13.0 Infrastructure

A. INTRODUCTION

The City's "infrastructure" comprises the physical systems that support its population, including its water supply, wastewater, solid waste management, sanitation services, energy, and transportation systems. Many of these topics are discussed elsewhere in this DEIS (Chapter 9, "Traffic and Parking;" Chapter 10, "Transit and Pedestrians;" Chapter 14, "Solid Waste and Sanitation Services;" and Chapter 15, "Energy."). Provided in this chapter is an assessment of the potential impact of the Proposed Action on water supply, sewage treatment, and stormwater management.

Infrastructure serving the Project Site is adequate to meet Project demands. Using the CEQR methodology for calculating demand, there would be sufficient water supply capacity and pressure. Similarly, based on the estimated sanitary sewage generation, the Proposed Action would result in no significant adverse impact on the Bowery Bay Water Pollution Control Plant (WPCP), which serves the Project Site, nor would the Proposed Action significantly contribute to combined sewer overflow (CSO) events. Though differing from the Preferred Development Program in terms of water and sanitary sewer demands, the three variations, like the Preferred Development Program, would not result in any significant adverse impacts to the City's water supply or wastewater treatment systems.

B. EXISTING CONDITIONS

1. Water Supply

The potable water supply for New York City is collected in three upstate watersheds: the Delaware, the Catskill, and the Croton. From these watersheds, water is distributed via a network of reservoirs, aqueducts, and tunnels extending as far as 125 miles north of the City. The watersheds cover almost 2,000 square miles and have a reservoir storage capacity of 550 billion gallons. The water reaches most consumers by gravity; however, nearly four percent of the City's water is pumped to its final destination.

On average, City water consumption is approximately 1.2 billion gallons per day (gpd), of which the borough of Queens consumes an estimated 220 million gpd.[1]

The Delaware and Catskill (West-of-Harlem) systems collect water from the watershed areas in the Catskill Mountains and deliver it to a reservoir in Yonkers, where it is distributed to the City through three tunnels: City Tunnel No. 1, which goes through the Bronx and Manhattan to Brooklyn; City Tunnel No. 2, which goes through the Bronx, Queens, and Brooklyn (and from there through the Richmond Tunnel to Staten Island); and City Tunnel No. 3, which goes through the Bronx, Manhattan, and Queens. The Delaware and Catskill systems supply approximately 90 percent of the City's water. The Project area is served mainly by City Tunnel No. 2 and, to a more limited extent, by City Tunnel No. 3.

[1] Queens water consumption rate provided by Natalie Millner, Public Affairs, NYCDEP, July 3, 2003.

The Project area is served by 12-inch water lines in 43rd Avenue and Vernon Boulevard, and a 20-inch water line along Vernon Boulevard between Bridge Plaza South and 43rd Avenue. Water would be delivered to the Project Site through 8-inch laterals from the grid system.

Water pressure throughout the Project area is estimated by the Bureau of Water Supply to be between 40 and 45 pounds per square inch (psi). Twenty psi is considered sufficient water pressure for residential areas. The high water pressure is partially a result of the Project Site's low elevation.

There currently is no water usage by Lots 7, 13, 15, and 20 on Block 477, since these lots are vacant. The temporary NYPA facility located on Lot 24 uses water at a rate of approximately 280,000 gpd.

2. Sanitary Sewage and Stormwater

The City's sewer system consists of a grid of sewers beneath the streets that collects and delivers wastewater flow to 14 WPCPs, and is capable of treating a total of 1.7 billion gallons of sewage per day. The sewage system for most of the City combines both sanitary sewage from buildings and stormwater collected by curb side catch basins and storm drains; however, there are some areas of the City that have separate systems for sanitary sewage and stormwater. At the WPCPs, water is treated through a variety of physical and biological processes that remove solid contaminants so that the water discharged into the City's waterways does not adversely affect water quality. During dry weather, combined sewers function as sanitary sewers, conveying all flows to the WPCPs for treatment. During wet weather, however, stormwater entering the system can exceed the capacity of the treatment plants and trigger a CSO into the City's waterways. During a significant storm event, CSOs within the Bowery Bay WPCP service area are discharged to the East River. There are CSO outfalls to the East River in the vicinity of the Project Site, including one located below the streetbed on which the DSNY salt pile is located, at 43rd Avenue and the East River.

The wastewater collection system for the Project Site consists of 15-inch combined sewers along Vernon Boulevard, and a 7-foot 8-inch by 7-foot 7-inch storm drain within 43rd Avenue.

The Project Site is served by the Bowery Bay WPCP. The system is designed to deliver twice the mean dry weather or sanitary flow to the Bowery Bay WPCP for treatment. The Bowery Bay WPCP has the capacity to provide secondary treatment for 150 million gallons/day (mgd); the total hydraulic capacity of the Bowery Bay WPCP is 300 mgd. As reported by NYCDEP, the Bowery Bay WPCP has an average flow rate of 126 mgd. The average dry weather flow at the Bowery Bay WPCP over the most recent 12-month period was 114 mgd (Table 13-1). The effluent from the Bowery Bay WPCP is regulated by a State Pollutant Discharge Elimination System (SPDES) permit issued by the NYSDEC.

TABLE 13-1: DAILY FLOW VOLUME[1]

Bowery Bay WPCP	FY 2004 (mgd)	FY 2005 (mgd)[2]
Dry Weather Flow	102	114
Monthly Average Flow	111	126

Source: NYCDEP

1 Based on 12-month rolling average.
2 FY2005 represents latest 12-month period, including a portion of 2005.

Lots 7, 13, 15 and 20 on the Project Site are currently vacant and do not contribute any sanitary sewage flow to the sewer system or the WPCP. Lot 24, which is the site of the NYPA facility, discharges 44,000 gpd of wastewater into the New York City sewer system that may include negligible amounts of stormwater. Stormwater at the Project Site generally either infiltrates the soil or is direct runoff into the East River or Vernon Boulevard. Stormwater that reaches Vernon Boulevard is conveyed by the combined sewers to the Bowery Bay WPCP. The estimated total stormwater runoff from the Project Site is approximately 20.13 cubic feet per second (cfs) during a 10-year storm event.

C. FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION

In the future without the Proposed Action, the NYPA facility would be relocated, eliminating its demands on the municipal water supply and wastewater management systems. Conditions at the Project Site related to infrastructure would otherwise be the same as described under Existing conditions. Stormwater would continue to infiltrate the ground on the Project Site or run off the site directly into the East River or to Vernon Boulevard and eventually to the Bowery Bay WPCP.

Projects anticipated to be completed by 2009 in the vicinity of the Project Site would total approximately 2,163,000 sf of commercial and 4,183,000 sf of residential development. These projects would increase demand on local infrastructure. In the Future without the Proposed Action, demands for water supply and wastewater treatment would increase by 1.78 mgd. This increase would not cause the average daily flow volume to exceed the WPCP's 150 mgd design capacity.

The Bowery Bay WPCP Phase II upgrade, which will entail replacement of several WPCP components, will be complete by 2009; these improvements will not result in a change in the capacity of the facility, which will remain the same as under Existing conditions.

D. FUTURE CONDITIONS WITH THE PROPOSED ACTION

The Proposed Action would affect water usage, sanitary sewage, and stormwater disposal for this area. The Proposed Action would facilitate a mixed-use development containing studios, offices, residential, retail, and community facility uses instead of the current industrial use. The residential component of the development would introduce up to 1,000 new residential units to the Project Site and introduce approximately 2,700 new residents to the area. The additional demands on infrastructure are indicated below.

1. Water Supply

The *CEQR Technical Manual* has established the general threshold for demand on the City's water supply systems of 1 mgd. An increase in demand less than this threshold is not considered to result in a significant adverse impact on the City's water supply system. If increased 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. As indicated in Table 13-2, the Proposed Action would increase peak demand for water by approximately 545,245 gpd above Future Conditions without the Proposed Action, including usage by residents, workers, visitors and air conditioning systems. This increase in demand would be below the CEQR impact threshold, does not require a detailed assessment of its effects on water

supply pressure or demand, and would not have any significant adverse impacts on the City's water supply system.

TABLE 13-2: WATER CONSUMPTION WITH THE PROPOSED ACTION

Use	Rate (gpd)	Floor Area (sq. ft)	Dwelling Units	Persons	Water Usage/Day (gpd)	Air Conditioning (gpd)
Residential	112	1,045,000	1,000	2,700	302,400	
Office	25	655,000		2,183	54,575	
Air Conditioning	0.1			300		65,500
Retail	0.17	77,000		N/A	13,090	
Air Conditioning	0.17					13,090
Cultural/Community	0.17	131,000		N/A	22,270	
Air Conditioning	0.17					22,270
Film Studios	25	347,000		694	17,350	
Air Conditioning	0.1					34,700
				Subtotal Water Use	*409,685*	*135,560*
				Total Water Use	**545,245**	

Notes:
1. Rates taken from CEQR Technical Manual (Film Studios Rates Assumed Equivalent to Office Rates)
2. Employee numbers are based on the following ratios: office 1/300 sq. ft.; studio 1/500 sq. ft.
3. Person = Dwelling units X avg. household size (2.70,weighted blended rate for Community District 2 in Queens County and Study Area)

2. Sanitary Sewage and Stormwater

Sewage generation from the Proposed Action is conservatively estimated to be equivalent to the water use, approximately 545,245 gpd during peak demand conditions. This amount represents an approximately 0.4 percent addition to the projected average flow to the Bowery Bay WPCP. This increase would not significantly affect the plant. The average wastewater flows into Bowery Bay WPCP together with the 1.78 mgd additional demand of No Action projects and the 545,245 gpd wastewater estimated to be generated by the Project would not exceed the plant's 150 mgd design capacity. Therefore, no significant adverse impacts to sanitary sewage treatment facilities would occur.

The Proposed Action would transform a vacant site into a complex containing commercial, residential, studio, and other uses. As a consequence, the permeability of the Project Site would be reduced, and stormwater runoff would increase. The estimated increase in stormwater runoff would be approximately 10.20 cfs (to a total of about 30.33 cfs), during a 10-year storm event. Stormwater drainage from the Project Site would be directed to the East River and away from combined sewers, utilizing the existing stormwater outfall located beneath 43rd Avenue at the East River. This outfall has adequate capacity to accommodate Project runoff. This drainage plan is consistent with City policy for reducing stormwater inputs to combined sewers as a means of preserving treatment capacity at the treatment plants. Through these features, on-site stormwater would be managed so as not to increase the occurrence of CSOs. No significant adverse impacts to the Bowery Bay WPCP would occur, since the Proposed Action would not cause the plant to exceed its capacity. Furthermore, the separation of storm drainage, and its direct discharge to the river, would further the goals of the City and State for the management of water quality as it relates to CSO events. The Applicant also intends to incorporate sustainable building features into the building design that utilize green-roof technologies and graywater retention and reuse strategies to further reduce net stormwater runoff.

E. VARIATIONS

1. Water Supply

Variation 1: Residential would replace the approximately 655,000 gsf of office space with an equivalent amount of residential space containing 655 apartments. This would result in a net increase in water demand of approximately 78,053 gpd more than with the Preferred Development Program (approximately 545,245 gpd with the Preferred Development Program compared to approximately 623,298 gpd with Variation 1).

Variation 2: Studio would replace the cultural facility with an equivalent amount of studio and studio support space. This would result in a net decrease in water demand of approximately 24,890 gpd less than the Preferred Development Program (approximately 545,245 gpd with the Preferred Development Program compared to approximately 520,355 with Variation 2).

Variation 3: Residential and Studio would replace the approximately 655,000 gsf of office space with an equivalent amount of residential space and would also replace the cultural facility with an equivalent amount of studio and studio support spaces. This would result in a net increase in water demand of 53,163 gpd more than the Preferred Development Program (approximately 545,245 gpd with the Preferred Development Program compared to approximately 598,408 gpd with Variation 3).

As with the Preferred Development Program, none of the three variations would result in an increase in water demand above the CEQR threshold of 1,000,000 gpd that would require a detailed assessment of effects on water pressure and demand. Therefore, neither the Preferred Development Program nor any of the variations would result in a significant adverse impact to water supply or pressure.

2. Sanitary Sewage and Stormwater

Both Variations 1 and 3 would result in a net increase in sanitary sewage, equivalent to the net increase in potable water demand compared to the Preferred Development Program. These increases are estimated to be 78,053 gpd and 53,163 gpd, respectively. Variation 2 would result in a decrease of sanitary sewage of approximately 24,890 gpd, equivalent to the net decrease in potable water demand compared to the Preferred Development Program. Like the Preferred Development Program, none of the variations would result in sanitary flows beyond the dry weather capacity of the Bowery Bay WPCP, and none of the variations would result in a significant adverse impact to the sanitary sewage system.

As with the Preferred Development Program, net stormwater flows would be directed to the existing stormwater outfall along 43rd Avenue, avoiding the combined sewers. Therefore, as with the Preferred Development Program, the variations would not result in any significant adverse impacts on the stormwater management system.