigate the loss of vegetation from construction of the museum. The Proposed Action would also provide native upland and wetland landscaping along the drainage ditch and adjacent to Ulmer Street and 28th Avenue. This enhanced landscaping would provide potential habitat for migratory songbirds during spring and fall migrations. Although the proposed Academy would temporarily displace wildlife using the Project Site, no significant adverse impacts to terrestrial or wildlife resources are anticipated as a result of the proposed Academy.

Wetlands and Waters of the United States

Under the Future Conditions With the Proposed Action, the entire drainage ditch would remain under the jurisdiction of the USACE as "water of the United States" under Section 10 and 404 regulations and under the jurisdiction of the NYSDEC under 6NYCRR Part 608 - Use and Protection of Waters regulations. Under the Proposed Action, the drainage ditch would continue draining the adjacent neighborhood and upstream areas, serving as a stormwater facility for on-site stormwater run-off, and controlling tidal waters from flooding areas north of the Project Site. However, under the Proposed Action the existing tide gates would be removed and a new tide gate structure would be placed in relatively the same location as the current tide gate, or relocated to another part of the drainage ditch. If the tide gate is moved to the southernmost portion of the drainage ditch, the drainage ditch would become a freshwater waterbody. The new tide gate structure would continue to allow flow from the upstream areas to drain to Flushing Bay during times of heavy precipitation and prevent tidal surges from traveling up the ditch and flooding the wetlands that are located on the former Flushing Airport site.

Under the Proposed Action, the southern crossover bridge would be replaced by a new pile supported bridge which would be constructed in relatively the same location as the existing crossing. The northern bridge crossover would be replaced with a pedestrian walkway structure just south of the existing crossing. The existing, attached 72" culverts would be removed and would not be replaced. A new tide gate structure would be constructed at relatively the same location of the existing structures or at another location along the ditch. If the tidal gate is relocated to the southernmost section of the ditch, just north of 31st Avenue, no portion of the drainage ditch would be influenced by the tide with

the exception of a small area between the proposed tide gate structure and the existing 56-inch by 81-inch storm pipes just north of 31st Avenue. The culverted area of the drainage ditch, south of the Project Site (south of 31st Avenue), which extends to Flushing Bay/Flushing River, would remain tidally influenced. In this scenario, as a result of the Proposed Action, flows to the ditch would only come from the Project Site, stormwater from the neighborhood north of the Project Site and the former Flushing Airport site. In addition, all existing outfalls that discharge site runoff to the drainage ditch would be removed. Site runoff would be treated with a combination of natural and mechanical systems before discharging into the drainage ditch. The environmental benefits of moving the tide gates to the southernmost location under the Future Conditions with the Proposed Action are discussed below.

Improved Maintenance

A uniform non-tidal freshwater system on the Project Site would require less maintenance than a combined water system. Other maintenance responsibilities in the freshwater system would include water quality treatment systems needed to improve the water quality in the drainage ditch. The proposed water quality treatment units would treat the incoming stormwater before entering the drainage ditch, which would decrease the opaqueness of the existing water, reduce the risk of odor, and contribute to the health of the proposed landscaping. In addition, in the Future with the Proposed Action, the replacement of the flex valve tidal gates will help facilitate water flow into the Flushing River/Flushing Bay, which in existing conditions, often restricts downstream flows at low tide.

Aesthetic Quality

Freshwater draining from the former Flushing Airport site and stormwater entering from offsite sources carries suspended silt, organic matter and other contaminants. Further, the water temperature of the run-off from the areas north of the Project Site is higher because it flows from shallow waterbodies at the former Flushing Airport site and the "V-shaped" drainage pond to northeast of the Project Site, and paved surfaces of onsite parking lots. As a result, the warm, nutrient rich and stagnant water becomes a prime host for algae blooms, which in turn leads to oxygen-depleted water, which appears opaque and brown in color. Under the Proposed Action, moving the tide gate structure to the southern end of the drainage ditch would provide variations in ground elevations within the drainage ditch which would foster different landscaping planting zones and offer more variety in wetland plant materials than existing conditions.

Air Quality Improvements

Under the current conditions, the drainage ditch often gives off unwanted odors. The source of unwanted odors is two-fold: in the tidal portion of the drainage ditch, the twice-per-day low tide occurrence can expose the drainage ditch bed, which releases a sulphurous, odor; while in the freshwater non-tidal portion of the drainage ditch, water tends to stagnate, fostering algal growth and releasing associated odors. With the Proposed Action, replacement of the tide gates would improve water flow, and the sources of sediment, contamination, and the nutrient inflow into the freshwater drainage ditch would be reduced or managed by proposed water quality systems.

Landscaping

The tidal section of the existing drainage ditch features very few saltwater plant species and few to none below the tide line. This indicates that landscaping the tidal drainage ditch with saltwater plants has less likelihood of successful plant establishment than the freshwater drainage ditch. Currently, a variety of native and non-native plants are established in the freshwater area of the ditch, upstream of the tidal gate. In the Future with the Proposed Action, the removal the existing tide gate and installation of a new tide gate structure at the southernmost area of the drainage ditch would create an entirely freshwater waterbody which would likely promote successful growth of freshwater plants. As mentioned under "Aesthetic," a freshwater non-tidal system would promote more wetland plant growth and provide a wider variety of wetland plants for landscaping purposes.

Environmental Benefits

The Future with the Proposed Action, which may include moving the tidal gates to the southernmost area of the drainage ditch would create a diverse non-tidal freshwater wetland and watercourse which is likely to provide more ecological benefits than a system that is part tidal and part non-tidal. Creating a diverse riparian corridor adjacent to the open water of the drainage ditch would aid in filtering runoff and water from the upland areas north of the Project Site prior to its discharge into Flushing Bay. The freshwater riparian corridor would also provide upland and wetland habitat for avian species. Given that there are few existing freshwater streams or wetlands in the region, this will be an important ecological contribution.

Further, it is unlikely that the tidal portion of the drainage ditch could be enhanced to provide similar values to the region. Although the Flushing River/Flushing Bay are both tidal and are the dominant features in the region, there is currently no evidence of marine life (finfish, shellfish nor vegetation) in the tidal section of the drainage ditch based on site visits and research materials. This is possibly because the Flushing River is heavily polluted, and because the water from Flushing Bay that moves upstream on the flooding tide is culverted for over 700 feet before reaching the southern portion of the drainage ditch. Thus, it is unlikely that an attempt at restoration of the tidal section of the drainage ditch would attract animal and plant species or would have any ecologically significant contribution to the Flushing River/Flushing Bay. Given that the tidal section of the existing drainage ditch does not provide a marine life habitat, converting this tidal zone to freshwater would have little to no negative effect on critical tidal marine habitat, but could significantly improve freshwater habitat opportunities. Therefore, creating a freshwater system in the Future with the Proposed Action is not anticipated to result in any adverse impacts to upon wetlands.

Floodplains

As discussed previously and shown in Figure 5-3, the majority of the Project Site is located within a 100-year tidal floodplain that is associated with nearby water bodies including Flushing Bay, Flushing River, and Mill Creek. In the vicinity of the site, the 100-year tidal floodplain elevation has been determined to be elevation 13' (NGVD 29 [10.275' QBD]). The development of the Project Site with the proposed Academy would occur within the 100-year floodplain. A majority of the current Project Site which exists as an asphalt Pound Lot and adjacent parking lot would be developed with buildings associated with the proposed Academy. The proposed Academy would comply with the New York City Building Code (Title 27, Subchapter 4, Article 10) and Local Law 33 of 1988 which regulates construction in the 100-year floodplain, and requires that roadway and utility construction be designed to minimize or eliminate damage from flooding. Under Local Law 33, habitable structures must have the lowest floor not less than one foot above the base flood level.

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

The capacity of the ditch would remain the same, but major improvements to the banks are proposed for structural and aesthetic purposes. The banks would be re-graded and re-stablized and non-invasive trees and shrubs would be planted along the banks for both aesthetic purposes and to provide additional soil stabilization. Given that tidal waters would no longer flow into the ditch and occupy a portion of its capacity, the ditch would have a greater flood storage capacity than it currently does.

Therefore, the proposed Academy is expected to partially alleviate the potential flood hazards that currently exist on the Project Site and on upstream properties.

Stormwater management techniques that would be constructed as part of the proposed Academy would also help to alleviate any potential flooding issues on the Project Site. The "green roofs" and the proposed tactical village and dining hall/central services area at the southeast portion of the Site, bio-retention system, bio-swales, and landscaped vegetation proposed in and around the drainage ditch area would reduce the quantity and rate of stormwater discharge entering the drainage ditch. During large storm events, these technologies would not only provide stormwater treatment but also manage stormwater runoff and provide a longer detention time than the existing conditions, which is sheetflow over asphalt. The proposed Academy would also reconfigure all of the existing on-site stormwater outfalls to the detention ditch so that stormwater would be managed more efficiently.

Although the proposed Academy would also result in impervious surfaces covering a large amount of the Project Site, the current conceptual plan includes landscaping and various stormwater management practices including bio-retention systems, bio-swales and water treatment units. These techniques are expected to increase the amount of evapo-transpiration and infiltration and improve existing water quality. Therefore, the proposed Academy is not expected to result in adverse floodplain impacts.

Aquatic Resources

Under the Future with the Proposed Action, the size and scope of the proposed Academy has the potential to affect the water quality of the drainage ditch and Flushing Bay at two different stages: construction, and final occupancy. During both stages, the project is not expected to result in any significant adverse impacts on aquatic resources.

Under the Proposed Action, activities which could result in potential water quality impacts include construction near the man-made drainage ditch, including removal and replacement of the tide gates, existing structural crossovers and culverts, construction of new structural crossovers, landscape enhancements along the drainage ditch, various water quality treatment facilities and new outfalls.

Construction activities also have the potential to result in temporary impacts to fish and benthic macroinvertebrates in Flushing Bay/Flushing River due to temporary localized increases in suspended sediment, potential release of contaminants from disturbed sediments, and noise associated with construction activities in and around the drainage ditch. Since the drainage ditch offers minimal habitat opportunities, these impacts would be localized and would not be expected to result in significant adverse impacts to aquatic biota.

During the construction of the proposed Academy, erosion and sediment control measures would be utilized to prevent the discharge of sediment-laden stormwater runoff to the drainage ditch and Flushing Bay. The construction of the proposed Academy may also result in the removal or capping of contaminated soils and historic fill. As discussed in Chapter 7, "Hazardous Materials," implementation of the remedial measures during construction activities would minimize the potential for significant adverse impacts to groundwater quality, adjacent wetland areas, and benthic and fish resources. Adverse impacts on groundwater flow patterns and aquatic resources are not expected.

For the final occupancy, a stormwater pollution prevention plan (SWPPP) will be designed to employ various best management practices that will minimize potential impacts on the drainage ditch and Flushing Bay that may be associated with stormwater runoff. The proposed SWPPP will comply with the New York Guidelines for Urban Erosion and Sediment Control and the New York State Management Design Manual. The SWPPP will also comply with the Flushing Bay Comprehensive Watershed Plan and would take into account that Flushing Bay is identified as an impaired waterbody. All discharges to Flushing River/Flushing Bay, vis-à-vis the drainage ditch, would be required to meet

applicable Class I quality standards. The projected discharges would not be expected to result in an adverse impact on the life stages of estuarine-dependent and anadromous fish species, bivalves and other macroinvertebrates found within the Bay.

As noted in this section, the proposed Academy will be pursuing a LEED silver-rating certification. As part of the effort to obtain this certification, the proposed Academy will be using a variety of sustainable design features and best management practices that would increase the quality and decrease the quantity of stormwater that leaves the Project Site and flows into Flushing River/Flushing Bay. These features would complement each other and provide numerous levels of stormwater treatment prior to discharge. Brief descriptions of the proposed features are provided below.

Stormwater management strategies would be employed under the Proposed Action, which are anticipated to improve water quality in the drainage ditch. The majority of the stormwater will fall on roofs of the buildings and on landscaped surfaces and would be collected and treated through a combination of natural and mechanical means to satisfy the water quality requirements stipulated in the SPDES Statewide General Permit. This treatment is expected to include removal of total suspended solids and total phosphorous, as applicable. Although this stormwater post-treatment may still discharge into the drainage ditch, the runoff is expected to be considerably cleaner than existing conditions.

Although the exact area of rooftop has not been determined, the proposed Academy would use a green roof system (vegetated) to collect and utilize rainwater. The system would retain rainwater, promote evapotranspiration, decrease the amount of runoff from the Project Site, and provide treatment through biological means.

A bio-retention system is proposed on the north side of the Project Site, along 28th Avenue. It would include a shallow stormwater basin with underdrainage that utilizes engineered soils and vegetation to collect, convey and treat runoff. The system would slow the discharge of runoff from the site, promote infiltration, increase landscape aesthetics and provide stormwater treatment through biological means.

A bio-swale is proposed on the east side of the Project Site. The bio-swale consists of an open channel system with underdrainage which utilizes engineered soils and vegetation to collect, convey, and treat runoff. The bio-swale will also slow the discharge of runoff from the site, promote infiltration, and provide stormwater treatment through biological means.

Approximately five subsurface Water Quality Treatment Units would be installed throughout the site, once the water has passed through these units it would be conveyed through subsurface pipes that would discharge into the drainage ditch. These units provide a reinforced concrete mechanical system that removes finer sediment, particles, free oil, and debris from urban runoff. The units would provide the last step of treatment before stormwater is discharged to the detention ditch and is eventually conveyed to Flushing Bay/Flushing River.

With the design of the proposed Academy still in the conceptual stages, it is not possible to generate detailed stormwater runoff calculations for the proposed development. As mentioned above, the quantity of stormwater runoff for proposed Academy is expected to be less than existing conditions because of the proposed increase of landscaping and the use of best management practices (BMPs). The use of these different management strategies and the alterations to the layout of the Project Site would require removal and/or numerous modifications to the existing outfalls. Prior to redevelopment of the site and in coordination with DEP, an amended drainage plan would be prepared to comprehensively address all the surface runoff and separate handling of the sanitary dry flow that would be generated as a result of the proposed Academy.

As discussed in Chapter 8 "Infrastructure", the Proposed Action would not require improvements to the existing sewer infrastructure to protect aquatic resources. The estimated sanitary sewer generation for the proposed development is expected to contribute an insignificant increase in the flow to the Tallman Island water pollution control plant. The Proposed Action would not have a significant adverse impact on the Tallman Island WPCP's ability to properly treat and discharge sanitary sewage. Please refer to Chapter 8 for a detailed description or the estimated sewage flow calculations.

Water quality changes associated with increases in suspended sediment and re-suspension of contaminated sediments from construction would be minimal and are expected to dissipate shortly after the outfall is installed. A SWPPP will be prepared for the proposed Academy in accordance with established engineering practices as part of the SPDES permitting process. Implementation of best management practices for erosion and sediment control and other measures of the SWPPP (described further below) would minimize potential water quality effects associated with the discharge of stormwater during construction activities and upon completion of the proposed Academy.

The potential impacts of construction activities on aquatic resources in Flushing River/Flushing Bay are also not expected to be significant. Life stages of estuarine-dependent and anadromous fish species, bivalves, and other macroinvertebrates have developed behavioral and physiological mechanisms for dealing with variable concentrations of suspended sediment, and thus are fairly tolerant of elevated suspended sediment concentrations (Birtwell et al. 1987; Dunford 1975; Levy and Northcote 1982 and Gregory 1990 in Nightingale and Simenstad 2001; LaSalle et al. 1991). Fish are mobile and generally avoid unsuitable conditions such as increases in suspended sediment and noise (Clarke and Wilber 2000), and also have the ability to expel materials that may clog their gills when they return to cleaner, less sediment-laden waters. Most shellfish are adapted to naturally turbid estuarine conditions and can tolerate short-term exposures by closing valves or reducing pumping activity. More mobile benthic invertebrates that occur in estuaries have been found to be tolerant of elevated suspended sediment concentrations.

As discussed above, the Proposed Action would result in substantial improvements to the Project Site, specifically in and around the man-made drainage ditch. Disturbance to benthic communities during construction activities would be minimal and would not significantly impact the food supply for fish foraging in the area.

Threatened, Endangered, and Special Concern Species

Since no threatened, endangered and special concern species are located on the Project Site, under Future Conditions With the Proposed Project it is not anticipated that the proposed Academy would result in any significant adverse impacts on these resources.

F. CONCLUSION

As described above, best management practices would be employed to minimize the potential impacts on the existing stormwater system and natural resources in the project area. As required for construction activities that disturb one acre or more of land, a SWPPP would be prepared in accordance with established engineering practices. Implementation of BMPs for erosion and sediment control and other measures of the SWPPP would minimize potential water quality effects associated with the discharge of stormwater during upland construction activities and construction activities in the drainage ditch. BMPs would also be employed to prevent or minimize the potential disturbance from any work along and within the man-made drainage ditch including work below mean high water in the existing tidal area.

The proposed Academy is not anticipated to result in any significant adverse impacts to natural resources on the Project Site or study area. Further, development of the proposed Academy would offer benefits to natural resources, including improved habitat for birds and other wildlife and substantially improve stormwater management within the Project Site and adjacent areas. In addition, as a LEED Silver-rated project, the proposed Academy would include sustainable energy and water use systems and design elements including green roofs, onsite storage and treatment facilities, graywater recycling, and bioswales and other sustainable features which would provide additional benefits to natural resources in and around the Project Site.

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