A. INTRODUCTION

For City Environmental Quality Review (CEQR) analysis purposes, the City's "infrastructure" comprises the physical systems supporting its population, including water supply, wastewater treatment, and stormwater management. Given the size of New York City's water supply system and the City's commitment to maintaining adequate water supply and pressures, few actions have the potential to cause significant impacts on this system. Other infrastructure components, such as solid waste management, energy and transportation, are addressed separately under CEQR and are assessed in separate chapters of this document.

This chapter examines the capacity of the City's water supply, sanitary sewer, and storm sewer to handle the additional loads generated by the Proposed Action. As discussed in Chapter 1, "Project Description," the proposed Academy would result in approximately 2.4 million gsf of total program, including academic space, physical training facilities, administrative and support components, an indoor firing range for pistol training, a field house, a tactical village, a drivers training course, a police museum, and a visiting officer/lecturer lodging facility. Additionally, 2,000 accessory parking spaces are proposed on-site, including an above-grade parking garage of 1,800-spaces and 200 additional at-grade parking spaces which would be disbursed throughout the site in smaller parking lots and along the Academy's interior road network. The Proposed Action would allow for the development of a modern academic complex, to be operated by the NYPD, which would consolidate facilities for recruits, civilians, and active police officers that are currently spread across the City. The new recruit, in-service, and worker populations introduced to the Project Site and the surrounding area as a result of the Proposed Action are expected to place new demands on New York City's water supply and sewage treatment/disposal systems.

The *CEQR Technical Manual* also states that detailed analysis of wastewater treatment is needed for those actions with very large flows that have the potential for significant adverse impacts on sewage treatment. As such, the Proposed Action is analyzed for the volumes of wastewater it would generate in relation to the State Pollutant Discharge Elimination System (SPDES) permitted capacity of the water pollution control plant servicing the project area.

In addition, the *CEQR Technical Manual* states that a detailed analysis of stormwater management is warranted if a proposed action involves certain types of industrial activities (e.g., manufacturing, processing, or raw materials storage), actions that would greatly increase the amount of paved area, actions that would be served by a separate storm system and that would involve construction activities, or construction of a new stormwater outfall. As the Proposed Action would entail one or more of the above conditions, an assessment of stormwater management is provided in this chapter.

The analysis in subsequent sections concludes that the Proposed Action would not result in any significant adverse impacts to the existing water supply, sewage treatment, and stormwater discharge systems. The existing municipal services have adequate capacity to meet the increases in demands. Further, as the proposed Academy would meet LEED Silver requirements, at minimum, the campus incorporates a variety of design features that minimize the project's impacts on local infrastructure.

B. EXISTING CONDITIONS

Water System

Water Supply

The New York City water supply system comprises three watersheds north and northwest of the city: the Delaware, Catskill, and Croton. From these watersheds, water is conveyed as far as 125 miles to the City via a system of reservoirs, aqueducts, and tunnels. The system has 19 collecting reservoirs, two balancing reservoirs, aqueducts, and tunnels, with several dams, 3 major aqueducts, 2 large water distribution tunnels, with a third major tunnel under construction and partially in use, and a system of water mains and other facilities. The watersheds of the three systems encompass almost 2,000 square miles, with a storage capacity of about 550 billion gallons. The water flows to the City through aqueducts, reaching most consumers by gravity alone, although some four percent of the City's water must be pumped to its final destination.

Neither the groundwater beneath Queens nor the waters of the East River are used as a source for potable water or other uses, such as irrigation or industrial processes. The current average daily water consumption for the City as a whole is approximately 1.3 billion gallons per day (gpd) according to NYCDEP, the municipal agency that operates the system.

The NYC potable water supply is treated with a variety for chemicals for various reasons, including fluoride added for dental hygiene. NYCDEP conducts regular water quality monitoring to check the levels of treated water and to document compliance with federal and state water quality regulations. The City does not filter its drinking water supply; however, under a consent decree with the US Environmental Protection Agency (EPA) and the NY State Department of Health it is constructing a filtration plant in Van Cortlandt Park in the Bronx to filter water from the Croton system. Currently, the City is not required and is not planning to filter water from the Catskill and Delaware systems.[1]

The Croton system collects water from watershed areas in Westchester and Putnam Counties and delivers it to the Jerome Park Reservoir in the Bronx. From there, it is distributed to the Bronx and Manhattan through the New Croton Aqueduct. The remaining two surface water systems, the Delaware and Catskill systems, collect water from watershed areas in the Catskill Mountains and deliver it to the Hillview Reservoir in Yonkers. From there, it is distributed to the City through three tunnels: City Water Tunnel No. 1, which goes through the Bronx and Manhattan; City Water Tunnel No. 2, which goes through the Bronx, Queens, and Brooklyn (and from there through the Richmond Tunnel to Staten Island); and City Water Tunnel No. 3, which currently serves the Bronx, upper Manhattan, and Roosevelt Island. The construction of City Water Tunnel No. 3 was begun in 1970 and is scheduled for completion in 2020. The addition of City Water Tunnel No. 3 is intended to improve the City's water supply while allowing for the inspection and repair of City Water Tunnels Nos. 1 and 2. The next phases of City Water Tunnel No. 3, currently under construction, are intended to provide service to Midtown Manhattan, Lower Manhattan, Brooklyn, and Queens. City Water Tunnel No. 3 is anticipated to be a supplemental water source and to provide redundancy and improve reliability of future water service delivery to these areas.

Within the City, a grid of pipes distributes water to consumers. Large mains—up to 96 inches in diameter—feed smaller mains, such as 8, 12 and 20-inch mains, that distribute water to individual locations. These mains also provide water to fire hydrants along many of the City's streets. Pressure regulators control water pressure throughout the City's water supply system.

[1] Ascher, Kate, *The Works: Anatomy of a City*, 2005.

City Water Tunnel No. 2 serves the primary water supply to the area surrounding the Project Site. The larger 20-inch mains feed the smaller 6-inch to 12-inch mains that currently exist in the area. Buildings drawing upon the water supply connect into the smaller distribution mains for their water needs.

Based on the available information received to date, the water infrastructure includes the following:

- 12-inch main is located in the north side of 31st Avenue with four fire hydrants located on the north side of the street, spaced approximately 300 feet apart. This water main was installed in 1990.
- 12-inch main is located perpendicular to 28th Avenue, approximately 470 feet west of Ulmer Street, which continues south to the former 30th Avenue. This water main was installed in 1960.
- 12-inch main is located in the west side of College Point Boulevard with six fire hydrants located on the east side, spaced approximately every 300 feet. This water main was installed in 1990. 20-inch main is located in the east side of College Point Boulevard, with six fire hydrants located on the east side, spaced approximately every 300 feet. This water main was installed in 1990.
- 8-inch main perpendicular to 31st Avenue, approximately 340 feet west of the Whitestone Expressway, which continues north to former 30th Avenue. This water main was installed in 1960.
- 12-inch main is located in the east side of Ulmer Street with fire hydrants located on the east side spaced approximately every 250 feet. This water main was installed in 1992.
- 12-inch main appears in NYCDEP records within the former Higgins Street, 30th Avenue, and 131st Street right-of-ways. NYCDEP indicated that this water main could be terminated and capped at the lot line between the adjacent church and the proposed Academy site. NYCDEP further advised that a hydrant would need to be installed at the point of termination (immediately before the cap) to facilitate flushing the service line in the future.

Additionally, there is evidence of a water main in 28th Avenue via the existing fire hydrants and valves, which are spaced approximately every 340 feet. Reportedly, the water main extends from College Point Boulevard to 28th Avenue and was installed in 1990 by NYC EDC. No information was available from NYCDEP with respect to this water main and the NYCDEP was not aware of its existence.

Water Consumption

The New York City water supply system provides approximately 1.3 to 1.4 billion gpd, with consumption reaching upwards to 1.5 billion gpd during the summer months. Because of the size of the water supply system, little variation in water pressure occurs from hour to hour, except within the local distribution network.

Project Site

As the Academy site is partially occupied by vacant land, partially occupied by at-grade parking for the College Point Tow Pound and partially occupied by vehicle service station, on-site water demand is very low. According to the *CEQR Technical Manual*, the current on-site water consumption is estimated at approximately 620 gpd at a conservative rate of 0.17 gpd/sq. ft. for both domestic and HVAC uses. The proposed development site does not generate a regular demand on the local water supply.

Sanitary Sewage

According to the *CEQR Technical Manual*, for assessment purposes, estimates of an area's daily sanitary sewage generation are typically equivalent to the domestic water usage rates. Wastewater from air conditioning systems is not included in the overall volumes used for analysis, as minimal

volumes of wastewater are generated from the re-circulation and evaporation processes involved in the air-cooling process.

New York City's sewer system consists of a grid of more than 6,000 miles of sewer pipes beneath the streets that send wastewater flows to 14 different treatment plants, known as "water pollution control plants," or "WPCPs," which have a combined capacity to treat a total of approximately 1.77 billion gallons of sewage per day. The areas served by each of these plants are called "drainage basins." For the most part, this system is not a "combined" sewer system (a NYCDEP operated and maintained system that carries both sanitary sewage and site storm water from buildings and stormwater collected in catch basins and storm drains). This area of the City, similar to Staten Island, predominantly operates with separate systems for sanitary sewage and stormwater. In addition, small areas of Staten Island, Brooklyn, and Queens use septic systems to dispose of sanitary sewage. Also, some developments in Staten Island use small privately owned and operated sewage treatment plants to treat sanitary sewage.

Sewers beneath the City's streets collect sewage from the buildings along the streets. Collection sewers can be one to two feet in diameter on side streets, and three or four feet in diameter under larger roadways. They connect to trunk sewers, generally five to seven feet in diameter, which bring the sewage to interceptor sewers. These large interceptor sewers (often up to 10 or 12 feet in diameter) bring the wastewater collected from the various smaller mains to the water pollution control plants for treatment.

Combined sewers collect both "dry-weather" wastewater (primarily sanitary sewage as well as wastewater from industries) and stormwater. During dry weather, combined sewers function as sanitary sewers, conveying all flows to the WPCPs for treatment. During wet weather, however, large volumes of rainfall runoff (10 to 50 times the dry-weather flow) can enter the system through catch basins along the City's streets. If this water were conveyed to local treatment plants, it would exceed their design capacity, as the plants are designed to handle only twice their average design dry-weather flow for limited periods. To avoid flooding the plants, "regulators" are built into the combined sewers to act as relief valves. These are chambers generally set to allow two times the average design dry-weather flow into the interceptor. During storms, if a greater amount of wastewater reaches the regulator, the excess is directed to outfalls into the nearest waterway (e.g., the Hudson River, East River, etc.). During such heavy storm periods, a portion of the sanitary sewage entering or already in the combined sewers discharges into the waterway along with the stormwater and debris washed from the streets. This untreated overflow is known as "combined sewer overflow," or "CSO." Combined sewer overflow is a concern because it contains oil and gasoline from street traffic, floating debris (also called "floatables," and usually consisting primarily of street litter), various pollutants from industrial facilities (both pollutants discharged into the sewer system and pollutants in the runoff from these facilities), and untreated sewage.

A typical combined sewer has regulators that divert the wastewater flow to interceptors, which deliver wastewater to the WPCP. The regulators are generally designed to allow two times the mean dry weather flow into the interceptor. Thus, in dry weather, all sewage from the trunk sewers flows into the interceptor. During storm events, twice the mean dry weather sewage is diverted to interceptors. Excess diluted combined flows divert to the CSOs, which discharge directly to adjacent waterways.

The proposed Academy site is located in the service area of the Tallman Island WPCP, located on Powell's Cover Road in the College Point neighborhood of Queens. The Tallman Island WPCP, which is currently undergoing an upgrade, serves a population of approximately 400,000 people in approximately 17,400 acres of the northeastern section of Queens. It provides secondary treatment of sanitary sewage, including: primary settling, aeration, final settling, and disinfection for a minimum of 1.5 times the design flow (120 mgd). In addition, the plant is required to provide primary treatment

(primary settling) and disinfection for the wastewater in excess of 120 mgd up to two times the design flow (160 mgd). The facility is undergoing upgrades to ensure continued compliance with permit limitations, to maintain a safe working environment for the future, and meet the recently mandated citywide nitrogen removal program.

The Tallman Island WPCP has a SPDES permitted capacity of 80 million gallons per day (mgd). SPDES permits are issued by NYSDEC. The average actual monthly flow rate at the plant for the latest 12 months of records available (May 2007 to April 2008) are shown in Table 8-1. As shown in the table, during this 12-month period the Tallman Island WPCP had an average flow of 58 mgd average dry weather flow, which is below the SPDES permit allowable limit. The plant handles greater volumes during storm events due to stormwater inflows to the plant.

The Tallman Island WPCP, as mentioned above, serves the northeast section of Queens in which the proposed Academy site is located. Tallman Island, along with three other nearby WPCP's, discharges into the upper East River. There are also numerous CSO locations in the vicinity of the proposed Academy site, which discharge into Flushing Bay (and ultimately the East River) during heavy rainstorms, which overload the local WPCP's.

TABLE 8-1: Monthly Average Daily Flows at the Tallman Island WPCP

Year	Month	Flow (mgd)
2007	May	53
	June	60
	July	62
	August	61
	September	53
	October	60
	November	55
	December	61
2008	January	57
	February	60
	March	59
	April	55
12-Month Average		**58**
SPDES Permitted Capacity		**80**
Source: NYCDEP		

The existing sanitary sewer infrastructure in the vicinity of the site is owned and operated by NYCDEP. There is a 50-foot wide permanent easement in Ulmer Street, adjacent to the site of the proposed Academy. Based on the available information received to date, the sanitary sewer infrastructure includes the following:

- 10-inch diameter Ductile Iron Pipe (DIP) sanitary sewer in the east side of College Point Boulevard, starting at a point 120 feet north of 31st Avenue, extending northerly to 28th Avenue.
- 7-foot by 7-foot Corrugated Metal Pipe (CMP) sanitary sewer is located in Ulmer Street.
- 12- to 18-inch diameter Extra Strength Vitrified Clay Pipe (ESVP) encased in concrete sanitary sewer is located in the center of 28th Avenue between College Point Boulevard and 129th Street.

- 38-inch by 24-inch sanitary sewer is located in the center of 28th Avenue between 129th Street and Ulmer Street that connects to the 7-foot by 7-foot sewer in Ulmer Street.
- 24-inch diameter DIP sanitary sewer is located in 31st Avenue starting at a point 150 feet east of College Point Boulevard, extending easterly to the Whitestone Expressway.
- 24-inch diameter sanitary sewer is located in the Whitestone Expressway that extends to the north and appears to terminate at Ulmer Street.
- 10-inch diameter sanitary sewer is located in College Point Boulevard between 123rd Street and 30th Avenue.
- A possible 8- and 12-inch sanitary sewer may be located 291 feet east of the site within a utility easement at the property line and Block 4362.

Stormwater Runoff

The proposed Academy site is currently served by a network of storm sewers. Stormwater runoff is collected in catch basins along the streets, and channeled to the storm sewer system. Adjacent storm sewers range in size from three to seven feet in diameter.

The existing stormwater drainage infrastructure in and around the site includes piped storm sewers as well as a drainage ditch that bifurcates the site. The drainage ditch is located in the middle of the project site and forms an inverted "L" shape, starting at the intersection of 28th Avenue and Ulmer Street and extending south to 31st Avenue. The drainage ditch flows west for 500 feet and then turns to the south and flows for another 1,100 feet to 31st Avenue. The ditch is approximately 50 feet wide by 1,600 feet long. Two internal road bridges, referred to as the northern bridge and southern bridge, cross over the ditch. The bridges separate the ditch into a northern section, a central section, and a southern section. The ditch contains open water with swatches of wetland vegetation along the edge of the ditch.

From the northeast corner of the site, twin 84-inch diameter storm sewers convey flow into the drainage ditch, and to the south, two 89-inch diameter storm sewers convey flow out of the drainage ditch. Water from the drainage ditch flows under 31st Avenue and then continues underground and crosses under College Point Boulevard until it discharges out to Flushing Bay/Flushing Creek, just south of the College Point Boulevard bridge which is located approximately 700 feet south of the site. Also in the south near the two 89-inch storm sewers, an 87-inch by 63-inch diameter storm sewer conveys flow into the drainage ditch from off-site areas. At the 90-degree bend at the northern section of the ditch, twin 64-inch by 43-inch diameter storm sewers, with an end section that merges the two pipes together, conveys flow into the drainage ditch from off-site areas.

The drainage ditch is a jurisdictional "Waters of the United States" under the USACE Section 10 and Section 404 programs, based on: the presence of wetlands determined by the occurrence of hydrophytic vegetation, hydric soils and wetland hydrology according to criteria established in the 1987 "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1 that are either adjacent to or part of a tributary system; the presence of a defined water body (e.g. stream channel, lake, pond, river, etc.) which is part of a tributary system; and the fact that the location includes property below the ordinary high water mark, high tide line, or mean high water mark of a water body as determined by known gage data or by the presence of physical markings including, but not limited to, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter or debris or other characteristics of the surrounding area. As such, USACE concluded that there is one principal water area on the Project Site that is part of the tributary system, and is considered to be waters of the United States. It is also subject to the jurisdiction of the NYSDEC pursuant to 6NYCRR Part 608 – Protection of Waters.

The majority of the site is paved and slopes towards the existing drainage ditch located within the site. It appears that the stormwater runoff from the site is discharged via piped and overland flow into the drainage ditch.

Based on the available information received to date, the non-ditch related storm infrastructure owned and operated by the NYCDEP includes the following:

- 57-inch by 38-inch, 68-inch by 43-inch, and 87-inch by 63-inch storm sewer in College Point Boulevard with catch basins; a 42-inch storm sewer in 30th Avenue connecting to an 87-inch by 63-inch storm sewer in College Point Boulevard; 87-inch by 63-inch storm sewer continues south to 31st Street then continues east on 31st Street via a 63-inch by 87-inch diameter CIP storm sewer into the southern section of the drainage ditch.
- 36-inch diameter storm sewer is located in the south side of 31st Avenue from the Whitestone Expressway then connecting to the two 89-inch diameter storm sewer outflow pipes which discharges into the Flushing River.
- Dual 56-inch by 81-inch storm sewers drain the southern portion of the ditch, cross 31st Street and continue south to College Point Boulevard. The 56-inch by 81-inch dual storm sewer then continues southwest, crossing College Point Boulevard and then continues south where it discharges into the Flushing River.
- Catch basins and manholes are located in 28th Avenue and Ulmer Street; no storm sewer piping is shown on the survey; however, it is anticipated that storm sewers exist in this area.
- Dual 72-inch storm sewers cross under the 7-foot by 7-foot sanitary trunk sewer, which is located in Ulmer Street (also known as "the inverted siphon") at the intersection of 28th Avenue and Ulmer Street, then continues south and discharges into the northern section of the drainage ditch. An inverted siphon is a pipe that conducts water (storm effluent in this case) beneath a depression or other obstruction (sanitary sewer in this case) and operates under hydraulic head.
- 12-inch storm sewer collects street runoff from Ulmer Street and 28th Avenue and then crosses over the 7-foot by 7-foot sanitary trunk sewer at the intersection of 28th Avenue and Ulmer Street and discharges into the northern section of the ditch.
- 60-inch storm sewer runs down the center of former 129th Street perpendicular to 28th Avenue. The sewer then connects to a 72-inch CMP storm sewer which continues 170 feet east on 28th Avenue until it takes a 90 degree turn and discharges into the bend at the northern section of the ditch.
- 15-inch storm sewer starting approximately 73 feet east of the first bridge crossing at the drainage ditch and continues approximately 261 feet east to the manhole junction. From the manhole junction, the sewer becomes a 24-inch storm sewer and continues in a southerly course.

As with demand for potable water, the proposed Academy site is not currently generating large wastewater flows, though it is predominantly covered by a paved parking lot or buildings, both impermeable surfaces. The drainage ditch and the immediate areas along the upper banks are the only areas of the site that can be identified as permeable surfaces. The drainage ditch, described above, receives much of the runoff from the on-site paved lots and also receives stormwater flows from adjacent upland areas.

Current Capital Projects

As mentioned above the New York City DEP intends to upgrade the Tallman Island WPCP. The upgrades intend to meet the following objectives[1]:

[1] Tallman Island TI-2/TI-3 Water Pollution Control Plant – Plant Upgrade EAS, February 2006. Prepared for NYCDEP by BBL, Inc. and TAMS Consultants, Inc.

- Ensure that the Tallman Island WPCP can treat incoming wastewater flow through primary treatment and disinfection during wet-weather at twice the design dry weather flow (160 mgd) while meeting the mandated treatment efficiencies.
- Ensure that at least 150 percent (120 mgd) of the mean design dry weather flow can be processed through the secondary treatment facilities.
- Prevent flooding nuisances to the adjoining neighborhood.
- Increase the reliability and efficiency of the various process systems.
- Improve the reliability and economics of the sludge treatment system.
- Improve instrumentation and process control.
- Provide facilities and treatment modifications to provide step-feed Biological Nutrient Removal (BNR).

The overall purpose of the Tallman Island plant upgrade program is to provide more efficient and reliable wastewater treatment and ensure compliance with the SPDES permit criteria.

Sewer and water pipe repair and replacement is commonly coordinated with major roadway reconstruction, as reconstruction activities are generally coordinated with the various utilities located beneath the roadway to avoid the inconvenience and expense of repeated street excavation. No upgrades are ongoing in the immediate area.

C. THE FUTURE WITHOUT THE PROPOSED ACTION (NO-BUILD CONDITION)

As mentioned in Chapter 1, "Project Description," the Project Site includes a City-owned vehicle service station (the City holds a month-to-month lease with the service station), a City-owned strip of vacant land that is located between the Tow Pound and College Point Boulevard, and the balance of the Site is comprised of the northern portion of the NYPD's College Point Tow Pound. All of the vehicles, motorcycles and parts currently located on the College Point Tow Pound site will be relocated to other City-owned sites as the City reorganizes its citywide operations. Additionally, the City would likely continue the month-to-month lease that it currently holds with the vehicle service station at the northwest corner of the proposed Academy site. As such, under the No-Build condition, the water consumption and sewage generation would therefore be slightly lower than the rates under existing conditions.

As noted above, NYCDEP is currently upgrading the Tallman Island WPCP to provide more efficient and reliable wastewater treatment and ensure compliance with the SPDES permit criteria.

Additionally, a variety of NYCDDC and NYCDEP infrastructure projects are expected to occur in the College Point neighborhood which will update and repair local sewer trouble spots. The locations and details of each project have been listed in correspondence with Community Board 7, the Queens Borough President and the City Planning Commission. As none of these projects are located immediately adjacent to the proposed Academy site and would not directly affect service to the Police Academy, they are not described in detail in this FEIS.

D. THE FUTURE WITH THE PROPOSED ACTION (BUILD CONDITION)

The Proposed Action would not require improvements to existing water and sewer infrastructure. However, multiple service connections would need to be made to the existing infrastructure. Additionally, new water consumption demands and sewage generation would result from proposed Academy uses. Compared to the No-Build Condition, the Proposed Action would result in

approximately 2.4 million gsf of uses, including: indoor training facilities, classrooms, administrative space, indoor pistol ranges, a tactical village, an indoor track, a police museum, a drivers training course, a visiting police/lecturer lodging facility, and an above-grade parking facility which would accommodate the anticipated parking demand on-site.

Water System

The *CEQR Technical Manual* has established the general threshold for demand on the City's water supply systems of one million gallons of water per day. An increase of demand of less than this threshold is not considered to result in a significant adverse impact on the City's water system. If an increase in water demand is projected to exceed this threshold, a detailed analysis of the City's ability to supply water to a project site is required.

The expected water demand for the proposed development is provided below, and is based on the types of uses that are proposed for the site. As per the *CEQR Technical Manual* guidelines (Table 3L-2 of the *CEQR Technical Manual*, "Water Usage and Sewage Generation Rates for Use in Impact Assessment"), office uses are expected to create a demand for domestic water at a rate of 25 gpd per worker; education uses are expected to have a demand of approximately 30 gpd per student; food service is expected to create a demand of approximately 10 gpd per meal; the proposed visiting officer/lecturer facility, expected to operate similar to a hotel, is expected to create a demand for approximately 150 gpd per room per occupant; the assembly space is expected to create a demand of 0.17 gpd/sq. ft.; and the service areas are expected to create a demand of 0.17 gpd/sq. ft. As such, under Build conditions the proposed development would accommodate up to 5,500 recruits, in-service officers, instructors, and other employees and visitors, which would generate a domestic water demand of up to approximately 347,000 gpd. The proposed development would also create an additional demand of 0.10 gpd (for education, lodging, and office areas) to 0.17 gpd (for food service, assembly, and service areas) per square foot of building area for air conditioning systems according to CEQR guidelines. As such, it is estimated that the proposed Academy would utilize an additional approximately 220,000 gpd of water for air conditioning. Therefore, at maximum population, the proposed development would generate a total water demand of approximately 567,000 gpd. As the proposed Academy's generated water demand would be below the CEQR impact threshold of one million gpd of water, the Proposed Action is not expected to adversely affect the City's water supply or local water pressure.

Compared to the average daily water demand in New York City of about 1.3 billion gpd, the maximum increase in water demand resulting from the proposed Academy represents less than 0.01 percent of the City's total daily consumption, which is an insignificant increase. The water supply system has adequate capacity to support the proposed development and would not experience a significant adverse impact.

In addition, multiple service connections would be required from the adjoining streets to provide domestic water and fire protection for the development. Based on the existing infrastructure and preliminary site layout, connections to 28th Avenue and College Point Boulevard seem to be most feasible. New connections to the 12-inch water main which, is located in the east side of Ulmer Street would be fairly complicated as the connection would need to cross the existing 7-foot by 7-foot sanitary sewer.

As indicated above, an existing water main in the former 131st Street right-of-way would be terminated (capped) at the lot line between the proposed Police Academy site and church properties as it is not needed for the proposed project and it does not service any properties to the north of the Academy site. NYCDEP indicated that a hydrant would need to be installed at the point of termination

(immediately before the cap) to facilitate flushing the service line in the future. NYCDEP would be consulted during the planning of this work and prior to the start of construction activities in this area.

No additional improvements or changes to the existing water infrastructure are anticipated based on the survey and record mapping information.

Sanitary Sewage

The estimated sanitary sewer generation for the proposed development would be the same as the estimated domestic water demand (excluding air conditioning demand). Typical day-to-day operations at the proposed development would generate approximately 347,000 gallons of sanitary sewage. This generation rate represent less than one tenth of a percent of the SPEDES permitted flow of 80 mgd to the Tallman Island WPCP, and are considered to be insignificant increases. The Proposed Action would not have a significant adverse impact on the Tallman Island WPCP's ability to properly treat and discharge sanitary sewage.

Improvements to the existing sanitary sewer infrastructure around the proposed Academy site are not anticipated. It should be noted that NYCDEP would not permit direct connections to the 7-foot by 7-foot sanitary sewer in Ulmer Street. Also note that a new connection to the 10-inch sanitary sewer in the west side of College Point Boulevard would be very complicated and potentially not feasible due to the existing and adjacent 57-inch by 38-inch storm sewer. As such, connection would most likely be made to the existing infrastructure in 28th Avenue and College Point Boulevard.

The proposed development would not exceed the capacity of the local sewer system, and is not expected to result in significant adverse impacts on the City's existing sewer system.

Stormwater Runoff

The proposed Academy would decrease the amount of paved area on the proposed development site resulting in approximately 1,089,000 sq. ft. (25 acres) of building roof area, internal circulation, and associated impervious areas, and approximately 461,000 sq. ft. (10 acres) of pervious area, including the landscaped buffers, the courtyard, the drainage structure and upland areas, and green roofs. As part of the LEED Silver certification for the project, it is expected that the proposed Academy site would retain and/or detain stormwater on-site, as described below.

Due to the extensive site work that would be required in conjunction with the environmental remediation and foundation construction, all existing outfalls that discharge site runoff to the drainage ditch would be removed. Construction of the proposed Academy would also result in the reconfiguration of the existing on-site stormwater outfalls to the detention ditch so that stormwater would be managed more efficiently.

The project's stormwater management approach has been aimed at preventing untreated stormwater from running off the site by encouraging infiltration or collection/treatment for all stormwater before it leaves the site. Several techniques for managing stormwater are being considered, including:

- Stormwater falling on ground surfaces would be directed towards pervious surfaces (e.g., permeable pavement, open grid paving) or vegetated areas (e.g., bioswales, rain gardens, etc.) for slow infiltration into the water table or into cisterns for reuse.
- Stormwater falling on roof surfaces would be "harvested" by capturing, collecting and storing rainwater.
- A green roof is proposed on the proposed tactical village and on the dining hall/central services area at the southeast portion of the proposed Academy site to help reduce site storm water runoff.

During large storm events, these approaches 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.

Furthermore, it is expected that water quality improvement measures would be provided on-site to help improve the water quality of the storm flow exiting the site, including the use of hydrodynamic separators or similar measure for removing suspended solids. The proposed water quality treatment units would treat the incoming stormwater before it enters 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.

Currently no off-site improvements are required to the storm sewer infrastructure to accommodate the proposed Academy. However, potential improvements to the drainage ditch may be required, depending on the details of the final design.

The proposed Academy would be designed in accordance with a Stormwater Pollution Prevention Plan (SWPPP) in order to minimize potential water drainage effects associated with the discharge of stormwater during and after completion of construction activities. The SWPPP would incorporate stormwater management practices (SMP's) consistent with the SPDES General Permit for Construction Activities (GP-02-01) and with the New York State Stormwater Management Design Manual. All runoff would be in accordance with design parameters established for the NYCDEP Amended Drainage Plan or Drainage Proposal for this project. Therefore, as outlined above, the proposed Academy would lessen the site's burden on the Queens sewer infrastructure, as compared to Existing and No-Build conditions, by reducing the rate and quantity of stormwater.

Tide Gate Replacement / Improvements to the Drainage Ditch

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. Improvements to the banks of the drainage ditch are proposed for structural and aesthetic purposes. The banks would be re-graded and re-stabilized and non-invasive trees and shrubs would be planted along the banks for both aesthetic purposes and to provide additional soil stabilization.

The project team is considering the possibility of removing and replacing the existing crossings and the tide gates. Under the Proposed Action a new tide gate structure may be upgraded and replaced in its current location. 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.

The southern crossover bridge may 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 may be replaced with a pedestrian walkway structure just south of the existing crossing. The existing, attached 72-inch culverts would be removed and would not be replaced. A new tide gate structure would be constructed at its current location if a new pile supported bridge were constructed.

Maintenance responsibilities in the drainage ditch 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. As mentioned above, in the Future with the Proposed Action, the proposed design

includes the replacement of the flex valve tidal gates to help facilitate water flow into the Flushing River/Flushing Bay, which often restricts downstream flows at low tide in existing conditions.

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. Different landscaping planting zones would be introduced on the upland sections of the drainage ditch to offer more variety in wetland plant materials than existing conditions.

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. The proposed 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.

E. CONCLUSION

The Proposed Action would not result in significant adverse impacts on existing infrastructure systems. The existing city infrastructure has sufficient capacity to accommodate the proposed Academy without having a significant adverse impact on other users.

The proposed Academy is expected to generate a maximum demand of 567,000 gpd of water when it is operating at full capacity. As this is well below the CEQR impact threshold of one million gallons of water per day, the proposed Academy is not expected to overburden the city's water supply system, and would not result in a significant adverse impact to the city's water supply or water pressure.

When the proposed development is operating at full capacity, the Tallman Island WPCP would receive up to approximately 347,000 gpd of additional sanitary sewage, which represents less than one tenth of one percent of the plant's treatment capacity. Consequently, there would be adequate treatment capacity at the Tallman Island WPCP to handle the increased sanitary flows from the proposed Academy, and the Proposed Action would not result in a significant adverse impact to the City's sanitary sewer system.

As described above, to reduce stormwater generation and/or provide increased water quality treatment, green roof and bioswale features would be provided on-site. This would reduce the amount of stormwater that the proposed development would discharge into the on-site drainage ditch. The stormwater discharges are not expected to have a significant adverse impact on the sewer system or on the water quality of the Flushing Creek. As compared to existing and No-Build conditions, the proposed project would represent significant stormwater management improvements.