FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE CROTON WATER TREATMENT PLANT

8.2. REQUIRED WORK AT JEROME PARK RESERVOIR FOR ALL CROTON WATER TREATMENT PLANT SITE ALTERNATIVES

8.2.1. Introduction

This section describes work required to maintain the facilities around Jerome Park Reservoir (Reservoir or JPR). Work at the facilities listed below would be necessary regardless of the choice of water treatment plant site. A study area of up to one-mile was established for the Reservoir site in conducting the following analyses. The methodology used to prepare these analyses is presented in Section 4, Data Collection and Impact Methodologies.

Jerome Park Reservoir is located in the Borough of the Bronx, New York City (NYC). The 110.5-acre site is owned by New York City and is under the jurisdiction of the NYC Department of Environmental Protection (NYCDEP). The site is currently used as an open finished water Reservoir and is part of the City's Water Supply System.

The Reservoir is an open, concrete-bottom basin formed of vertical stone-masonry walls and earth embankment. The existing 1,500-foot-long concrete dividing wall forms two separate basins. The maximum water level in the Reservoir is at Elevation 134.5 feet, and the top of the dividing wall is at Elevation 140 feet. The existing Reservoir floor varies between Elevations 108 and 110. The east perimeter wall of the Reservoir is made of stone and rubble masonry with top elevation of 139.5 feet. Within the upper portions of this wall, there are two brick-lined aqueducts of horseshoe shape: the Old Croton Aqueduct, which is no longer in service; and the New Croton Branch Aqueduct (NCBA), which discharges into the southern end of the Reservoir through the south portal. The New Croton Aqueduct (NCA) passes under pressure approximately 100 feet below the floor of the Reservoir and is connected to Shaft No. 21 on the north side of the dividing wall. The Reservoir is surrounded by water supply facilities that include:

- Gate House Nos. 2, 3, 5, 6, and 7
- Mosholu Pumping Station
- Demonstration Water Treatment Plant
- Jerome Pumping Station (located approximately a quarter of mile to the northeast, but is connected to the Reservoir complex)
- Microstrainer Building

In the proposed project, Jerome Park Reservoir would be used as a raw water Reservoir if either the Mosholu or Harlem River sites were chosen. If the Eastview Site were chosen, Jerome Park Reservoir would be used for overflows (Kensico-City Tunnel (KCT) treated water conveyance alternative only) and for an emergency supply. Irrespective of the choice of water treatment plant site, the work described below is required to maintain the facilities around Jerome Park Reservoir. This work required for all water treatment plant alternatives around Jerome Park Reservoir would take place at the various facilities at different periods between 2006 and 2011, as shown in Table 8.2-1. Most of the work would take place between 2009 and 2010.

The work required at the NCA shaft access points for the pressurization of the NCA for the Eastview Site Alternative is described in Sections 8.1 through 8.5. The impacts of this pressurization work at the new shaft and new chamber near Gate House No. 5 is described below. Since the pressurization work would take place at the same location, and would be of similar magnitude and duration around Jerome Park Reservoir, the impacts described below would apply to all of the proposed project alternatives. If the Eastview Site alternative with the pressurization of the NCA is not chosen, the NCA would still undergo baseline rehabilitation from 2004 to 2007. This NCA rehabilitation work is a separate action from the proposed project, would be conducted regardless of where the proposed Croton project is located, and is subject to its own environmental review.

Table 8.2-1 summarizes the work proposed around Jerome Park Reservoir, distinguishes the work that is dependent on a specific water treatment plant site, and provides the range of years in which the work would likely take place.

TABLE 8.2-1. CROTON WATER TREATMENT PLANT WORK NEAR JEROME PARK RESERVOIR

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Jerome Park Reservoir - Operates as a raw water reservoir for the Croton system	Emergency water supply		Add ramp in the south basin in the vicinity of Gate House No. 6. 2009-2010	
Gate House No. 7 - Interconnection to City Water Tunnel No. 1	Rehabilitate interior and exterior.	Seal pipe connections to the distribution system. The structure would not be used for this alternative.	Rehabilitate interior and exterior.	
	Refurbish and automate sluice gates in the west portal to the JPR.		Refurbish and automate sluice gates in the west portal to the JPR.	
	2011- 2014		2006-2007	
Mosholu Pumping Station - Lifts about 50 mgd of Croton water from JPR into Shaft No. 3 from where it can directly supply High Level service areas of the Bronx or be transmitted to other areas of the Bronx and Manhattan via City Tunnel No. 1	Remove pumps, piping, and motors, place off-line.			
	2011 - 2012			
Gate House No. 5 - Used to supply Shaft No. 21	Rehabilitate interior and exterior.	Seal pipe connections to distribution system. The structure would not be used for this alternative.	Rehabilitate interior and exterior.	
	Remove the corrosion inhibitor and chlorination equipment after the Croton water treatment plant is completed.		Remove the corrosion inhibitor and chlorination equipment after the Croton water treatment plant is completed.	
	Remove existing 16-inch diameter raw water pipe to the Demonstration Plant.		Remove existing 16-inch diameter raw water pipe to the Demonstration Plant.	
	Seal Chamber No. 22. Seal		Seal Chamber No. 22 and refurbish and automate existing sluice gates.	

TABLE 8.2-1. CROTON WATER TREATMENT PLANT WORK NEAR JEROME PARK RESERVOIR

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
	connections to Gate House Nos. 2 and 3 and refurbish existing sluice gates.		Install Potassium permanganate storage and mixing facilities.	
	2011 - 2014		2009-2010	
NCA Shaft No. 21 - Used as transfer conduit for water from the JPR into the NCA; provides Croton water to the Low Level service areas of the Manhattan distribution system	Connection from Shaft No. 21 to a new Shaft Chamber north of Gate House No. 5. Plug north of Shaft No. 21 for Low Level Service to Manhattan.	Seal pipe connections. The structure would not be used for this alternative.	Plug south of Shaft No. 21 to separate raw water from treated Low Level Service to Manhattan.	Continue to use to convey raw water from JPR southward to the water treatment plant.
	Access point to NCA for construction crews and materials.			
	Rehabilitation and Upgrades.			
	2011-2014		2009-2010	
Gate House No. 6/Microstrainer Building - Connects the south basin of JPR to the Bronx Low Level service area	Gate House No. 6 would be taken offline and retained for Bureau of Water Supply use.			
	The Microstrainer building would be demolished.			
	2011-2014		2009-2010	
Gate House No. 3 - Used to supply Gate House No. 5 from South Basin	Minor structural rehabilitation.	Seal pipe connections. The structure would not be used for this alternative.	Minor structural rehabilitation.	
	Close two 48-inch diameter gate valves to the distribution system and connection to Gate House No. 5		Close two 48-inch diameter gate valves to the distribution system	
	2011-2014		2009-2010	

TABLE 8.2-1. CROTON WATER TREATMENT PLANT WORK NEAR JEROME PARK RESERVOIR

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Gate House No. 2 - Used to drain JPR and supply Gate House No. 5 from North Basin	Provide a new overflow facility for the north basin of Jerome Park Reservoir: Extend the 30-inch diameter drain line from the dividing wall to Gate House No. 2.	Seal pipe connections. The structure would not be used for this alternative.	Provide a new overflow facility for the north basin of Jerome Park Reservoir: Extend the 30-inch diameter drain line from the dividing wall to Gate House No. 2.	
	Close 48-inch diameter gate valve to the distribution system and connection to Gate House No. 5.		Close 48-inch diameter gate valve to the distribution system	
	2011-2014		2009-2010	
New Shaft Chamber - Would serve as a central point for distributing treated water to the High Level and Low Level services	Use raised bored construction to drill New Shaft Chamber using the new treated water tunnel from the NCA as access point.	The construction of the New Shaft Chamber would not occur for this proposed alternative.	Use raised bored construction to drill New Shaft Chamber using the new treated water tunnel from the water treatment plant as access point.	
	2008-2011		2008-2011	
Flow Meter Chamber A - Would measure the flow from the new Shaft Chamber to the East Bronx and South Bronx Low Level service connections	Construct a new 48-inch diameter pipe from the proposed chamber to the existing Valve Chamber "C" to connect to the East Bronx Low Level service.	The construction of Flow Meter Chamber A would not occur for this proposed alternative.	Construct a new 48-inch diameter pipe from the proposed chamber to the existing Valve Chamber "C" to connect to the East Bronx Low Level service. Construct a second new 48-inch diameter pipe to an existing butterfly valve that connects to the South Bronx Low Level service just north of the dividing wall.	
	2008-2011		2008-2011	
Flow Meter Chamber B - Would measure the flow from the new Shaft Chamber to City Tunnel No. 1, Shaft No. 3	Construct two new 48-inch diameter pipes from the proposed chamber to the existing 48-inch pipes in Goulden Avenue going north..	The construction of Flow Meter Chamber B would not occur for this proposed alternative.	Construct two new 48-inch diameter pipes from the proposed chamber to the existing 48-inch pipes in Goulden Avenue going north..	
	2008-2011		2008-2011	

TABLE 8.2-1. CROTON WATER TREATMENT PLANT WORK NEAR JEROME PARK RESERVOIR

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Flow Meter Chamber C - Would measure flow from the new Shaft Chamber to City Tunnel No. 1, Shaft No. 4 and City Tunnel No. 3, Shaft No. 4B	Construct underground concrete vault containing one 48-inch diameter and one 84-inch diameter Venturi meter.	The construction of Flow Meter Chamber C would not occur for this proposed alternative.	Construct underground concrete vault containing one 48-inch diameter and one 84-inch diameter Venturi meter on existing pipelines.	
	2008-2011		2008-2011	
Flow Meter Chamber D - Would measure the flow from the Shaft No. 21 to the South Bronx Low Level service connection	Construct underground concrete vault containing one 48-inch diameter Venturi meter and connect to existing 48-inch pipelines.	The construction of Flow Meter Chamber D would not occur for this proposed alternative.		
	2008-2011			
Valve Chamber A - Connects High Level service pipes to City Tunnel No. 1, Shaft No. 4 and City Tunnel No. 3, Shaft No. 4B	Remove the existing 48-inch diameter interconnection and butterfly valve between the 48-inch and 84-inch diameter pipes and replace with blind flanges. Close the existing 48-inch diameter butterfly valve located on north side of chamber and install blind flange. Remove a section of the 48-inch diameter pipe to install the connection from the new Shaft Chamber to the new Flow Meter Chamber B and construct a bulkhead upstream of the connection.	No work is proposed for Valve Chamber A for this site alternative.	Remove the existing 48-inch diameter interconnection and butterfly valve between the 48-inch and 84-inch diameter pipes and replace with blind flanges. Close the existing 48-inch diameter butterfly valve located on north side of chamber and install blind flange. Remove a section of the 48-inch diameter pipe to install the connection from the new Shaft Chamber to the new Flow Meter Chamber B and construct a bulkhead upstream of the connection.	
	2011-2014		2010	

TABLE 8.2-1. CROTON WATER TREATMENT PLANT WORK NEAR JEROME PARK RESERVOIR

Location	Eastview NCA	Eastview KCT	Mosholu	Harlem River
Valve Chamber C - Contains connections from Gate House No. 5 to the Low Level service of the East Bronx	No work is proposed for Valve Chamber C; remove existing section of each of the 48-inch diameter pipes on the west side of the chamber and place a blind flange on each to separate the distribution system from Gate House No. 5.			
	2009 – 2010			
Jerome Pumping Station - Used to pump water to the Bronx Intermediate Level service area	Place off-line.		Place off-line. Would be used for NYCDEP staff offices	Place off-line.
	2010-2014			

8.2.1.1. Gate House No. 7

Gate House No. 7 is located along the northeast corner of Jerome Park Reservoir at the intersection of Sedgwick and Goulden Avenues, in the Bronx, NYC. Gate House No. 7 currently functions to control flow into the Reservoir from the New Croton Branch Aqueduct and can direct flow into the north basin. This gate house also includes a diversion to the Mosholu Pumping Station.

In the proposed project for all the site alternatives, Gate House No. 7 would be utilized to either control flow directly into the north basin of Jerome Park Reservoir or to allow water to continue through the New Croton Branch Aqueduct to the south basin. Gate House No. 7 would no longer discharge water to the Mosholu Pumping Station or continue to be used as the chlorination facility. Therefore, the electrical and chemical equipment and piping systems, all equipment from the switchgear rooms, and all of the screens would be removed. The superstructure would require interior and exterior rehabilitation and the sluice gates in the west portal of the north basin would be refurbished and automated.

The Mosholu Pumping Station is contained within the Gate House No. 7 complex. In the proposed project, the 75-year-old Mosholu Pumping Station would be taken off-line and all connections to the distribution system and the access pipe from Jerome Park Reservoir Gate House No. 7 would be plugged, sealed, and equipment would be removed. New piping and flow meters would connect the two Shaft No. 3, City Tunnel No. 1 risers with the two 48-inch diameter High Level Service transmission mains outside the gate house on Goulden Avenue.

The renovation work required for Gate House No. 7 would take place between 2006-2007 for Mosholu and Harlem River and between 2011-2014 for the Eastview alternatives.

8.2.1.2. Gate House No. 5

Gate House No. 5 is located on the east side of the Reservoir, near the intersection of Goulden Avenue and West 205th Street. Gate House No. 5 currently has multiple features that include distribution control, a chlorination facility, a rescue skiff, offices, and an employee lounge. It receives Croton water from the north and south basins of Jerome Park Reservoir, through Gate House Nos. 2, 3 and 7 (via the New Croton Branch Aqueduct). Gate House No. 5 supplies Croton water to the NCA via NCA Shaft No. 21, the south basin via the south portal, the north basin, the East Bronx distribution system, and the Jerome Pumping Station.

In the proposed project, a potassium permanganate facility would be constructed within Gate House No. 5 for the water treatment plant at the Mosholu or Harlem River sites if it were deemed necessary in the future. This would entail placing plastic bins and mixing equipment where some of the chlorination equipment is presently located. The interior and exterior of the structure would be refurbished for the Mosholu, Harlem River or Eastview sites using the NCA for treated water conveyance site alternatives.

Other proposed modifications associated to Gate House No. 5 for all site options include removing the 16-inch raw water connection from the Demonstration Plant and permanently sealing Chamber No. 22.

For the Eastview Site with the KCT option Gate House No. 5 would not continue to be used. All pipe connections to the City's distribution system would be sealed.

All work related to Gate House No. 5 is scheduled to take place between 2009-2010 for Mosholu and Harlem River Sites and between 2011 and 2014 for the Eastview Site.

8.2.1.3. New Croton Aqueduct Shaft No. 21

NCA Shaft No. 21 is located in the north basin of Jerome Park Reservoir. NCA Shaft No. 21 currently connects Gate House No. 5 to the NCA. NCA Shaft No. 21 functions as a conduit transferring water from Jerome Park Reservoir into the NCA and provides chlorinated Croton water to the Low Level Service areas of the Manhattan distribution system.

In the proposed project, NCA Shaft No. 21 would direct raw water from Jerome Park Reservoir to the proposed plant via the NCA for the Mosholu or Harlem River Site alternatives. Minor rehabilitation work is probable but no modifications to the facility at NCA Shaft No. 21 are proposed at this time.

If the proposed Eastview Site using the KCT for treated water conveyance were selected there would be no work involving NCA Shaft No. 21.

All work related to the rehabilitation and upgrade of NCA Shaft No. 21 is scheduled to take place between 2009-2010 for the Mosholu and Harlem River sites and 2011-2014 for the Eastview alternatives.

8.2.1.4. Gate House No. 6 / Microstrainer Building

Gate House No. 6 and the Microstrainer Building are located at the southern edge of Jerome Park Reservoir at the intersection of Reservoir Avenue and Goulden Avenue.

In the proposed project, Gate House No. 6 would be taken offline for all site alternatives. The connections from Gate House No. 6 to the 48-inch diameter bypassing pipe that connects the south basin of Jerome Park Reservoir to the Bronx Low Level service area and the two inlet pipes from Jerome Park Reservoir would be plugged. Gate House No. 6 would be retained for NYCDEP use, but all of the operating equipment would be removed. The Microstrainer Building would be demolished, and the area would be landscaped and kept open for a potential access ramp to the bottom of the Reservoir's south basin.

The decommissioning and dismantling of Gate House No. 6 and the Microstrainer Building would occur between 2009-2010 for the Mosholu and Harlem River alternatives and 2011-2014 for the Eastview alternatives.

8.2.1.5. Gate House No. 3

Gate House No. 3 is a one-story, 30-foot by 33-foot building located on the west side of the south basin of the Reservoir. Its current function is to take water from the west side of the south basin and convey it to Gate House No. 5 and allow Reservoir water to be circulated.

In the proposed project, Gate House No. 3 would continue to function as a water intake structure. Gate House No. 3 would no longer be needed to supply Gate House No. 5 if the Eastview Site with NCA option is selected.

The interior and exterior of the structure would be rehabilitated. Two 48-inch diameter gate valves to the distribution system would be removed and the operating stems would be cut. Concrete plugs at the gate valve intakes would be constructed.

Gate House No. 3 would no longer be used for the Eastview Site with KCT option, in which case all pipe connections would be sealed.

This work would take place between 2009-2010 for the Mosholu and Harlem River alternatives and between 2011 and 2014 for the Eastview alternatives.

8.2.1.6. Gate House No. 2

Gate House No. 2 is located in the north basin of the Reservoir. Gate House No. 2 consists of two components; a 40-foot by 35-foot main building that extends from the bedrock below the Reservoir floor to one story above the top of the Reservoir embankment and a 200-feet long underground passageway that extends from the main building to Sedgwick Avenue. Currently, Gate House No. 2 serves as the main drainage facility of the Reservoir and also functions as a north basin water supply source for Gate House No. 5.

In the proposed project, Gate House No. 2 would continue to serve as the main drainage facility for both basins of the Reservoir and supply water to Gate House No. 5. Similarly to Gate House No. 3, Gate House No. 2 would not serve as a water supply to Gate House No. 5 for the Eastview Site using the NCA option for treated water conveyance, and the connections from Gate House No. 2 to Gate House No. 5 would be sealed. A new overflow facility for the north basin would also be installed in Gate House No. 2. The interior and exterior of the structure would be rehabilitated. The 48-inch diameter gate valve to the distribution system would be closed and the operating stem would be cut. A concrete plug at the gate valve intake would be constructed. A new overflow weir in Gate House No. 2 would be constructed to independently control water levels in the north basin.

Additionally, a 30-inch drain line would be extended from the dividing wall approximately 700-feet to Gate House No. 2, where it would be connected to the reservoir drain. The extension would allow the south basin to be drained without having to use a diver to remove the blind flange to the drain inlet located on the Reservoir floor.

The rehabilitation work and the construction of the weir at Gate House No. 2 are scheduled to take place between 2009-2010 for the Mosholu and Harlem River alternatives and between 2011 and 2014 for the Eastview NCA alternative. This work would not take place if the Eastview Site with KCT option were selected.

8.2.1.7. New Shaft Chamber and Tunnel

In the proposed project, a new Shaft Chamber would be constructed in the Harris Park Annex north of Gate House No. 5, west of Goulden Avenue. The new Shaft Chamber would provide a central point for distributing treated water to the High Level and Low Level services.

The construction of the new chamber would not occur for the Eastview Site with the KCT option. It would only be built if the Mosholu, Harlem River or Eastview with NCA alternatives are selected.

For the Eastview Site with NCA alternative, the New Shaft Chamber would convey High Level treated water via two 48-inch diameter pipes to City Tunnel No. 1, Shaft No. 3; a 48-inch diameter pipe to City Tunnel No. 1, Shaft No. 4; and an 84-inch diameter pipe to City Tunnel No. 3, Shaft No. 4B. High Level treated water would also be conveyed from the new Shaft Chamber to the Low Level system through sleeve valves. A new 48-inch diameter pipe would be constructed from the new Shaft Chamber to the existing Valve Chamber C, to deliver Low Level treated water to the East Bronx. An additional Low Level 144-inch diameter connection would be made from the new Shaft Chamber to the NCBA, to provide service to Low Level Manhattan and South Bronx. High Level water would be supplied from the NCA through a 126-inch diameter connection the NCA to the New Shaft Chamber.

For the Mosholu Site alternative, the new Shaft Chamber would convey High Level treated water via two 48-inch diameter pipes to City Tunnel No. 1, Shaft No. 3, a 48-inch diameter pipe to City Tunnel No. 1, Shaft No. 4, and an 84-inch diameter pipe to City Tunnel No. 3, Shaft No. 4B. Connections to the existing high level services are all in the ground below Harris Park Annex and Goulden Avenue. A new 8-foot diameter tunnel from the new Shaft Chamber would convey Low Level treated water to Manhattan via the NCA (downstream Shaft No.21). Low Level connections from the new Shaft Chamber would also be made to the South and East Bronx service.

For the Harlem River Site alternative, treated water would be conveyed from the water treatment plant to the distribution system via a nine (9) foot diameter tunnel carrying High Level treated water. The New Shaft Chamber would contain a riser pipe that would connect to a 96-inch manifold in the chamber. Two 48-inch diameter pipes would discharge into the High Level system through City Tunnel No. 1 at Shaft No. 3. The 96-inch diameter pipe manifold would also connect to two new pipes, a 48-inch diameter pipe (servicing City Tunnel No. 1 Shaft No. 4) and an 84-inch diameter pipe (servicing City Tunnel No 3 Shaft No. 4B).

The construction of the New Shaft at this location would be done using the raised bored construction method. This method involves drilling of a pilot hole from the surface. A boring drill rig would be assembled at the bottom of the shaft where the tunnel would terminate, and

turned by a machine at the top. The boring spoils would fall into the tunnel, and would be removed as the drill is raised from the bottom of the shaft. Using the new tunnel for access, all the debris would collapse into the new tunnel and would be removed at the water treatment plant site for either the Mosholu or the Harlem River Site alternatives. For the Eastview Site, the material would be removed through the NCA from shafts upstream of the Reservoir. This method would reduce the impact caused by construction in the area.

The drilling of the New Shaft via raised bore construction would take place in the first summer of the scheduled construction period. The new tunnel lining would be installed before the New Shaft Chamber construction commences. In response to public comment, construction of the New Shaft Chamber would occur during the school year with the concrete pours taking place during the summer months, Saturdays, or holidays to avoid disturbance of the nearby schools while they are in session. The construction of the New Shaft Chamber would be simultaneous with setting the piping in the New Tunnel from either the water treatment plant or the NCA, depending on the site selection, to the New Shaft Chamber.

Distribution to the High Level service would receive priority during normal operation for the Eastview (with NCA) and Harlem River Sites. The Low Level service would be supplied through the High Level service via existing regulators dispersed through the system. For the Mosholu site, both High and Low Level services would be supplied from the new Shaft Chamber.

This work is expected to be completed during approximately two seasons per year from 2008 through 2011, before the scheduled plant start-up date.

8.2.1.8. Flow Meter Chambers

Other work related to the construction of the New Shaft Chamber includes the construction of at most four Flow Meter chambers in Jerome Park Reservoir area. These meter chambers would not be needed if the Eastview with KCT alternative is selected.

For the Eastview with NCA and Harlem River Site options, Flow Meter Chamber A would be constructed to measure the flow from the new Shaft Chamber to the East Bronx Low Level service connection. The same Flow Meter Chamber would measure the flow from the new Shaft Chamber to the East Bronx and South Bronx Low Level service connections for the Mosholu site. The proposed chamber would be an underground concrete vault containing a single 48-inch diameter Venturi meter and would be located approximately 300 feet north of Gate House No. 5 beneath Harris Park Annex.

Flow Meter Chamber B would be constructed to measure the flow from the new Shaft Chamber to City Tunnel No. 1, Shaft No. 3 High Level Service. The proposed chamber would be an underground concrete vault containing two 48-inch diameter Venturi meters and would be located approximately 480 feet north of Gate House No. 5 beneath Goulden Avenue.

Flow Meter Chamber C would be constructed to measure the flow from the new Shaft Chamber to City Tunnel No. 1, Shaft No. 4 and City Tunnel No. 3, Shaft No. 4B High Level Service. The

proposed chamber would be an underground concrete vault containing one 48-inch diameter and one 84-inch diameter Venturi meter and would be located beneath the intersection of Goulden Avenue and W. 205th Street.

Flow Meter Chamber D would be constructed to measure the flow from the Shaft No. 21 to the South Bronx Low Level service connection only for the Eastview site with NCA alternative. The proposed chamber would be an underground concrete vault containing a single 48-inch diameter Venturi meter. The proposed Flow Meter Chamber D would be located in Jerome Park Reservoir near the existing butterfly valve at the dividing wall, which connects to the South Bronx Low Level service for the Eastview Site.

This work is associated to the construction of the New Shaft Chamber. The construction of the proposed New Flow Meters would take place seasonally from 2008 through 2011 with excavation of the New Flow Meter chambers taking place in the second summer of construction. The construction of the Flow Meter chambers would occur during the second school year with concrete work performed on Saturdays and school holidays.

8.2.1.9. Jerome Pumping Station

The Jerome Pumping Station is located on Jerome Avenue between Mosholu Parkway and West 205th Street in the Bronx. The pumping station was built in 1906 to house steam driven pumps, which were replaced in 1938 by three 19 million gallons per day (mgd) electric pumps that are capable of delivering 50 mgd of water to the Bronx Intermediate Level Service. The pumping station superstructure is a three-story building, but only the main floor is at grade. The basement and mezzanine levels are below grade. The basement level contains pumps, motors, and piping. The mezzanine level contains electrical switchgear. The Jerome Pumping Station currently pumps water from Jerome Park Reservoir to the Intermediate Level service area.

In the proposed project, the Intermediate Level service would be supplied from the in-City High Level Service using existing pressure reducing valves and regulators for all site alternatives. The Jerome Pumping Station would no longer be needed and would be taken off line, but would be retained for BWSO use. All the mechanical equipment, suction mains and discharge mains would be capped at the face of the building. A portion of the water treatment plant staff may occupy the Jerome Pumping Station. Other future uses of the Jerome Pumping Station would be the subject of further study.

The work required to place the Jerome Pumping Station off-line is expected to take place between 2010-2014 for all alternatives.

8.2.2. Baseline Conditions

8.2.2.1. Existing Conditions

8.2.2.1.1. Land Use, Zoning and Public Policy

Land use

Reservoir Site. The Reservoir, located entirely on City-owned property under the jurisdiction of the NYCDEP, is part of a public water supply complex, and is not accessible to the public except for occasional special events. The area of the Reservoir itself is designated as an "open space and recreation" land use on the New York City Department of City Planning (NYCDCP) land use maps. However, a majority of the land adjacent to the Reservoir, including the Harris Park Annex, is not mapped as parkland. The only areas mapped as parkland include Fort Independence Playground to the north of the Reservoir and Old Fort No. 4 Park to the south.

Study Area. The existing land uses within Jerome Park study area include industrial and manufacturing, commercial and retail such as retail stores, offices, and neighborhood services, institutional and public facility such as schools, hospitals, fire and police stations, libraries, a junior center, a senior center, and human services facilities, medium- and high-density residential, parks and recreation, vacant land, and transportation and utility (Figure 8.2-1). Although, Jerome Park Reservoir is considered a park and recreation/open space land use according to New York City Department of City Planning Land Use Maps, a majority of the land adjacent to the Reservoir, including the Harris Park Annex, is not mapped as parkland. The only areas mapped as parkland include Fort Independence Playground to the north of the Reservoir and Old Fort No. 4 Park to the south.

East of Goulden Avenue - North of Bedford Park Boulevard. The predominant land uses for the portion of the study area east of Goulden Avenue and north of Bedford Park Boulevard are high density residential and park and recreation related uses. Low- and mid-rise apartment buildings are found throughout the study area and have been classified as high-density residential areas. A number of institutional and public facility uses are located within the study area. The largest concentration of these uses is directly east of the Reservoir, between Mosholu Parkway, Paul Avenue, Bedford Park Boulevard, and Goulden Avenue. The educational facilities located in this area include DeWitt Clinton High School and Bronx High School of Science. The New York City Transit Authority (NYCTA) rail yards, designated as a transportation and utility use, separate these educational facilities from Jerome Avenue. Other institutional and public facility uses within the study area include the Montefiore Medical Center, located in the northeast section of the study area.

Commercial and retail land uses in the study area primarily consist of neighborhood businesses scattered among high-density residential uses. These businesses include restaurants, retail establishments, and other neighborhood services. Commercial and retail development along Jerome Avenue consists largely of automotive-related uses interspersed with some small convenience stores. Since many of these businesses are located on the street level of residential buildings, they are categorized as residential rather than commercial on Figure 8.2-2.

Numerous parks and recreation uses are located within the study area with Van Cortlandt Park, located within the northern portion of the study area, comprising the largest such use. Baseball fields, tennis courts, hiking trails, and a golf course in Van Cortlandt Park offer active recreation opportunities (a second golf course is just outside of the study area). Other substantial parks and recreation uses within the study area include Harris Park and playing fields located to the east of the Reservoir, and park space along Mosholu Parkway. Additional recreational facilities are found near schools and within neighborhood parks throughout the study area. Much of the transportation and utility land uses within the study area are NYCTA property. These include the elevated rail tracks running over Jerome Avenue, and their associated rail yards along Jerome Avenue. The Jerome Pumping Station, located north of West 205th Street and between Paul and Jerome Avenues (adjacent to the NYCTA rail yards), is also situated in an area categorized as transportation and utility.

East of Goulden Avenue - South of Bedford Park Boulevard. The predominant land uses for the portion of the study area east of Goulden Avenue and south of Bedford Park Boulevard are high-density residential and institutional and public facilities. The most prevalent land use throughout the study area is high-density residential represented by low- and mid-rise apartment buildings found throughout the study area. The largest medium-density residential land use lies in the southern portion of this study area, southwest of the Kingsbridge Armory. Lower density residential dwellings, consisting of single- and multi-family homes are scattered throughout the study area, often in lots adjacent to much larger, higher density residential buildings. As a result, many such areas receive an overriding high-density residential land use classification. Single-family homes predominate in some areas south of the Kingsbridge Armory and sections of Valentine Avenue.

A number of institutional and public facility uses are located within the study area. The largest concentration of these uses is directly east of the Reservoir, between Bedford Park Boulevard, Paul Avenue, West Kingsbridge Road, and Goulden Avenue. This concentration includes Herbert H. Lehman College, Public School No. 86, and Walton High School. Lehman College also maintains a parking lot directly adjacent to the eastern perimeter of the Reservoir south basin. The NYCTA rail yards, designated as a transportation and utility use, separate the educational facilities from Jerome Avenue

Commercial and retail land uses in the study area primarily consist of neighborhood businesses scattered among high-density residential uses. These businesses include restaurants, retail establishments, and other neighborhood services. Commercial and retail development along Jerome Avenue consists largely of automotive-related uses interspersed with some small convenience stores. Commercial and retail uses are also found along West Kingsbridge Road. Since many of these businesses are located on the street level of residential buildings, they are categorized as residential rather than commercial on Figure 8.2-3.

The only substantial park and recreation use within the study area is St. James Park found in the southern portion of the study area. Additional recreational facilities are found near schools and within neighborhood parks throughout the study area. Much of the transportation and utility land

uses within the study area are NYCTA property. These include the elevated tracks running over Jerome Avenue, and their associated rail yards along Jerome Avenue.

West of Goulden Avenue - North of W. 233rd Street. The predominant land uses for the portion of the study area west of Goulden Avenue and north of W. 233rd Street are primarily high density residential mixed with commercial and retail uses and park and recreation open spaces. The most prevalent land use throughout the study area is high-density residential. The primary high-density, high-rise apartment buildings are located to the north of the Reservoir, between Van Cortlandt Park South, Sedgwick Avenue, and Van Cortlandt Avenue West. The Tracey Towers, two residential towers that are approximately 40 stories, are also just north of the Reservoir. West of the Reservoir several large apartment buildings (approximately 10 to 20 stories) are also found. Interspersed with them are low- and mid-rise apartment buildings. There are few institutional or public facility uses within this area.

Commercial and retail land uses in the study area primarily consist of neighborhood businesses scattered among high-density residential uses. These businesses include restaurants, retail establishments, and other neighborhood services. The largest commercial and retail use is situated in the portion of the study area in the vicinity of Broadway and the Major Deegan Expressway. Businesses located along Broadway consist largely of fast food and other restaurants, automotive-related businesses, and retail uses. Commercial and retail uses are also found along Bailey Avenue and in a small commercial area at Van Cortlandt Village Square, located at the intersection of Van Cortlandt and Sedgwick Avenues. Since many of these businesses are located on the street level of residential buildings, they are categorized as residential rather than commercial on Figure 8.2-4.

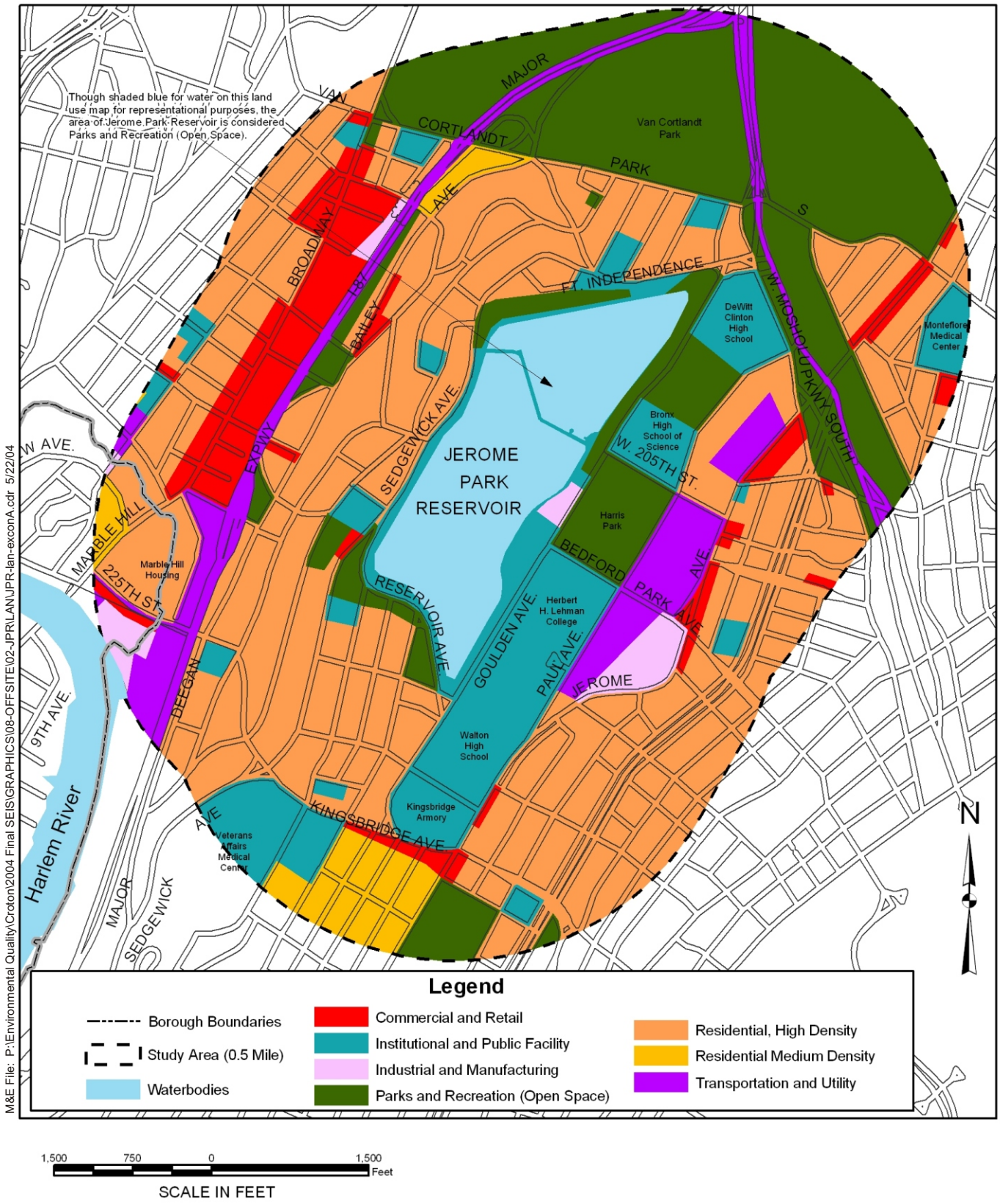
Numerous parks and recreation uses are located within the study area with Van Cortlandt Park, located within the northern portion of the study area, comprising the largest such use. Baseball fields, tennis courts, hiking trails, and a golf course in Van Cortlandt Park offer active recreation opportunities (a second golf course is just outside the study area). Additional recreational facilities include Fort Independence Park and smaller neighborhood parks found near schools throughout the study area. Much of the transportation and utility land uses within the study area are NYCTA property. These include the elevated rail tracks running over Broadway. The Major Deegan Expressway, which bisects this study area north to south, is a prominent transportation corridor within the study area.

West of Goulden Avenue - South of W. 233rd Street. The predominant land uses for the portion of the study area west of Goulden Avenue and south of W. 233rd Street are primarily residential high density interspersed with commercial and retail uses and transportation and utility uses. The most prevalent land use throughout the study area is high-density residential. West of the Major Deegan and north of the Harlem River, the Marble Hill Housing Projects comprise the largest multifamily residential land use in the western portion of the study area. Several large apartment buildings (approximately 10 to 20 stories) are also found on the hilly streets to the west of the Reservoir. Interspersed with them are low- and mid-rise apartment buildings. The largest medium-density residential land use lies in the southern portion of this study area, located south of Kingsbridge Road West and east of the Veterans Affairs Medical Center. Lower density residential dwellings, consisting of single- and multi-family homes are

also scattered throughout the study area, often in lots adjacent to much larger, higher density residential buildings. As a result, many such areas receive an overriding high-density residential land use classification, including areas immediately west of the Reservoir along Kingsbridge Terrace, Bailey Avenue, and Heath Avenue. In some areas single-family homes predominate, including some areas west of the Marble Hill Housing Project. Institutional and public facility uses within the study area include the Veterans Affairs Medical Center, and other small scattered facilities.

Commercial and retail land uses in the study area primarily consist of neighborhood businesses scattered among high-density residential uses. These businesses include restaurants, retail establishments, and other neighborhood services. The largest commercial and retail use is situated in the western portion of the study area in the vicinity of Broadway and the Major Deegan Expressway. Businesses located along Broadway consist largely of fast food and other restaurants, automotive-related businesses, and retail uses. Since many of these businesses are located on the street level of residential buildings, they are categorized as residential rather than commercial on Figure 8.2-5.

Recreational facilities are found in this portion of the study area near schools and within neighborhood parks throughout the study area that include Old Fort No. Four Park. Much of the transportation and utility land uses within the study area are NYCTA property. These include the elevated tracks running over Broadway. The Major Deegan Expressway, which bisects this study area north to south, is a prominent transportation corridor within the study area.



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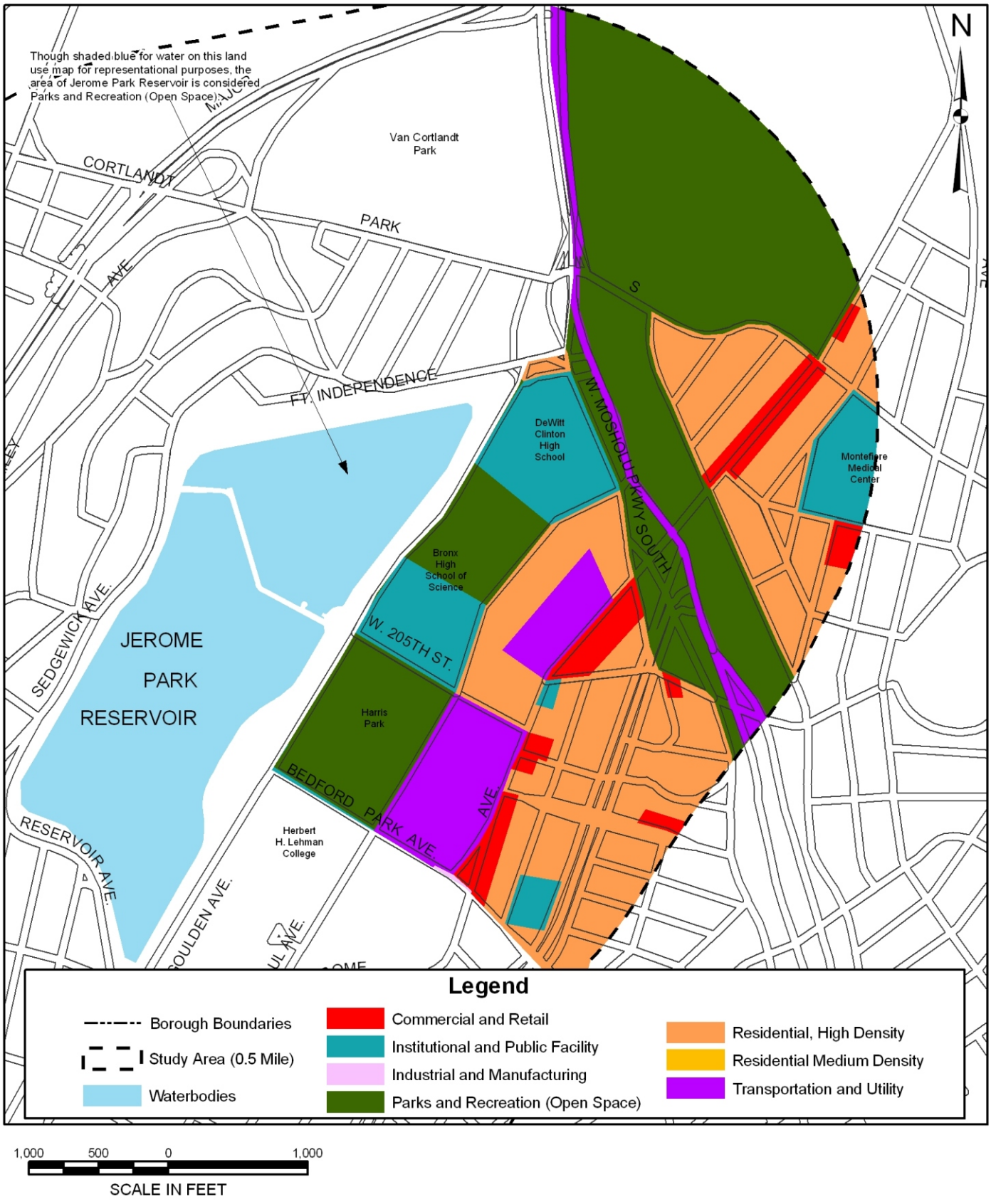
Source: New York Department of City Planning 2003 Land Use Maps, refined based on field observations conducted in July 2001, July 2002, August 2002 and August 2003

Land Uses
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-1

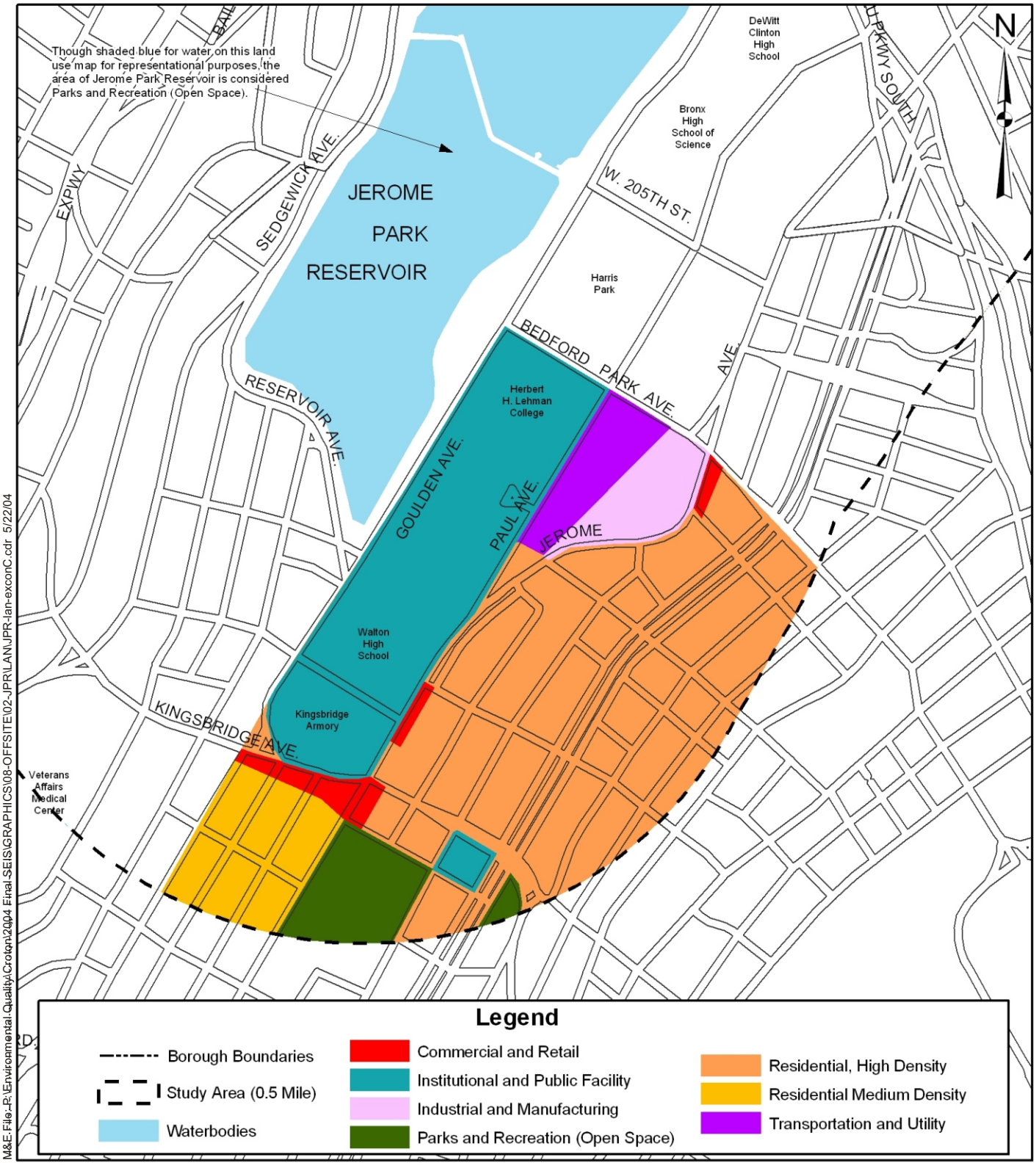


Source: New York Department of City Planning 2003 Land Use Maps, refined based on field observations conducted in July 2001, July 2002, August 2002 and August 2003

Land Uses - East of Goulden Avenue North of Bedford Park Boulevard

Croton Water Treatment Plant

Figure 8.2-2



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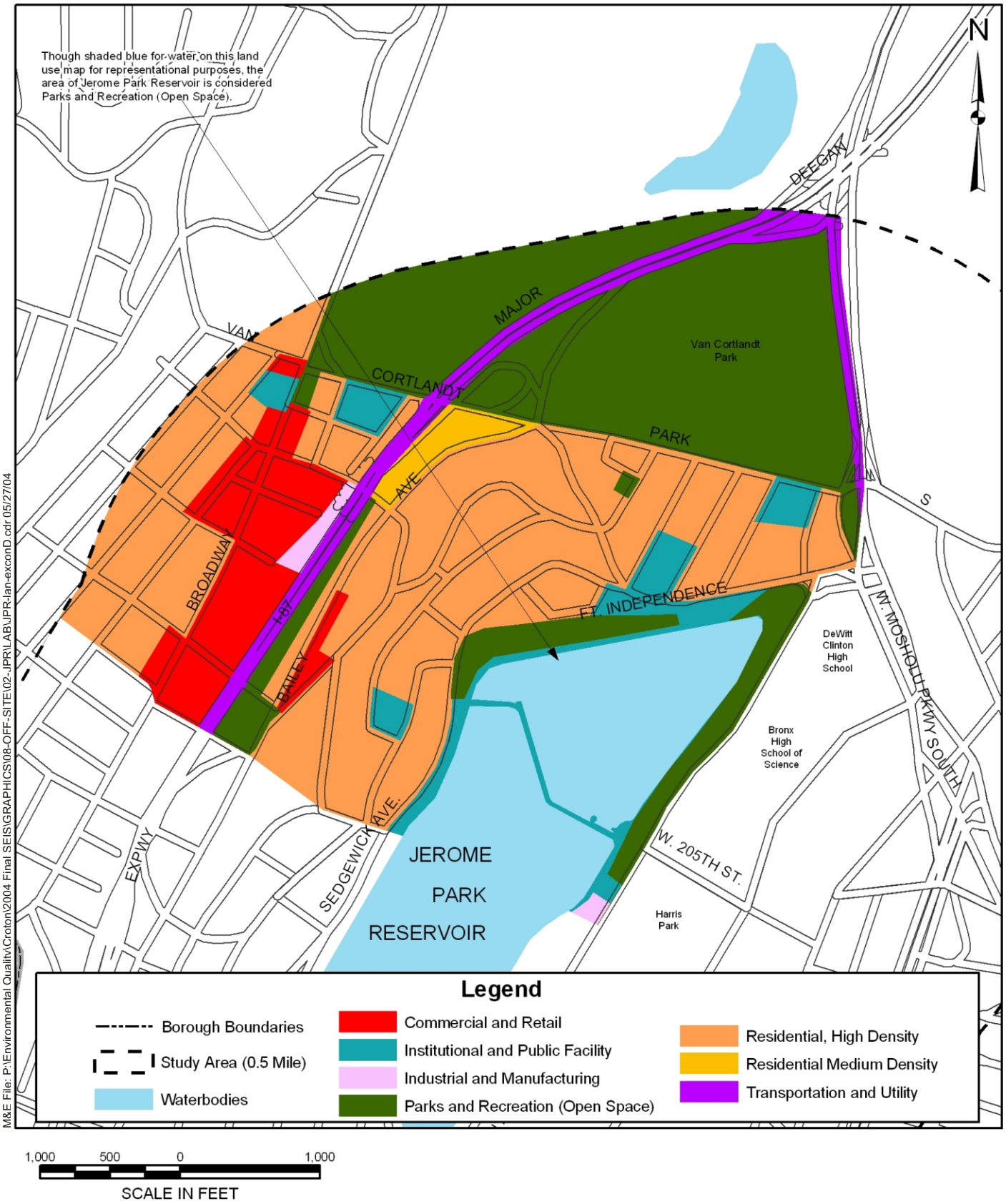
Source: New York Department of City Planning 2003 Land Use Maps, refined based on field observations conducted in July 2001, July 2002, August 2002 and August 2003

Land Uses - East of Goulden Ave. South of Bedford Park Boulevard

Croton Water Treatment Plant

Figure 8.2-3

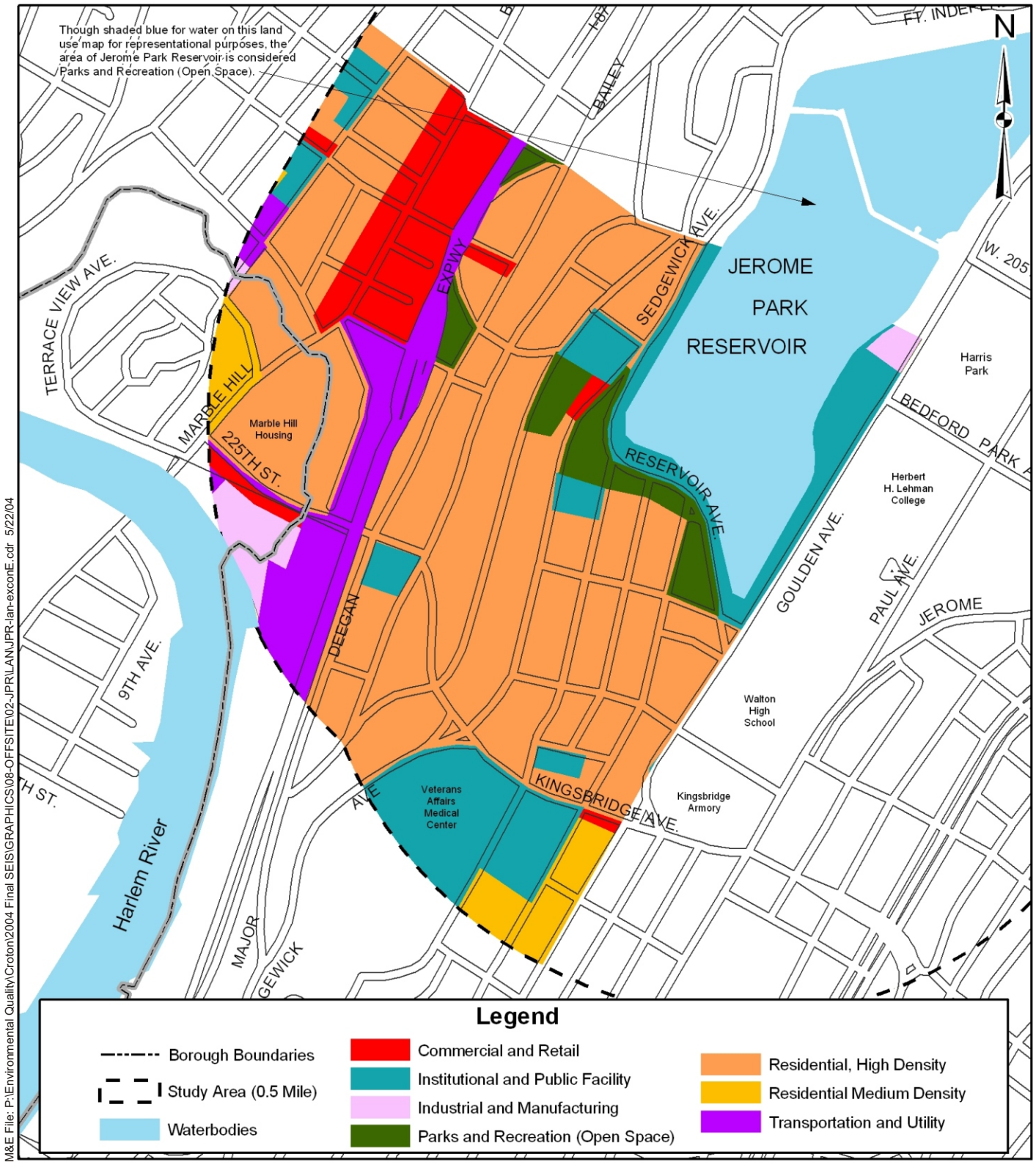


Source: New York Department of City Planning 2003 Land Use Maps, refined based on field observations conducted in July 2001, July 2002, August 2002 and August 2003

Land Uses - West of Goulden Avenue North of 233rd Street

Croton Water Treatment Plant

Figure 8.2-4



Source: New York Department of City Planning 2003 Land Use Maps, refined based on field observations conducted in July 2001, July 2002, August 2002 and August 2003

Land Uses - West of Goulden Ave. South of 233rd Street

Croton Water Treatment Plant

Figure 8.2-5

Zoning

Reservoir Site. The Jerome Park Reservoir is zoned R6, as is the study area south of the Reservoir, and some of the areas to the east and west. This zone is a medium-density residential zone that allows all types of residences and community facilities. Among the list of typical uses allowed by special permit within a R6 zone are: public service facilities, utility substations, sewage disposal plants, and water or sewage pumping stations. The Jerome Pumping Station is located to the east of the Reservoir in an area zoned C8-2, or Special Purpose Commercial. This district permits many principal uses as shown in Table 8.2-2. The existing water supply facilities are identified as non-conforming uses within the R6 and C8-2 districts.

Study Area. As shown in Figure 8.2-6, land use in the study area is regulated by a variety of zoning districts, as promulgated by the City. Table 8.2-2 summarizes the districts and their permitted uses.

TABLE 8.2-2. JEROME PARK RESERVOIR: ZONING

District[(1)]	District Name	Principal Permitted Uses
R4	Residential	Designed to provide for all types of residential buildings - community facilities, transportation facilities, or open uses that serve the residents of these districts or are benefited by a residential environment. Special Uses[(2)]: Public service facilities, camps (overnight or outdoor day) radio or television towers, riding academies or stables, sand gravel or clay pits, docks, fire stations, health related facilities, police stations, public transit, railroad, or utility substations, seaplane bases, sewage disposal plants, water or sewage pumping stations
R5	Residential	See R4
R6*	Residential	See R4
R7-1	Residential	See R4
R8	Residential	See R4
C1-3 in R6, R7-1, and R8	Local shopping and services, residential	Designed to provide for local shopping and include a wide range of retail stores and personal service establishments which cater to frequently recurring needs - residences, convenience or retail establishments, neighborhood services, restaurants, golf courses, hospitals, offices, water and sewage pumping stations, schools. Special Uses[(2)]: Camps (overnight or outdoor day), bus stations, car rental agencies, eating or drinking establishments
C2-2	Local shopping and services	Designed to provide for a wide range of essential local services not involving regular local shopping – transient hotels or accommodations. Special Uses[(2)]: Eating or drinking establishments, public parking garages

TABLE 8.2-2. JEROME PARK RESERVOIR: ZONING

District[(1)]	District Name	Principal Permitted Uses
C2-3 in R6, R7-1, and R8	Local shopping and services, residential	Residences, some auto-related uses, neighborhood services, colleges, restaurants, golf courses, hospitals, laboratories, offices, prisons, water and sewage pumping stations, schools, transient hotels or accommodations, public service establishments
C2-3 in R4	Local shopping and services, residential	See C2-3 in R6- R8. Special Uses[(2)]: See C2-2
C8-1	Special purpose commercial	Stadiums, auto-related uses, restaurants, golf courses, hospitals, laboratories, offices, water and sewage pumping stations, truck terminals. Special Uses[(2)]: Bus stations, racetracks, sewage disposal plants
C8-2*	Special purpose commercial	See C8-1.
M1-1	Light manufacturing, high performance	Manufacturing, auto-related uses, restaurants, golf courses, laboratories, offices, prisons, water and sewage pumping stations, trucking terminals. Special Uses[(2)]: Radio or television towers, sand, gravel, or clay pits, Airports, stadiums, public parking garages, bus stations, hospitals, sewage disposal plants
M1-2	Light manufacturing, high performance	See M1-1. Special Uses[(2)]: See M1-1 and indoor interactive entertainment facilities with eating and drinking
Special (C)	Grand Concourse	Residential, some commercial

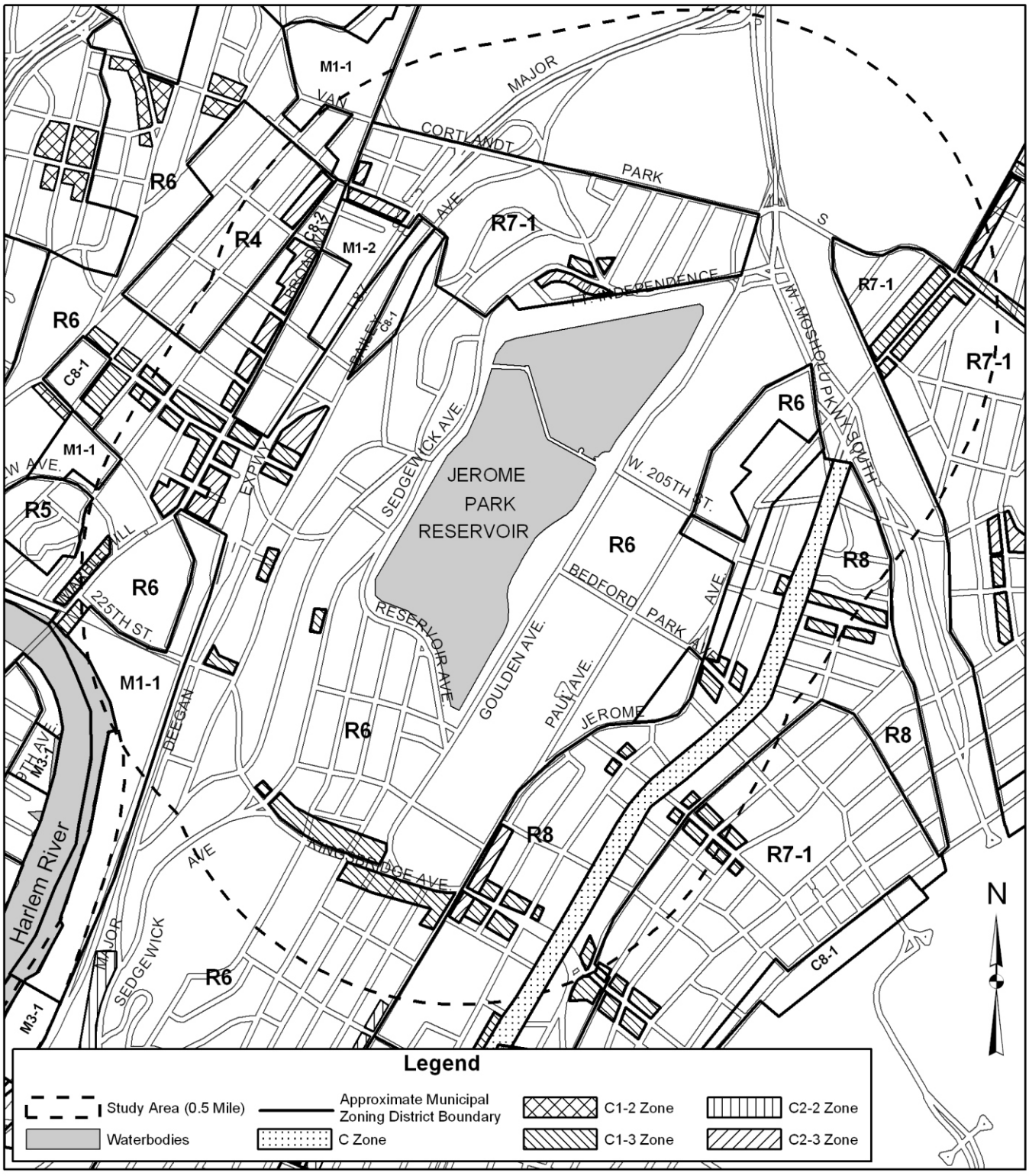
Notes:

* JPR site is zoned R6 with the Jerome Pumping Station in C8-2.

(1) The dimensional requirements for residential uses in C1 and C2 zones are governed by the surrounding residential zone.

(2) Some uses require a special permit from the Board of Standards and Appeals, while others require a special permit from the NYC Planning Commission.

Source: NYCDCP. 2003. New York City Zoning Resolution (as approved January 29, 2003).



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Note: Zoning districts based upon NYC zoning maps (2003)

Zoning
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-6

East of Goulden Avenue - North of Bedford Park Boulevard. The portion of the study area east of Goulden Avenue and north of Bedford Park Boulevard contains residential zones, commercial zones, commercial overlay zones, and a special district (Figure 8.2-6). The northern portion of the study area, south of Van Cortlandt Park, and the far eastern parts of the study area are zoned R7-1. This is a medium-density apartment house zone. An R8 zone is located east of Jerome Avenue. This zone allows the highest density residential development in the Bronx. The minimum lot size for the residential zones within the study area ranges from 3,800 square feet for single- and two-family units to 1,700 square feet for all other units.

Numerous commercial zones (C1 and C2) overlay the study area. C1 zones allow retail and related services and C2, while it is similar to C1, allows a larger variety of uses. The commercial development within these zones is regulated based on the surrounding residential zoning. Residential uses and community facilities are also allowed in C1 and C2 zones. A C8-2 zone is located along Jerome Avenue. The C8 zones are designed for special purposes, such as automotive uses and heavy commercial services. This zone offers a transition from commercial to manufacturing uses, while excluding residences. The Grand Concourse Boulevard, which is characterized by pre-war apartment buildings, is zoned as a special district known as the "Special Grand Concourse District." Specific bulk and design regulations help to preserve the distinctive art deco composition of the Grand Concourse Boulevard, and to protect its scale. Small commercial districts are interspersed throughout the study area consisting largely of local service and retail districts zoned C1-3. This zoning district provides for local shopping and services.

East of Goulden Avenue - South of Bedford Park Boulevard. The portion of the study area east of Goulden Avenue and south of Bedford Park Boulevards contains residential zones, commercial zones, commercial overlay zones, an industrial zone, and a special district (Figure 8.2-6). An R8 zone is located east of Jerome Avenue. This zone allows the highest density residential development in the Bronx. The minimum lot size for the residential zones within the study area ranges from 3,800 square feet for single- and two-family units to 1,700 square feet for all other units.

Numerous commercial zones (C1 and C2) overlay the study area. C1 zones allow retail and related services and C2, while it is similar to C1, allows a larger variety of uses. The commercial development within these zones is regulated based on the surrounding residential zoning. Residential uses and community facilities are also allowed in C1 and C2 zones. A M1-1 industrial zone is located within the study area along Jerome Avenue. The M1-1 zone is usually located adjacent to low-density residential areas. The Grand Concourse Boulevard, which is characterized by pre-war apartment buildings, is zoned as a special district known as the "Special Grand Concourse District." Specific bulk and design regulations help to preserve the distinctive art deco composition of the Grand Concourse Boulevard, and to protect its scale. Small commercial districts are interspersed throughout the study area consisting largely of local service and retail districts zoned C1-3 and C2-3. These zoning districts provide for local shopping and services.

West of Goulden Avenue - North of West 233rd Street. The portion of the study area west of Goulden Avenue and north of W. 233rd Street contains residential zones, commercial zones, commercial overlay zones, and industrial zones (Figure 8.2-6). The northern portion of the study area, south of Van Cortlandt Park, are zoned R7-1. This is a medium-density apartment house zone. The minimum lot size for the residential zones within the study area ranges from 3,800 square feet for single- and two-family units to 1,700 square feet for all other units.

Numerous commercial zones (C1 and C2) overlay the study area. C1 zones allow retail and related services and C2, while it is similar to C1, allows a larger variety of uses. The commercial development within these zones is regulated based on the surrounding residential zoning. Residential uses and community facilities are also allowed in C1 and C2 zones. A C8-1 zone is located east of Bailey Avenue, and a C8-2 zone is located west of the Major Deegan Expressway. The C8 zones are designed for special purposes, such as automotive uses and heavy commercial services. This zone offers a transition from commercial to manufacturing uses, while excluding residences. Several M1 industrial zones are located within the study area, including a M1-1 zone located in the northwest corner of the study area, and a M1-2 zone located west of the Major Deegan Expressway. M1-1 zones are usually located adjacent to low-density residential areas, while M1-2 zones typify older industrial areas. Small commercial districts are interspersed throughout the study area consisting largely of local service and retail districts zoned C1-3 and C2-3. These zoning districts provide for local shopping and services.

West of Goulden Avenue - South of West 233rd Street. The portion of the study area west of Goulden Avenue and south of W. 233rd Street contains residential zones, commercial zones, commercial overlay zones, and industrial zones (Figure 8.2-6). Most of this study area is zoned R6. The minimum lot size for the residential zones within the study area ranges from 3,800 square feet for single- and two-family units to 1,700 square feet for all other units.

Numerous commercial zones (C1 and C2) overlay the study area. C1 zones allow retail and related services and C2, while it is similar to C1, allows a larger variety of uses. The commercial development within these zones is regulated based on the surrounding residential zoning. Residential uses and community facilities are also allowed in C1 and C2 zones. A C8-1 zone is located west of the Major Deegan Expressway. The C8-1 zone is designed for special purposes, such as automotive uses and heavy commercial services. This zone offers a transition from commercial to manufacturing uses, while excluding residences. Several M1-1 industrial zones are located within the study area, including two M1-1 zones located west of the Major Deegan Expressway. M1-1 zones are usually located adjacent to low-density residential areas. Small commercial districts are interspersed throughout the study area consisting largely of local service and retail districts zoned C1-3 and C2-3. These zoning districts provide for local shopping and services.

Public Policy. Plans and regulations were reviewed from local, municipal, and state sources to identify applicable policies within the study area. The following summarizes land use policies affecting the study area and Community Board policy statements.

The 2002 New York State Open Space Conservation Plan (Plan).[1] This Plan, which was first adopted in 1992 and revised in 1995, 1998, and 2002, serves as the blueprint for the State's land conservation efforts. The Plan contains: a comprehensive description of programs and policies that affect the conservation of the State's open space resources; a compilation of major conservation successes accomplished under the plan; a list of priority projects; conservation strategies for major resource areas; evaluation and criteria used to determine Environmental Protection Fund (EPF) and Clean Water/Clean Air Bond Act spending priorities; and recommendations by regional advisory committees and the Governor's Quality Communities Task Force to improve New York's open space conservation program. The following list provides a summary of those areas discussed in the Plan that occur within the study area:

(1) Bronx Harlem River Greenway – including Regatta Park, which would extend the greenway south to Roberto Clemente State Park.
(2) Putnam Railroad – a greenway through northern Bronx utilizing an abandoned railroad right-of-way.
(3) In addition to areas listed above, the plan identifies the following properties with a potential for fee purchase: Sedgwick Avenue, Croton Aqueduct Trail Linkage, and Kingsbridge Armory.

Citywide Statement of Needs For Facilities - Fiscal Years 2003 and 2004. This statement identifies by agency and program all new facilities the City plans to site and all existing facilities the City plans to close or to expand or to reduce significantly during the next two fiscal years. Within the study area, the statement identifies the replacement of the 46th Precinct Station in Bronx Community District 5, off-street parking for the 48th Precinct/Bronx Task Force in Bronx Community District 6, and a new combined firehouse and EMS support facility in Bronx Community District 7 or 8.

Community District Needs: Bronx, Fiscal Years 2002/2003. Community District 7, which includes Kingsbridge Heights, Norwood, Bedford Park, and University Heights neighborhoods, represents a substantial portion of the eastern part of the study area. The Statement notes Community District 7 opposition to the proposed Croton Water Treatment Plant at either the formerly considered site at Mosholu Golf Course or on any other site in the Bronx. The community district notes that it would like for the Mayor and the NYCDEP request deferment in responding to the federal government to review again alternatives to filtration or find a more willing community to accept the plant. The statement also notes that the community district supports renovation of the Kingsbridge Armory, though strongly recommends that the armory includes an educational complex, child care, youth and senior services, a family entertainment and sports complex, and retail businesses. The statement also notes the need for crime prevention.

[1] The New York State Department of Environmental Conservation. The New York State's Open Space Conservation Plan. 2002.

Community District 8 includes Kingsbridge and Marble Hill neighborhoods, to the west of Jerome Park Reservoir. The needs statement focuses on requests for capital funds for education, police, health and hospitals, parks and recreation, traffic and transportation, community services, and environmental protection. Community District 8 notes its opposition to siting of the Croton Water Treatment Plant in Jerome Park Reservoir and Van Cortlandt Park.

The needs statement of Community District 12, which includes Woodlawn, highlights the needs for increased education improvements, youth facilities/programs, increased police funding, transportation improvements, and minor improvements to the Town Hall.

Borough of the Bronx, Strategic Policy Statement, 2002 – 2005. This statement has been prepared in accordance with the New York City Charter. It identifies borough-wide goals for 2002 to 2005 including those pertaining to economic development, transportation, education, and health care. Among the borough assets identified in this statement, the Bronx waterfront is noted as a valuable resource. It states that developers of waterfront property must address the issues of access, environmental protection, and neighborhood preservation and enhancement, and that developers will be encouraged to incorporate public interests and environmental sensitivity into their designs. In addition, it notes the goal to reduce truck traffic through the introduction of waterborne freight ferries to carry freight and possibly waste transport. Other transportation-related goals include completion of the Grand Concourse and the refurbishing of rail lines for passengers and freight.

The statement also identifies community development goals including the improvement and expansion of neighborhood parks, continuing natural are restoration, the reconstruction and restoration of ball fields, providing pedestrian and bicycle link-ways through the Bronx, and the improvement of street lighting.

NYC Greenway Plan. In 1993, the NYCDCP adopted a Greenway Plan for the City, including the Bronx. According to the Greenway Plan, one greenway already exists: the Mosholu-Pelham Greenway. Four other greenways are proposed for the study area. The Grand Concourse Greenway is currently being planned as a pedestrian greenway by the City's Department of Transportation. The Aqueduct University Greenway and the Putnam Railroad Greenway are proposed to run north and south through Van Cortlandt Park. The NYC Department of Park and Recreation (NYCDPR), which is implementing the plan, is currently in the process of acquiring the railroad right-of-way for the Putnam Greenway in Van Cortlandt Park. Both the Aqueduct University Greenway and the Putnam Greenway would terminate (at their southern ends) at the fourth greenway proposed within the study area, the Harlem River Trail. This greenway would run along the eastern shore of the Harlem River.

The New York City Comprehensive Waterfront Plan: Reclaiming the City's Edge. The Waterfront Plan, adopted in 1992, provides a framework to guide land use along the city's entire 578-mile shoreline. In general, the Waterfront Plan identifies goals and improvements for four principal functions of the waterfront:

(1) The natural waterfront – protect and enhance the natural environment.
(2) The public waterfront – reestablish the public's connection to the waterfront by creating opportunities for visual, physical, and recreational access.
(3) The working waterfront – facilitate and encourage water-dependent uses and to ensure the retention of sufficient manufacturing-zoned land to accommodate future needs.
(4) The redeveloping waterfront – identify vacant or underutilized sites for redevelopment and establish land use and zoning controls that provide a predictable framework for new construction.

Specific to the study area, this plan identifies the following goals and improvements:

(1) Provide linear public access corridors along the Harlem River, specifically noting the proposed Harlem River waterfront esplanade and redevelopment extending north from High Bridge (only the northernmost of this section occurs within the study area).
(2) Proposes shoreline clean up along the Harlem River associated with the Harbor Drift Program.
(3) The plan states that several sites on vacant or underutilized land along the Harlem River would be suitable for medium-density residential development, including the M1-1 zoned area in the southwestern corner of the study area (plan suggests rezoning to permit medium density residential).

The New Waterfront Revitalization Program. The southwestern portion of the study area, in the vicinity of where the study area overlaps the Harlem River, is located in the coastal zone and is thus included in the City's Waterfront Revitalization Program. As such, certain local discretionary actions must be reviewed for consistency with program policies. The study area does not contain special natural waterfront features and is not in a significant maritime and industrial area.

Plan for the Bronx Waterfront. The Bronx Waterfront Plan, adopted in 1993, is a part of the New York City's Comprehensive Waterfront Plan issued in August 1992. With regard to the portion of the Bronx waterfront that occurs within Jerome Park study area, this report builds on and refines recommendations made in the *1989 The Bronx Harlem River Plan: A Summary Report*. Among the issues and recommendations presented in this plan that affect Jerome Park study area are the following:

(1) Review the potential for restoring wetlands along the Harlem River.
(2) Provide additional areas for public access, waterfront esplanades, and public parks along the Harlem River.
(3) Develop a Harlem River waterfront esplanade (from Broadway Bridge to High Bridge).
(4) Create an inland trail in Marble Hill, including access to the water's edge, to the proposed Harlem River waterfront esplanade.
(5) Develop a waterfront access plan.

(6) Redevelop the parcel between Broadway and the abandoned Columbia Presbyterian building on West 225th Street.

(7) Rezone the parcels north of the University Heights Bridge (only the northernmost parcel occurs within the study area) from M1-1 and M3-1 to medium density residential.

The Bronx Harlem River Plan: A Summary Report. The Bronx Harlem River Plan was adopted in 1989 and presents excerpts from an ongoing plan for the Bronx Harlem River Shoreline. The Bronx Harlem River Plan presents a land use and public access policy for a three and one-half-mile study area between the Harlem River and the Major Deegan Expressway, from Yankee Stadium to the Broadway Bridge in Marble Hill. Areas highlighted within the Bronx Harlem River Plan that occur within Jerome Park study area, include an area of "underutilized industrial-zoned land" between the intersection of the Major Deegan Expressway and West 225th Street and the Harlem River. Activities proposed in this area include a development opportunity area, open space, two waterfront access ways, and a waterfront esplanade along the Harlem River.

New York City Bicycle Master Plan. The Bicycle Master Plan was adopted in 1997 and represents the final report of the first phase of the Bicycle Network Development (BND) Project, a joint Department of City Planning-Department of Transportation effort. The goal of the BND is to increase bicycle rider ship in NYC and the purpose of the Bicycle Master Plan is to articulate the City's action plan. The Bicycle Master Plan identifies a 909-mile, citywide bicycle network and proposes design guidelines to assist in the implementation of the network. Within the study area, the Bicycle Master Plan lists two priority on-street routes for implementation/improvements, Grand Concourse and University Avenue. The Bicycle Master Plan also identifies greenway routes to compliment the bicycle transportation improvements. The greenway routes are based on the 1993 *Greenway Plan for New York City* and the 1993 *Bronx Greenway Plan*. Within the study area, the plan identifies the following funded greenway projects: Grand Concourse Traffic Design Study, Putnam Railroad Line: Harlem River and Van Cortlandt Park, and Harlem River Restoration. The Bicycle Master Plan also identifies potential greenway projects that have not received funding within the study area, consisting of the Putnam Railroad Trail extension and upgrading of the sidewalk on 233rd Street.

Mosholu-Jerome-East Gun Hill Road Business Improvement District. The New York City Department of Business Services identifies this area as a business improvement district. Provisions for the area includes sanitation services, security services, graffiti removal, seasonal decorations, and promotional services.

TEA-21 Grant. The NYCDPR has been awarded a TEA-21 grant to devise an implementation plan and identify acquisition sites for a greenway trail along the Harlem River extending from the Macombs Dam area to 225th Street. The project originates from the *1993 Bronx Greenway Plan*.

A Design Investigation for the Harlem River Esplanade. This report, prepared in 1993 by design consultants to the New York City Economic Development Corporation, proposes the creation of a greenway trail and public waterfront access along the Bronx side of the Harlem River.

8.2.2.1.2. Visual Character

Reservoir Site. Jerome Park Reservoir is long and irregularly shaped, with a concrete dividing wall that splits the water body into north and south basins. Under normal operating conditions, both basins of the Reservoir are filled. The Reservoir is surrounded by parallel chain link fences containing a narrow paved road of varying width for NYCDEP service vehicles. Outside the fences there is a border of vegetation and mowed grass. Figure 8.2-7 provides a location map that shows the locality of the Reservoir and where the photographs of the existing views were taken.

Study Area. The Reservoir is visible at street level from only a few areas in the surrounding community. The Reservoir rises up steeply to the south, outside City property, allowing people in Old Fort Park No. Four (at Reservoir Avenue between Goulden and Sedgwick Avenues) to see the south basin and a small sliver of the north basin (Photograph 1 of Figure 8.2-8). In the summer, the trees that line Reservoir Avenue and the vines that grow over the chain link fences surrounding the Reservoir partially obstruct this view. The Reservoir is also visible from two other parks in the near vicinity: Harris Park (Photograph 2 of Figure 8.2-8), adjacent to the Bronx High School of Science; and Fort Independence Park (Photograph 3 of Figure 8.2-9), located along the northwest corner of the Reservoir. Fort Independence Park contains several rows of benches from which to afford views of the water and vista beyond. Gate House No. 5 is a brick building located on the east side of Jerome Park Reservoir adjacent to the Reservoir's dividing wall. Photograph 4 of Figure 8.2-9, provides the existing view to Gate House No. 5. NCA Shaft No. 21 is a semi-circular structure located on the east side of the dividing wall and at the same grade as the dividing wall. Refer to Figure 8.2-7 for the location of NCA Shaft No. 21.

Jerome Park Reservoir is most visible from the upper stories of residential and institutional buildings that adjoin the Reservoir site. To the north and northeast, the tallest buildings near the Reservoir are twenty-one stories. Most of the buildings enjoy views of the Reservoir from the upper floors. The institutional buildings to the east are generally lower in height, but also have water views from their top floors. This is especially true of the buildings to the southeast, where the terrain surrounding the Reservoir is higher.

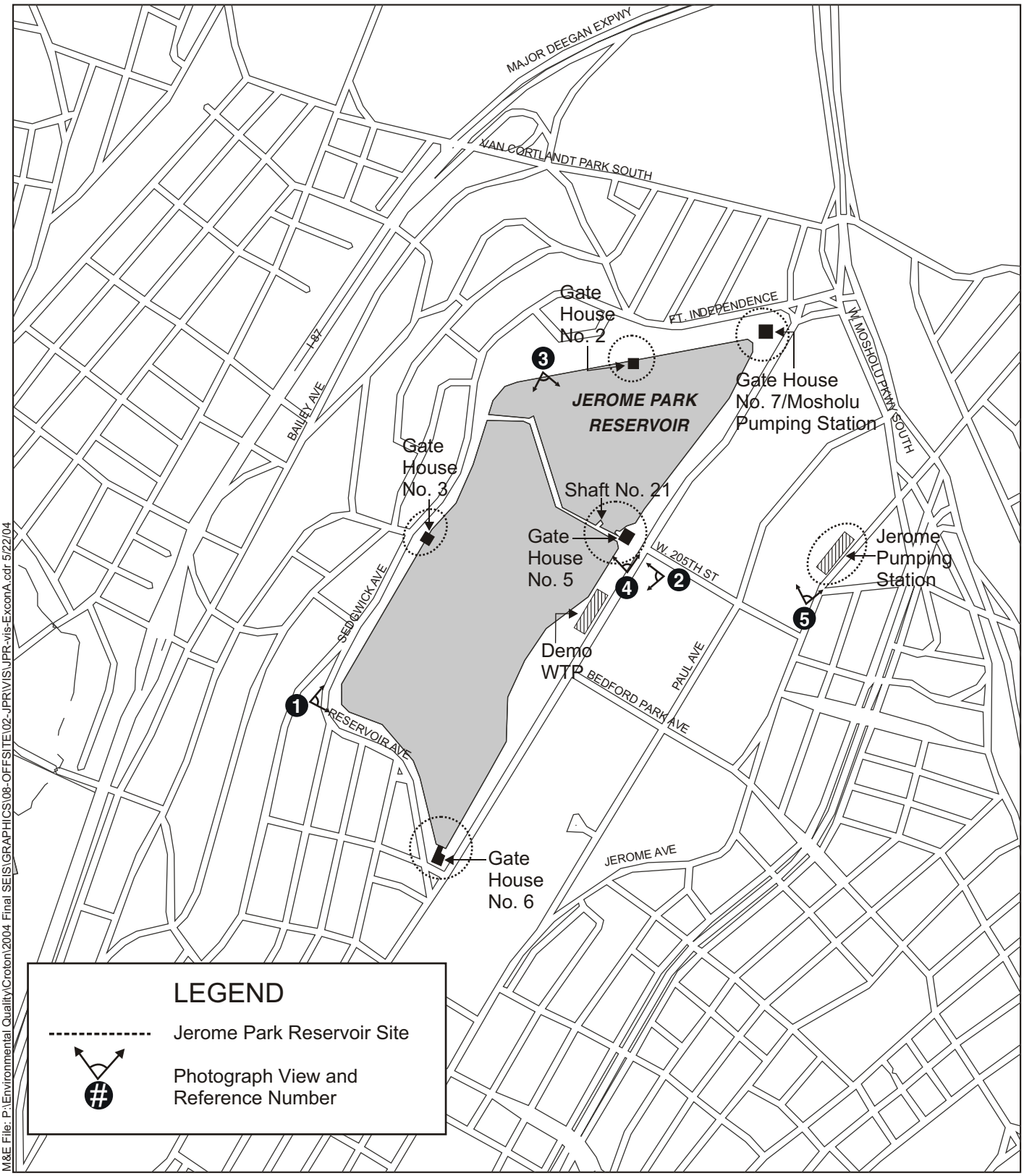
Sedgwick Avenue runs along the western and northern sides of the Reservoir. Sedgwick Avenue is a curvilinear street with well-maintained buildings and two rows of tall oak trees that form a canopy above the roadway. While the Reservoir is not visible from street level on Sedgwick Avenue, the grassy embankments that border the Reservoir provide a swath of green on the east side of the Avenue.

West of Sedgwick Avenue the land slopes steeply downhill to the Major Deegan Expressway, approximately 1,500 feet away. Most of the streets in this area -- Orloff Avenue, Cannon Place, Giles Place, Heath Avenue, Kingsbridge Terrace, and Fort Independence Street -- are narrow and hilly. Directly north of the Reservoir, the land levels off and the streets conform to a regular grid

pattern. This area has a relatively high concentration of high-rise apartment buildings, including the Amalgamated Houses complex, one of the earliest cooperative developments in the country. Built in the 1920s, the Amalgamated is well-maintained group of five and six-story apartment buildings. There are also two 40-story apartment towers north of the Reservoir, the Tracy Towers, which dwarf the duplexes and single-family homes nearby.

There are streetlights associated with the streets adjacent to Jerome Park Reservoir. There is also lighting associated with the NYCDEP operations at the Reservoir. At the Demonstration Water Treatment Plant, high-pressure sodium lights are located around the parking lot, installed to allow work during nighttime hours. Low intensity lights, focused downward, are evenly spaced across the dividing wall in Jerome Park Reservoir.

Jerome Pumping Station is a brick building completed in 1906, which has been granted status as a historic landmark (Photograph 5 of Figure 8.2-10).



Not To Scale

Visual Character
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-7

Photograph 1. View of south basin looking Northeast from Old Fort No. 4 Park on Reservoir Avenue

Photograph 2. View of south basin looking west from Harris Park

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Visual Character
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-8

Photograph 3. View north basin and dividing wall looking south from Fort Independence Park

Photograph 4. View of Gate House No. 5 looking northwest

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Visual Character
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-9

Photograph 5. View of Jerome Pumping Station looking northwest

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Visual Character
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-10

8.2.2.1.3. Community Facilities

Reservoir Site. Jerome Park Reservoir is owned by the City and used for water supply facilities. It is not accessible to the public and there are no community facilities on the site. A detailed analysis of community facilities in the study area is presented below.

Study Area. The Reservoir site is surrounded by industrial and manufacturing, commercial and retail stores, offices, and neighborhood services), institutional and public facility such as schools, hospitals, fire and police stations, libraries, etc., medium- and high-density residential, parks and recreation, vacant land, and transportation and utility. Several community facilities are located within a one-half mile radius of the Reservoir site (Table 8.2-3 and Figure 8.2-11).

Educational Facilities. A total of 26 educational facilities are located within or adjacent to the study area. There are 18 public schools of all grade levels, the Herbert H. Lehman College, and seven private schools. Data received from the NYC Board of Education indicate that all of the public schools presently exceed their student capacity. In order to meet the needs of the student population, modular classrooms (trailers and mobile classrooms) have been added and additional classroom space has been made available within the schools. The ethnic diversity of the students for the public schools located within the study area is summarized in Table 8.2-4.

Day Care Facilities. There are 10-day care facilities within the study area (Figure 8.2-11). The location and enrollment for each facility is presented in Table 8.2-5.

Libraries. Two branch libraries of the New York Public Library are located within Jerome Park study area. They are the Van Cortlandt Branch (map key #37 of Figure 8.2-11) at 3874 Sedgwick Avenue and Jerome Park Branch (map key #38 of Figure 8.2-11) at 118 Eames Place.

People who live or work within the City limits are eligible for a free library membership card allowing access to all 85 branches of the New York City Public Library (NYCPL), covering Manhattan, the Bronx, and Staten Island. In addition, there are four research libraries in Manhattan. The branches service approximately ten million persons, have 1.86 million card holders, sponsor approximately 20,000 programs each year (including adult literacy classes, citizenship classes, and English classes for speakers of other languages [ESOL], computer and internet workshops, career counseling, and story reading for children), and contain about 5.5 million books and 5.8 million other items, including audio cassettes, books, compact discs, films, periodicals, recordings, and video cassettes. The ratio of volumes to residents in the Bronx is 4.1 volumes per resident.

TABLE 8.2-3. EDUCATIONAL FACILITIES IN THE VICINITY OF THE JEROME PARK RESERVOIR, BRONX

Map Key #, Figure 8.2-11	Name Of School	Grades	Enrollment[1]	Capacity[1]	Percentage of Capacity
1	De Witt Clinton High School 100 W. Mosholu Parkway (District 7 & 8)	9-12	4,337	3,241	133%
2	Evander Childs High School 800 East Gun Hill Road (District 7 & 8)	9-12	3,215	2,588	124%
3	Bronx High School of Science 75 West 205th Street (District 7 & 8)	9-12	2,603	2,432	107%
4	Walton High School 2780 Reservoir Ave. (District 7 & 8)	9-12	2,687	1,573	170%
5	Herbert H. Lehman College 250 Bedford Park Boulevard West	Under-graduate and Graduate	9,324*	--	--
6	P.S. 310 Marble Hill School 260 West Kingsbridge Road (District 10)	K-6	1,084	800	136%
7	P.S. 280 The Mosholu Parkway School 149 East Mosholu Parkway (District 10)	K-8	457	172	266%
8	P.S. 246 Poe Center 2641 Grand Concourse/ Kingsbridge Avenue (District 10)	K-6	1,161	825	140%
9	I.S. 143 John P. Tetard Middle School 120 West 231st Street (District 10)	6-8	1,311	1,135	116%

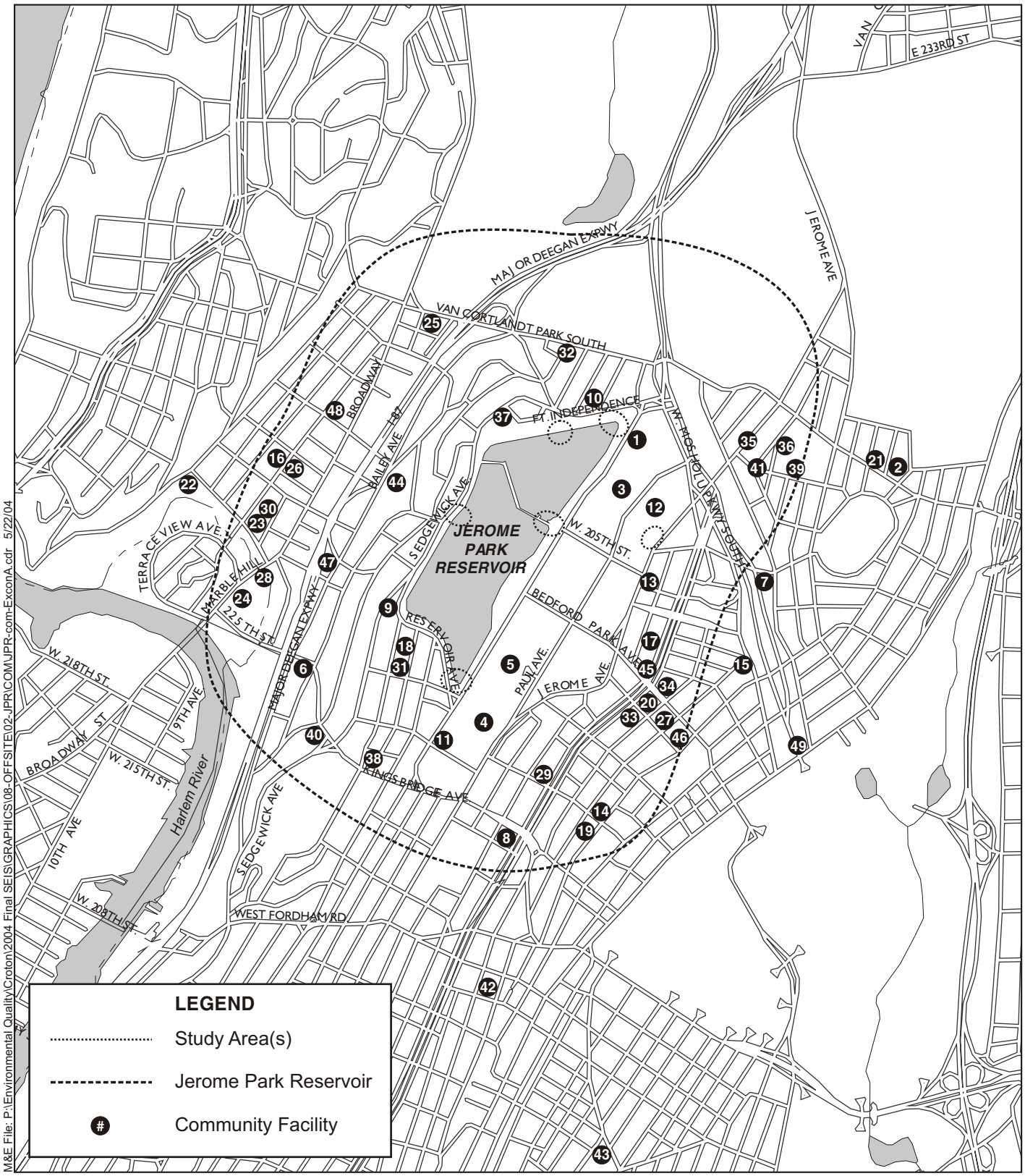
TABLE 8.2-3. EDUCATIONAL FACILITIES IN THE VICINITY OF THE JEROME PARK RESERVOIR, BRONX

Map Key #, Figure 8.2-11	Name Of School	Grades	Enrollment[1]	Capacity[1]	Percentage of Capacity
10	P.S. 95 Sheila A. Mencher/Van Cortlandt and PS 95 Annex 3961 Hillman Avenue (District 10)	K-8	1,713	1,245	138%
11	P.S. 86 Kingsbridge Heights 2756 Reservoir Avenue (District 10)	K-6	2,106	1,299	162%
12	I.S. 80 Mosholu Parkway JHS 149 East Mosholu Parkway (District 10)	6-8	1,316	1,087	121%
13	P.S. 51 Bronx New School 3200 Jerome Avenue (District 10)	K-7 (possibly K-8 in 1998/1999)	307	307	100%
14	P.S. 46 Edgar Allen Poe School 279 East 196th Street (District 10)	K-8	1,869	990	189%
15	P.S. 8, Isaac Varian School 3010 Briggs Avenue (District 10)	K-8	1,232	784	157%
16	P.S. 7, Kingsbridge School 3201 Kingsbridge Avenue (District 10)	1, 3-5	903	715	126%
17	St. Philip Neri School (Private) 3031 Grand Concourse Blvd.	K-8	659[2]	Not Available	Not Available
18	Our Lady of Angels School (Private) 2865 Claflin Avenue	K-8	443[2]	Not Available	Not Available

TABLE 8.2-3. EDUCATIONAL FACILITIES IN THE VICINITY OF THE JEROME PARK RESERVOIR, BRONX

Map Key #, Figure 8.2-11	Name Of School	Grades	Enrollment[1]	Capacity[1]	Percentage of Capacity
19	Our Lady of Refuge School (Private) 2708 Briggs Avenue	K-8	276[2]	Not Available	Not Available
20	Grace Lutheran School (Private) 2930 Valentine Avenue	K-8	186[2]	Not Available	Not Available
21	PS 94, Kings College School 3530 Kings College Place Bronx (District 10)	K-8	1,196	722	166%
22	PS 37 360 West 230th Street (District 10)	K-8	573	627	91%
23	PS 207 3030 Godwin Terrace (District 10)	K-2	628	545	115%
24	Marble Hill Nursery School & Kindergarten (Private) 5470 Broadway	PK-K	10[2]	Not Available	Not Available
25	Visitation School (Private) 171 West 239th Street		257[2]	Not Available	Not Available
26	St. John School (Private) 3143 Kingsbridge Avenue		288[2]	Not Available	Not Available

Notes:
[1] Enrollment and capacity data for New York City Public Schools obtained from City of New York Department of Education online School Report Cards (http://www.nycenet.edu). Data is for 2000-2001 school year.
[2] Data obtained from *Selected Facilities and Program Sites in New York City – The Bronx*, published by the Department of City Planning, Summer 1999.



Not To Scale

Community Facilities
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-11

TABLE 8.2-4. ETHNICITY AND GENDER PERCENTAGE WITHIN STUDY AREA PUBLIC SCHOOLS

School	Percentage (%)					
	White	African American	Hispanic	Asian and Others	Male	Female
DeWitt Clinton High School	3.1	33.2	58.0	5.7	44.6	55.4
Evander Childs High School	1.2	58.2	311.6	3.0	53.4	46.6
Bronx High School of Science	36.6	8.4	10.2	44.8	55.0	45.0
PS 280/Mosholu Parkway School	12.0	14.0	66.3	7.7	50.8	49.2
PS 226, Nadia J. Pagan School	0.2	28.3	69.2	2.3	52.0	48.0
PS 310 Complex	3.5	13.9	78.2	4.3	52.3	47.7
PS 86, Kingsbridge Heights School	2.3	14.5	80.8	2.4	50.5	49.5
HS 430, Walton High School	1.4	26.4	68.7	3.5	47.0	53.0
MS 143, JP Tetard Middle School	2.1	22.0	72.1	3.7	53.9	46.1
PS 207	3.5	15.0	77.1	4.5	50.5	49.5
PS 246/Poe Center	1.2	13.8	76.6	8.4	51.3	48.7
PS 95 and PS 95 Annex	9.8	27.1	57.0	6.1	51.0	49.0
IS 80/Mosholu Parkway JHS	9.8	18.4	63.7	8.1	47.2	52.8
PS 51/Bronx New School	20.9	29.6	46.9	2.6	56.0	44.0
PS 46/Edgar Allen Poe School	1.2	16.7	74.6	7.5	50.0	50.0
PS 8/Isaac Varian School	12.5	12.1	67.8	11.6	53.7	46.3
PS 7/Kingsbridge School	5.2	14.0	76.8	3.9	52.5	47.5
PS 94/Kings College School	2.7	27.1	61.9	8.3	49.4	50.6
PS 37	6.1	27.9	60.9	5.1	49.6	50.4

TABLE 8.2-5. DAY CARE FACILITIES IN THE VICINITY OF THE JEROME PARK RESERVOIR STUDY AREA, BRONX

Map Key #, Figure 8.2-11	Name of Facility	Location	Enrollment	Oversight Agency
27	Lehman College Student CCC	250 Bedford Park Boulevard	40 children	NYCDOHMH
28	Marble Hill Nursery School	5470 Broadway	60 children	NYCDOHMH
29	Concourse House CCC	2751 Grand Concourse	20 children	NYCDOHMH
30	Spuyten Duyvil Preschool	3041 Kingsbridge Avenue	42 children	NYCDOHMH
31	Reservoir Day Care	2840 Webb Avenue	39 children	NYCDOHMH
32	Amalgamated Nursery School	3980 Orloff Avenue	50 children	NYCDOHMH
33	Grace Lutheran School	2930 Valentine Avenue	40 children	NYCDOHMH
34	Starlite Daycare	218 East 201st Street	NA	NA
35	Mosholu-Montefiore CCC	3450 Dekalb Avenue	86 children	NYCDOHMH
36	Mosholu-Montefiore CCC INF	3450 Dekalb Avenue	16 children	NYCDOHMH

Notes:
NYCDOHMH: New York City Department of Health and Mental Health.

Community Centers. There are no community centers located within Jerome Park study area.

Hospitals and Public Health Facilities. The closest hospitals to Jerome Park Reservoir are the Montefiore Medical Center (map key # 39 of Figure 8.2-11), the U.S. Veterans Affairs Medical Center (map key # 40 of Figure 8.2-11), and North Central Bronx Hospital (map key # 41 of Figure 8.2-11), all of which are within a one-half mile of the study area.

Other hospitals in the area include Union Community Health Center (map-key #42 of Figure 8.2-11), St. Barnabas Hospital (map key #43 of Figure 8.2-11), and Our Lady of Mercy Medical Center (not shown on map). Union Hospital is located southeast of St. James Park, approximately three-quarters of a mile from both Jerome Park Reservoir. St. Barnabas Hospital is located southwest of Bronx Park, approximately one-mile to the south of Jerome Park Reservoir. Our Lady of Mercy Medical Center is located at the northeast corner of Woodlawn Cemetery, approximately two and one-half miles from Jerome Park Reservoir. Table 8.2-6 summarizes the occupancy rate of the inpatient departments for each hospital. According to the United Hospital Fund's *2001 Update, Health Care Annual*, there is generally adequate capacity, in most departments, to accommodate future growth, with the exception of the obstetrics, psychiatric and rehabilitation departments. Each hospital has emergency room facilities.

In order to determine which hospitals within the Bronx are designated to receive accident victims on a large scale, several sources were consulted. According to the NYSDOH, most urban and suburban hospitals have "mass casualty plans" in place to handle emergencies. However, based on information provided by the New York State Emergency Medical Services (NYS-EMS), only certain hospitals within the study area have a trauma rating. Hospitals with a trauma rating are equipped, and have been designated, to provide emergency medical care on a large scale. This rating can be either Level 1 (Regional Hospital), or Level 2 (Area Hospital).[2]
Within the Bronx there are three Level 1 trauma hospitals: St. Barnabas Hospital (approximately three miles southeast of Jerome Park Reservoir); the Bronx Municipal Hospital Center located on Eastchester Road (approximately four miles east of Jerome Park Reservoir); and Lincoln Medical and Mental Health Center (approximately five miles south of Jerome Park Reservoir). The closest hospital to Jerome Park Reservoir, Montefiore Hospital (map key # 39 of Figure 8.2-11), is a Level 2 trauma center.

Senior Citizen Centers. There are two senior centers located within the study area. The Fort Independence Senior Center (map key #44 of Figure 8.2-11), located at 3340 Bailey Avenue, serves an average of 833 meals per month. The Bedford Park Nutritional Supplement Service (map key #45 of Figure 8.2-11), located at 3025 Grand Concourse, serves an average of 2,438 meals per month. These senior citizen centers are under the supervision of the New York City Department for the Aging.

Fire Protection. Fire protection within the study area is provided by the New York Fire Department (FDNY or Department) Engine Co. 79, with support from Ladder Co. 37 (map key #46 of Figure 8.2-11). If further support were needed, the Engine and Ladder companies to report would be Engine 81 and Ladder 46 (map key #47 of Figure 8.2-11). Table 8.2-7 lists the location of the engine and ladder companies.

The FDNY protects more than 8,000,000 residents in an area of 320 square miles. The Fire Commissioner, who is appointed by and responsible to the Mayor, administers the Department. The uniformed force is under the command of the Chief of Department and consists of more than 11,400 fire officers and fire fighters. In addition, the Department includes approximately 2,800 Emergency Medical Technicians, Paramedics, and Supervisors assigned to the Bureau of Emergency Medical Service (EMS), as well as 1,200 civilian employees.

[2] The distinction between Level 1 and Level 2 is slight. A Level 1 hospital would have more staff with greater experience and availability, perhaps more specialized equipment, and would be centrally located within the region. According to NYS EMS, in the event of a serious accident, if the accident victim(s) are within one-half hour of a Level 1 or Level 2 hospital they are taken there. Otherwise they would be taken to a community hospital for "stabilization" and then transported

TABLE 8.2-6. HEALTH CARE FACILITIES IN AND NEAR THE JEROME PARK RESERVOIR STUDY AREA

	Montefiore Medical Center 110 East 210th Street, Bronx (see map key #39)		**North Central Bronx Hospital 3424 Kossuth Avenue, Bronx (see map key #41)**		**U.S. Veterans Affairs Medical Center[1] 150 West Kingsbridge Road, Bronx (see map key #40)**	
	Certified Beds	**Occupancy Rate (%)**	**Certified Beds**	**Occupancy Rate (%)**	**Certified Beds**	**Occupancy Rate (%)**
Medicine/Surgery	842	76.7	101	80.2	--	73.5
Pediatrics	117	74.3	51	33.3	Not applicable	Not applicable
Obstetrics	36	105.6	30	77.1	--	--
Psychiatry	22	108.0	47	98.9	62	85.5
Rehabilitation	22	92.4	25	74.0	5	120.0
Total Acute Care	1,039	78.5	254	74.6	67	--

Source: *2001 Update, Health Care Annual,* United Hospital Fund
[1]**Sourc**e: *Summary of VA Medical Program,* (http://www.geocities.com/Pentagon/1151/text32.html)
--: Information not available

TABLE 8.2-6. HEALTH CARE FACILITIES IN AND NEAR THE JEROME PARK RESERVOIR STUDY AREA

	Our Lady of Mercy Medical Center 600 East 233rd Street, Bronx (not shown)		St. Barnabas Hospital East 183rd Street at Third Avenue, Bronx (See Map Key #43)		Union Community Health Center (outpatient) 260 East 188th Street, Bronx (see map key #42)	
	Certified Beds	**Occupancy Rate (%)**	**Certified Beds**	**Occupancy Rate (%)**	**Certified Beds**	**Occupancy Rate (%)**
Medicine/ Surgery	848	73.5	318	73.7	Not applicable – outpatient only	Not applicable – outpatient only
Pediatrics	132	76.2	16	Not available	Not applicable – outpatient only	Not applicable – outpatient only
Obstetrics	36	89.2	16	55.2	Not applicable – outpatient only	Not applicable – outpatient only
Psychiatry	22	137.3	49	90.3	Not applicable – outpatient only	Not applicable – outpatient only
Rehabilitation	22	91.1	Not applicable – outpatient only	Not applicable – outpatient only	Not applicable – outpatient only	Not applicable – outpatient only
Total Acute Care	1,060	76.1	431	75.3	Not applicable – outpatient only	Not applicable – outpatient only

Source: *2000 Update, Health Care Annual,* United Hospital Fund
* Within study area
[1]**Source**: *1997 Update, Health Care Annual,* United Hospital Fund (not listed in 2000 update)
[2]**Source**: Not listed in the *Health Care Annual,* United Hospital Fund Update
--: Information Not Available

Police Protection. The study area is patrolled by officers of the 50th and 52nd Precincts of the New York City Police Department (NYPD) (map key #48 and #49 of Figure 8.2-11), respectively. The 50th Precinct is located within the study area at West 236th Street. This is a "host" precinct, meaning it provides space for other agencies at different levels of government, including the Federal Bureau of Investigation, State Police, and Narcotics Division.

The 52nd Precinct patrols the area south of Van Cortlandt Park, east of Goulden Avenue, and south of Kingsbridge Road West. The precinct headquarters is located at 3016 Webster Avenue, east of the study area. The 52nd Precinct is primarily residential ranging from six-story multiple dwelling units to one and two family residences. The neighborhoods in this precinct are known as Bedford Park, Fordham, Kingsbridge, Norwood and University Heights. This precinct abuts the Jerome Reservoir. The Reservoir itself falls into the 50th Precinct. Table 8.2-7 lists the location of both precincts.

TABLE 8.2-7. FIRE AND POLICE STATIONS WITHIN JEROME PARK RESERVOIR STUDY AREA

Map Key #, Figure 8.2-11	**NYC Fire Department (FDNY)**
46	Engine 79, Ladder 37 2928 Briggs Avenue Bronx
47	Engine 81, Ladder 46 3025 Bailey Avenue Bronx
Map Key #, Figure 8.2-11	**NYC Police Department (NYPD)**
48	50th Precinct 3450 Kingsbridge Avenue Bronx
49	52nd Precinct 3016 Webster Avenue Bronx

8.2.2.1.4. Open Space

Reservoir Site. Jerome Park Reservoir is owned by the City, is not accessible, except for special events allowed by NYCDEP, and has not been designated for recreational or environmental-activities. Therefore, an analysis of direct impacts on open space resources on the site itself is not necessary.

Study Area. There are a number of areas of public and private open space in the study area, which provides the community with a variety of recreational alternatives. Although Jerome Park Reservoir is not accessible to the public there are a number of locations around the Reservoir that allow clear views of the open water. The perimeter of Jerome Park Reservoir, outside the access road and fence, is partially landscaped with mowed grass and non-maintained shrubs. Jerome Park Reservoir affords residents panoramic views and opens the community to light.

Within the study area there are several large private/institutional recreational facilities (Figure 8.2-12). East of Jerome Reservoir Park Reservoir site is the Bronx High School of Science, DeWitt Clinton High School, Lehman College and Walton High School. Southwest of Jerome Park study area is John F. Kennedy High School. All have athletic fields that are accessible to the public either directly or by custodial approval. In addition, the John F. Kennedy High School contains a portion of land known as the Enchanted Gardens, a community garden. The approximate area of these recreational facilities is 36 acres.

A number of large (greater than 5 acres) public parks are also located throughout the study area along with numerous smaller parks/sitting areas (Figure 8.2-12 and Table 8.2-8). Across Goulden Avenue from Jerome Park Reservoir (located between the Bronx High School of Science and Lehman College) is Harris Park, which is just over 16 acres and includes six baseball fields. Fort Independence Park is located off Sedgwick Avenue, adjacent to the northwestern edge of Jerome Park Reservoir. The Fort Independence Park consists of trees, walking paths, and benches that overlook the Reservoir. Approximately one-quarter mile to the north of Fort Independence Park is a small park within Van Cortlandt Park that provides access to a playground, sitting area, and nature paths into the rest of Van Cortlandt Park. Northeast of Jerome Park Reservoir site is the Mosholu Golf Course and Driving Range within Van Cortlandt Park, off Jerome Avenue. Also in Van Cortlandt Park, aqueduct lands, which are believed to be the Old Croton Aqueduct, are included in this analysis. The aqueduct lands travel south through the study area.

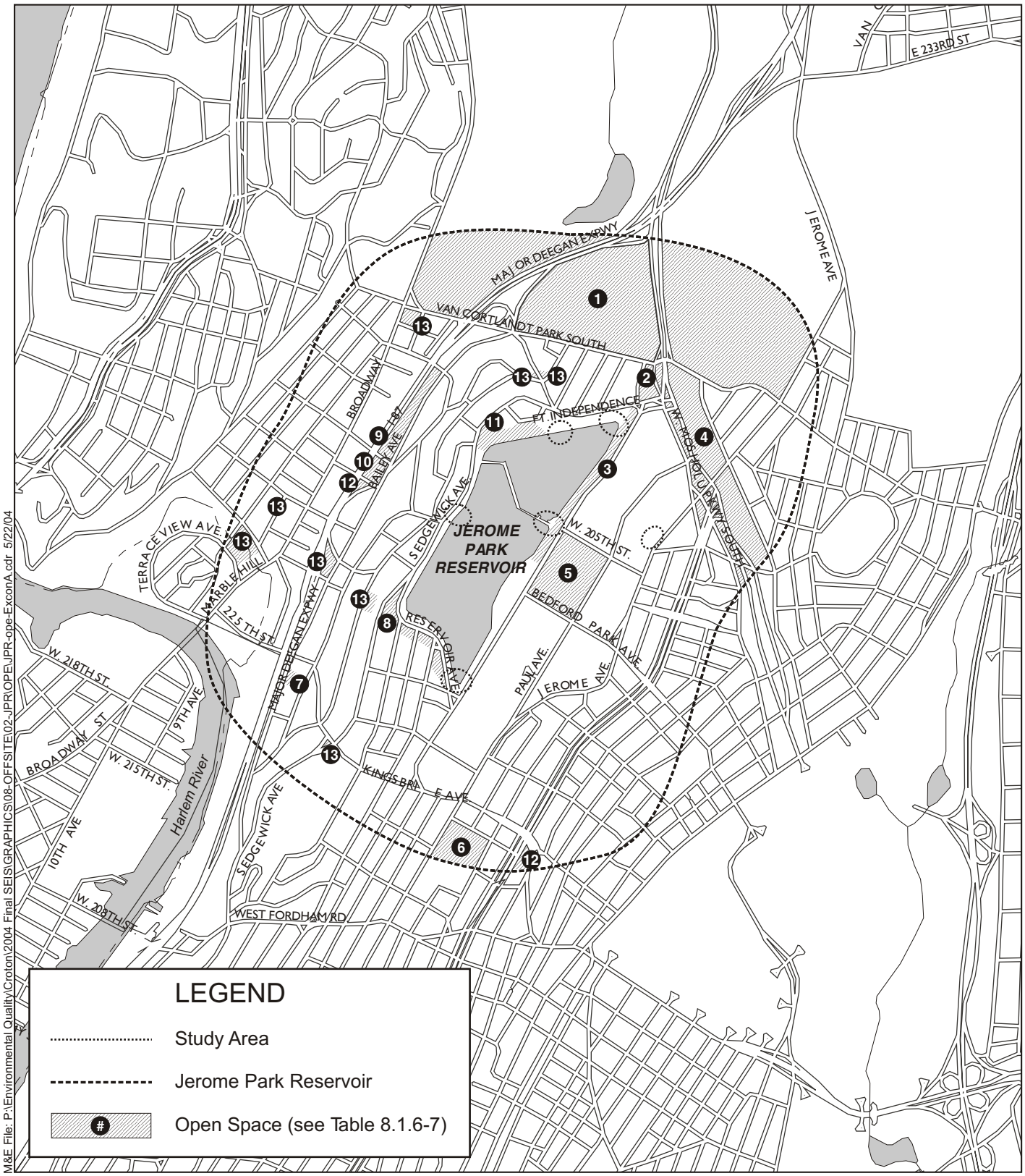
Approximately one-quarter mile east of Jerome Park Reservoir site is Mosholu Parkway and the Mosholu-Pelham Greenway. The Greenway is a large, landscaped, open area separating the northbound and southbound lanes of the Mosholu Parkway. A bike path and benches exist along the Mosholu-Pelham Greenway, connecting Pelham Bay Park and Orchard Beach on the east with Van Cortlandt Park on the west. The Greenway was originally constructed in the 1930s, and later reconstructed in the 1970s. It is part of the NYCDCPs Bronx Greenway Plan, a proposal to increase the amount of publicly accessible open space by linking pedestrian and bicycle paths using existing linear corridors. South of Jerome Park Jerome Park Reservoir are Saint James Park and Poe Park. Saint James Park, an 11-acre park, is on Jerome Avenue (between 190th and 193rd street) and contains recreational facilities and a variety of athletic courts. Poe Park, a 2.3 acre park one block east of Saint James Park is dominated by sitting areas and walking paths.

Immediately to the east of Jerome Park Jerome Park Reservoir, and to the west of Goulden Avenue, is Harris Park Annex, which was included as a park in the *1999 Selected Facilities & Program Sites in New York City*. However, while Harris Park Annex is often referred to as a park and is the under the jurisdiction of the NYCDPR, it is not a designated or mapped as parkland. Historically, the NYCDEP has used Harris Park Annex for various water supply purposes including, but not limited to, access to Jerome Park Jerome Park Reservoir, construction and maintenance of below-grade facilities associated with the City Water Supply System, and the Demonstration Water Treatment Plant. The Demonstration Water Treatment Plant still occupies the southern portion of this strip of land; the Lehman College parking area, also located on the Annex strip, has a permanent City easement for operation, maintenance, and repair of facilities related to the NCA and Jerome Park Reservoir. The northern area of Harris Park Annex is

vacant, consisting only of a mowed grass open area along Goulden Avenue, and is accessible to the public.

As Table 8.2-8 indicates, there are approximately 249 acres of Public Park and open space (excluding Jerome Park Reservoir and private and institutional open spaces) in the study area of Jerome Park Reservoir site. The majority of open space lies in Van Cortlandt Park and the Mosholu-Pelham Greenway. Smaller parks and open areas also contribute to the total acreage of open space. Of the 249 acres, approximately 122 are active open space and 126 are passive open space.

Also located throughout the study area are "Greenstreets." Launched in 1996, Greenstreets is a City-wide program to convert paved, vacant traffic islands and medians into green spaces filled with shade trees, flowering trees, shrubs, and groundcover. Since 1996, the NYCDPR has planted over 1,760 Greenstreets sites throughout the five boroughs. 326 sites are located in the Bronx, 344 in Brooklyn, 234 in Manhattan, 598 in Queens, and 263 in Staten Island. By the year 2001, NYCDPR had planted 2,001 Greenstreets in the City of New York.



Not To Scale

Open Space
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-12

TABLE 8.2-8. OPEN SPACE INVENTORY WITHIN THE JEROME PARK AREA

Name/Address	Map Key No. (Figure 8.2-12)	Public/ Private	Acreage Within Study Area (Approx.)	Description		Open Space Features: Facility Types	Facility Conditions	Hours of Access	User Group	Utilization Level
				Active %	Passive %					
Van Cortlandt Park and Mosholu Golf Center, Bronx	1	Public	158	80	20	Basketball, wall ball courts, playground, benches, edge golf	Good	Dawn to Dusk	All	High
Intersection of Sedgwick and Mosholu Parkway, Bronx	2	Public	2	50	50	Landscaping	Good	Dawn to Dusk	All	Low
Harris Park Annex Goulden Ave., Bronx	3	Public	7	0	100	Mowed Lawns	Good	All	All	Low
Mosholu-Pelham Greenway Mosholu Parkway, Bronx	4	Public	29	50	50	Bike path, basketball courts, benches, gardens, two playgrounds	Good	Dawn to Dusk	All	High
Harris Park Goulden Ave. W. 205th Street, Bronx	5	Public	16	95	5	Baseball/soccer fields, some benches	Good	Dawn to dusk	All	High
Saint James Park Jerome Avenue, Creston Ave., and East 191-193rd Ave., Bronx	6	Public	11	80	20	Handball courts, basketball courts	Good	Dawn to dusk	All	High

TABLE 8.2-8. OPEN SPACE INVENTORY WITHIN THE JEROME PARK AREA

Name/Address	Map Key No. (Figure 8.2-12)	Public/ Private	Acreage Within Study Area (Approx.)	Description		Open Space Features: Facility Types	Facility Conditions	Hours of Access	User Group	Utilization Level
P.S. 122 Playground Kingsbridge Rd., Bailey Ave., Heath Ave., Bronx	7	Public	1	95	5	Playgrounds	Good	Dawn to Dusk	All	Moderate
Old Fort No. 4 Park Reservoir Ave. at Strong Ave., Bronx	8	Public	6	40	60	Playground, paved playground, benches, etc.	Good	Dawn to dusk	All	Moderate
Bailey Avenue Park Strip Bailey Ave. at 204th St., Bronx	9	Public	7	0	100	Landscaping	Good	Dawn to dusk	All	Low
Conrad Grauer Field W 233rd/234th, Bronx	10	Public	2	80	20	Baseball fields	Good	Dawn to dusk	All	High
Fort Independence Park Sedgwick Avenue at Stevenson Point, Bronx	11	Public	4	50	50	Playground, basketball court, handball court, benches	Good	Dawn to Dusk	All	Moderate
Poe Park Bronx	12	Public	1	20	80	Edgar Allen Poe Cottage, sitting areas, walking	Good	Not posted	All	High

TABLE 8.2-8. OPEN SPACE INVENTORY WITHIN THE JEROME PARK AREA

Name/Address	Map Key No. (Figure 8.2-12)	Public/ Private	Acreage Within Study Area (Approx.)	Description		Open Space Features: Facility Types	Facility Conditions	Hours of Access	User Group	Utilization Level
						paths				
Sitting Areas [(1)]	13	Public	5	0	100	Benches, paths	Good	Not posted	All	Moderate
TOTAL STUDY AREA	-	-	249	49.2%	50.8%	-	-	-	-	-

Notes:
[(1)] There are a number of public sitting areas in the study area. A number of private sitting areas also exist, but are not listed in this table. They include courtyards and open space areas, which are part of apartment/condominium complexes.

The estimated population for the study area is 97,773 residents (see Socioeconomic Analysis discussion below, for a detailed analysis of the study area). The open space estimate derived from the acres of open space and study area population is approximately 2.54 acres per thousand residents (1.25 acres/1,000 residents for active open space and 1.29 acres/1,000 residents for passive open space).

For comparison purposes, New York State Office of Parks, Recreation and Historic Preservation has standard ratios for specific open space facilities, shown in Table 8.2-9. The New York City planning goal for open space is 2.5 acres per 1,000 residents.

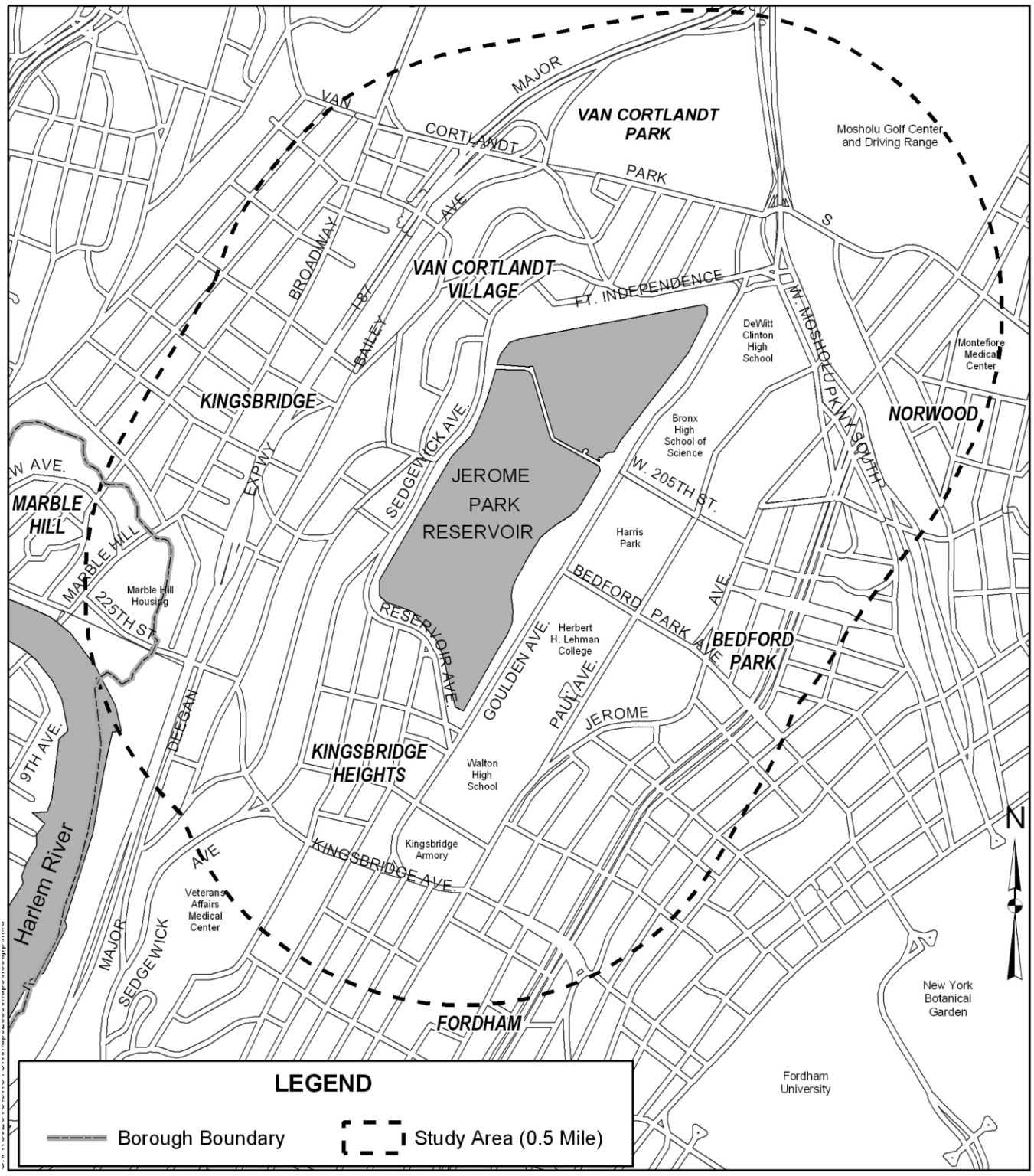
TABLE 8.2-9. NEW YORK STATE STANDARD OPEN SPACE RATIOS (ACRES/1,000 RESIDENTS)

Play Lot	Pocket Park	Neighborhood Park	District Park	City Park	Large Regional Parks	Metro (Urban Park)
2	0.25	1	2	5	15	0.124

8.2.2.1.5. Neighborhood Character

Reservoir Site. The character of the Reservoir site is a public utility created with passive open space surroundings. The concrete-bottom basin formed of vertical stone-masonry walls and earth embankment is a significant aspect of the Croton Water Supply System. The Reservoir is surrounded by a chain link fence, a narrow paved road for NYCDEP service vehicles, and a border of mowed grass and vegetation. Except for the east of the side of the property, another chain link fence surrounds the entire property and trees line. Public water supply facility structures, including the gate houses, pumping stations, and Demonstration Water Treatment Plant are located around the periphery of the Reservoir. The Jerome Park Reservoir and adjacent associated buildings, structures, and sites are listed on the New York State Register of Historic Places.

Study Area. Six different neighborhoods are located within the study area. The neighborhood delineations are generally based on those provided by NYCDCP maps, community board maps, and street maps. The neighborhoods are: Van Cortlandt Village, Kingsbridge, Marble Hill, Kingsbridge Heights, Bedford Park, and Norwood (Figure 8.2-13). Portions of the study area are largely residential, while other areas are predominantly industrial or commercial/retail. As a result, traffic patterns and congestion vary throughout the study area. In general, some of the residential areas receive less traffic and the accompanying noise and congestion than some of the commercial and retail areas, which typically draw increased traffic particularly during business hours (see Traffic and Transportation and Noise discussion below). Some commercial and retail uses are located along the major thoroughfares, which further contribute to the traffic and congestion in these areas. Within the study area, this congestion affects Broadway and more heavily-used roads such as Van Cortlandt Park South, Jerome Avenue, Mosholu Parkway, West 225th Street, and Sedgwick Avenue. The study area also contains numerous large facilities that contribute additional traffic to the neighborhoods, including the institutional uses adjacent to the Reservoir and the Bronx Community College.



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Note: Neighborhood locations generally based on 2001 Hagstrom Maps for New York City, 2003 NYCDCP maps and community districts maps.

Neighborhood Character
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-13

Van Cortlandt Village. Van Cortlandt Village includes the Reservoir, the institutional uses east of the Reservoir, those residential areas immediately west, south, and north of the Reservoir, and the Tracey and Scott Towers. The character of the institutional area directly east of the Reservoir, commonly referred to as "Educational Mile", is distinct from the rest of the study area. In the nineteenth century, the City planned to extend Jerome Park Reservoir east to Jerome Avenue. Goulden Avenue was planned as a dividing wall between two large basins. At the time of construction of the existing Reservoir, this area was excavated but later filled in. Today, this area accommodates numerous educational and transportation facilities.

Each of the schools along Goulden Avenue faces a different roadway. Bronx High School of Science faces West 205th Street, the Lehman College entrances are on Goulden Avenue and Bedford Park Boulevard, the entrance to DeWitt Clinton High School is on Mosholu Parkway to the north, and Walton High School faces Goulden Avenue. Several grade changes increase the feeling of a discontinuous landscape between the schools. The area around Bronx High School of Science, for instance, is approximately eight feet below street level, while the northern end of Harris Park across West 205th Street, to the south, is about eight feet above street level. The recreational fields associated with this area provide a valuable resource for the educational facilities and the surrounding communities.

Separating the school area from the neighborhoods to the east is a strip of industrial-like land uses, including the NYCTA subway yards. The southern boundary of this strip of large educational facilities is marked by another large facility, the Kingsbridge Armory, which is discussed in more detail below. The Jerome Pumping Station has also been designated as a New York City Landmark (see Historic and Archaeological Resources discussion for more details). The predominant features in the immediate area of the Jerome Pumping Station are the elevated train along Jerome Avenue and the tall barbed wire-topped security fences that surround the industrial uses behind the pumping station.

North of this institutional area are the Tracey Towers, which rise approximately 40-stories above the Reservoir, presenting a dominant visual feature of the area. The Tracey Towers are apartment buildings that were built in the 1970s. Nearby is the Scott Tower cooperative apartment building. This apartment building is approximately 15 stories. These towers are prominent on the landscape because of their height and their relatively modern appearance.

Van Cortlandt Park, at the northern border of the study area, provides an open space character. However, Van Cortlandt Park South is a fairly busy road with interchanges to the Major Deegan Expressway and the Mosholu Parkway. The Mosholu Parkway interchange creates a break between the institutional uses east of the Reservoir, and the residential areas to the north and west of the Reservoir.

The areas to the west and northwest of the Reservoir are residential. Directly adjacent to the north basin of the Reservoir is Fort Independence Park, where benches face the Reservoir. Directly north of the Reservoir, the land levels off and the streets conform to a regular grid pattern. This area has a relatively high concentration of older, high-rise apartment buildings including the Amalgamated Housing complex, one of the earliest cooperative developments in the country. Built in the 1920s, the Amalgamated is a well-maintained group of apartment

buildings with attractive trees and landscaping. In total, the Amalgamated accounts for twenty-one of the apartment buildings in this area. Interspersed among the apartments are parks, open spaces, schools, and a few houses.

Sedgwick Avenue, which runs along the western side of the Reservoir, is a curvilinear street with well-maintained buildings and two rows of trees that form a canopy above the roadway. While the Reservoir is not visible from the street level of Sedgwick Avenue, the grassy embankments that border the Reservoir provide a strip of green on the east side of the Avenue. West of Sedgwick Avenue, the land slopes steeply downhill to the Major Deegan Expressway. Most of the streets between Sedgwick Avenue and the Major Deegan Expressway are narrow and hilly. In a few places the topography is so steep that the City built pedestrian staircases to connect the streets. Houses with small yards are scattered among the low-rise apartment buildings.

Immediately south of the Reservoir, the neighborhood contains medium-density residential development on grid blocks (consisting of a mixture of houses and low-rise apartments), which establishes a more urban appearance than those residential areas to the west of the Reservoir. These streets have less traffic than some of the surrounding thoroughfares, based on field observations, due in part to the one-way streets that occur in this area (see Traffic and Transportation, for further details on traffic volumes). Some of these roadways have trees planted adjacent to the roads, though less densely planted than those areas west of the Reservoir. Additionally, the on street parking along these roadways constricts the available space for vehicular traffic. This portion of the neighborhood is at a higher elevation than the Reservoir. The Old Fort No. 4 Park is also located in this area, which provides open space for the surrounding community.

Kingsbridge. Continuing west to Broadway, the area transitions to a commercial and light industrial-type area with moderate traffic levels and interspersed residential parcels (see Traffic and Transportation discussion). The elevated train overshadows Broadway, and the topography along and adjacent to Broadway is relatively flat. There are few open spaces in this area. Numerous mid-rise brick apartment buildings are scattered among houses and other buildings, creating a discontinuous streetscape. Though outside of the study area, the area of Ewen Park presents a prominent visual feature for the neighborhood due to the rise in topography from the surrounding area and the forested nature of the park. Located to the west of Ewen Park, at an elevation higher than areas to the east, are several large apartment buildings that also represent dominant visual features of the area.

Marble Hill. Immediately north of West 225th Street, is a group of high-rise apartments known as the Marble Hill Housing Projects. The nine uniform buildings line the perimeter of the block with an open area in the middle. Each building is roughly ten stories tall. These tall apartment buildings create a distinct and abrupt feature in the views cape. The Marble Hill Housing Projects have been noted to be in need of improvements by the New York State Comptroller's Office (as noted in a July 1999 report, *Deterioration of Public Housing in the State and City Projects Operated by the New York City Housing Authority.*) The western portion of the Marble Hill area is characterized by a rise in topography and lower density residential development with single and multiple family homes. The residences in this area are closely

situated to one another and the streets are congested primarily due to the on street parking on both sides of the street.

Kingsbridge Heights. Within Kingsbridge Heights, are the U.S. Veterans Medical Center and the Jewish Home and Hospital for the Aged. Both of these facilities draw in people and traffic from outside of the study area. The U.S. Veterans Medical Center is especially dominating, as it is a large, modern complex with a vast parking area. Residential areas abut these facilities to the south and east. Houses and some apartments characterize the grid streets in these areas.

The section of West Kingsbridge Road in this portion of the study area is characterized by neighborhood shops and services. The Kingsbridge Armory, located at the corner of West Kingsbridge Road and Jerome Avenue, is a large building that visually dominates this area. The nineteenth century masonry building is reportedly the largest armory in the world. Immediately south of Kingsbridge Heights, the study area encompasses a small piece of the northern portion of the Fordham Neighborhood in the vicinity of St. James Park.

Bedford Park. Jerome Avenue forms the western border of this neighborhood, which is overshadowed by an elevated train. Jerome Avenue is typically characterized as having substantial traffic. Within the study area, industrial-type uses comprise the west side of the street, while the east side is lined with apartments and businesses. This combination of a major thoroughfare with the uses along this roadway work together to exacerbate traffic conditions. Heading further east, between Jerome Avenue and the Grand Concourse Boulevard, the area continues to be characterized by apartments and neighborhood type businesses, though the congestion in these areas is less than that found on Jerome Avenue and the Grand Concourse Boulevard. The streets in this area form a grid pattern with high-density development giving the area an urban appearance.

At the eastern boundary of the study limits the area becomes predominantly residential, with several well-maintained houses built in the late nineteenth century and a number of newer apartment buildings. The tree-lined Grand Concourse Boulevard is famous for its elegant apartment houses built in the 1930s. The segment of the Grand Concourse Boulevard, located within the study area, is well preserved with a solid street wall of five- and six-story apartment buildings.

Norwood. To the northeast of the Reservoir, immediately beyond the institutional area, is Norwood. A strip of open space exists along the Mosholu Parkway, while further east the area is characterized by increased activity and traffic where the Jerome Avenue overpass and an elevated subway platform cross this open space. Continuing northeast, but south of East Gun Hill Road, are mid-rise apartments and the Montefiore Medical Center. The Montefiore Medical Center contributes traffic from outside of the study area. The complex contains towering, modern-looking facilities, while the surrounding apartments seem to retain the older character of the overall study area.

8.2.2.1.6. Socioeconomic Analysis

Reservoir Site. The Jerome Park Reservoir is approximately 107.40 acres and is located entirely within the Bronx. A total of 23 people are currently employed at the Jerome Park Reservoir facilities: five employees at the Demonstration Water Treatment Plant; six employees at the Mosholu Pump Station/Gate House No. 7; six employees at the Jerome Pumping Station (located south of the Tracey Towers and along Jerome Avenue); and six employees at Gate House No. 5. Institutions, businesses, recreational uses, and residences surround the Reservoir.

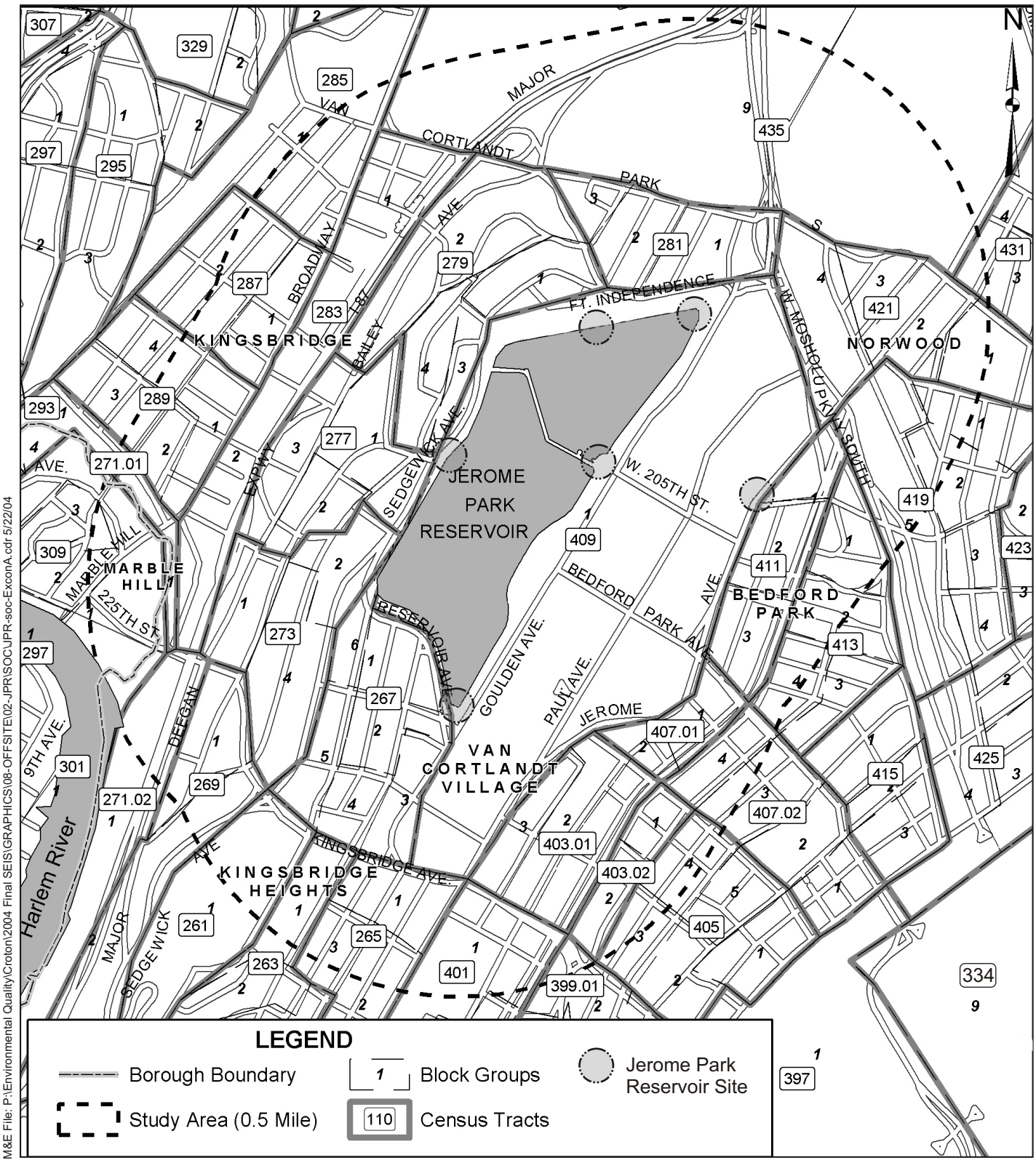
Since Jerome Park Reservoir facilities are located entirely on City-owned property and are part of a public water supply complex, no property taxes are currently generated at the site.

Study Area. This section gives a brief overview of the study area as a whole and highlights general trends both within the study area and the City. The study area consists of 73 Census block groups in Bronx County (Figure 8.2-14). Because the study area includes 73 block groups, more detailed information is provided in the discussions of the individual neighborhoods located within the study area. The neighborhood delineations used for this analysis are generally based on those provided by NYCDCP maps, Community Board maps, and street maps. The neighborhoods are: Van Cortlandt Village, Kingsbridge, Marble Hill, Kingsbridge Heights, Bedford Park, and Norwood (Figure 8.2-14). The discussions of these neighborhoods are preceded by a general overview of the study area. In addition to these neighborhoods, the northernmost part of the study area consists of a portion of Van Cortlandt Park and the Mosholu Golf Course. Unless otherwise cited, the data in this subsection are from the 1990 and 2000 U.S. Census.

In 2000, an estimated 97,773 persons and 34,587 households were in the Jerome Park Reservoir study area (see Table 8.2-10). Compared to the City and Bronx County in 2000, the Jerome Park Reservoir study area appeared to be substantially denser. Each neighborhood discussion provides further detail of these characteristics.

The City has seen a general trend of out-migration of whites and blacks from the 1970s until present. Meanwhile, Asians and persons of Hispanic origin have been migrating into the region.[3] The results have been dramatic shifts in racial composition over time. In 2000, the Jerome Park Reservoir study area had a slightly higher percentage of whites (33 percent) and a lower percentage of blacks (24 percent) than Bronx County (30 percent and 36 percent, respectively) (Table 8.2-10). Over half of the study area's population is of Hispanic or Latino origin. The study area's age composition was similar to Bronx County and the City (Table 8.2-10).

[3] New York Metropolitan Transportation Council (NYMTC). 1998. Forecasts: Baseline Scenario. NYMTC. New York, NY.



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Not To Scale

Socioeconomic Analysis
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-14

Economic trends from 1989 to 1999 in the City included a decreased median household income (MHI).[4] In addition, poverty and unemployment rates increased within the same period. After the longest period of employment growth ever recorded for the City (1992-2001), the City's economic expansion has subsequently lagged.[5] The study area reflected this trend by experiencing increases in poverty and unemployment rates from 1990 to 2000 (Table 8.2-10).

Two statistics that were uniform across the neighborhoods were occupational sector and means of transportation to work. In 2000, the percentages of the work force in the Jerome Park Reservoir study area employed in various occupational sectors reflected those of Bronx County (Table 8.2-11). Approximately 56 percent of the work force was employed in either managerial/professional specialties or in technical, sales, and administrative positions. Professional specialties include architects, engineers, teachers, and physicians, among other occupations. In 2000, roughly 58 percent of the workers in the Jerome Park Reservoir study area used public transportation to get to work, while many others drove alone (22 percent), car pooled (nine percent), or walked (eight percent) (Table 8.2-12).

TABLE 8.2-10. JEROME PARK RESERVOIR STUDY AREA DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
Population Change and Density, 1990-2000	**Neighborhoods:**	**1990 Pop.**	**2000 Pop.**	**% Change 1990-2000**	**2000 Density (persons per sq mi)**		
	Kingsbridge	8,591	9,656	12.4	46,572		
	Marble Hill	2,741	2,696	-1.7	64,422		
	Kingsbridge Heights	10,537	10,848	2.9	63,125		
	Bedford Park	25,289	28,194	11.5	125,558		
	Norwood	7,050	7,639	8.4	80,383		
	Van Cortlandt Village	35,030	38,740	10.6	53,784		
	Jerome Park Reservoir Study Area[1]	89,238	97,773	9.6	66,926		
	Bronx County, N.Y.	1,203,789	1,332,650	10.7	31,718		
	New York City	7,322,564	8,008,278	9.4	26,410		

[4] In making this comparison, 1989 MHI was adjusted to 1999 dollars based on the New York MSA Consumer Price Index for 1999.

[5] New York City Department of City Planning (NYCDCP). 2001. 2000/2001 Report on Social Indicators. NYCDCP. New York, NY.

TABLE 8.2-10. JEROME PARK RESERVOIR SITE DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
Change in Number of Households, 1990-2000	**Neighborhoods:**	**1990**	**2000**	**% Change 1990-2000**			
	Kingsbridge	3,712	3,917	5.5			
	Marble Hill	1,104	1,058	-4.2			
	Kingsbridge Heights	3,451	3,243	-6.0			
	Bedford Park	9,339	9,504	1.8			
	Norwood	2,736	2,696	-1.5			
	Van Cortlandt Village	13,825	14,169	2.5			
	Jerome Park Reservoir Study Area	34,166	34,587	1.2			
	Bronx County, N.Y.	424,112	463,212	9.2			
	New York City	2,819,401	3,021,588	7.2			
Racial Composition, 2000 % of Total Population	**Neighborhoods:**	**White**	**Black**	**American Indian[2]**	**Asian or Pacific**	**Other**	**Hispanic or Latino[3]**
	Kingsbridge	48.6	19.7	0.4	5.1	26.2	44.4
	Marble Hill	24.1	28.8	1.0	1.7	44.4	66.3
	Kingsbridge Heights	24.9	211.6	0.9	5.9	40.8	60.0
	Bedford Park	31.1	19.0	1.3	5.7	42.9	64.2
	Norwood	28.6	24.4	0.6	14.3	32.1	49.2
	Van Cortlandt Village	37.9	22.0	0.7	5.4	34.0	53.4
	Jerome Park Reservoir Study Area	32.5	23.6	0.8	6.3	36.7	56.3
	Bronx County, N.Y.	29.9	35.6	0.9	3.1	30.5	48.4
	New York City	44.7	26.6	0.5	9.9	18.3	27.0
Age Composition, 2000 % of Total Population	**Neighborhoods:**	**Age 0-4**	**Age 5-9**	**Age 10-19**	**Age 20-44**	**Age 45-64**	**Age 65+**
	Kingsbridge	6.5	6.5	12.5	39.0	19.4	16.1
	Marble Hill	7.5	9.4	15.1	39.5	20.0	8.5
	Kingsbridge Heights	9.5	9.2	14.9	38.0	16.8	11.6
	Bedford Park	9.7	9.7	15.3	42.3	16.5	6.5
	Norwood	9.1	9.3	14.0	43.8	16.5	7.5
	Van Cortlandt Village	7.5	8.3	14.0	37.9	20.2	12.0

TABLE 8.2-10. JEROME PARK RESERVOIR SITE DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
	Jerome Park Reservoir Study	8.3	8.7	14.3	40.1	18.2	10.4
	Bronx County, N.Y.	8.2	9.0	15.7	38.2	18.8	10.1
	New York City	6.8	7.0	13.1	40.2	21.2	11.7
Change in Median Household Income, 1989-1999	**Neighborhoods:**	**1989**	**1999**	**% Change 1989-1999**			
	Kingsbridge	$36,574	$33,466	-8.5			
	Marble Hill	$31,221	$27,603	-11.6			
	Kingsbridge Heights	$29,682	$30,731	3.5			
	Bedford Park	$30,503	$27,043	-11.3			
	Norwood	$37,356	$30,790	-111.6			
	Van Cortlandt Village	$38,345	$32,002	-16.5			
	Jerome Park Reservoir Area	$33,947	$30,272	-10.8			
	Bronx County, N.Y.	$29,741	$27,611	-7.2			
	New York City	$40,419	$38,293	-5.3			
Change in No. of People Below Poverty Line, 1990-2000	**Neighborhoods:**	**1990**	**2000**	**% Change 1990-2000**			
	Kingsbridge	1,325	2,297	73.4			
	Marble Hill	842	1,061	25.9			
	Kingsbridge Heights	2,913	3,462	18.8			
	Bedford Park	6,617	8,807	33.1			
	Norwood	1,585	2,396	51.2			
	Van Cortlandt Village	327	483	47.8			
	Jerome Park Reservoir Area	13,609	18,506	36.0			
	Bronx County, N.Y.	334,137	395,263	18.3			
	New York City	$40,419	$38,293	-5.3			
Change in Unemployment Rate, 1990-2000	**Neighborhoods:**	**1990**	**2000**	**% Change 1990-2000**			
	Kingsbridge	6.5	14.1	117.4			
	Marble Hill	9.9	13.8	39.5			
	Kingsbridge Heights	14.1	16.9	20.0			

TABLE 8.2-10. JEROME PARK RESERVOIR SITE DEMOGRAPHIC SUMMARY

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
	Bedford Park	13.5	15.0	10.4			
	Norwood	6.5	12.5	91.4			
	Van Cortlandt Village	9.6	11.8	23.4			
	Jerome Park Reservoir Study Area	10.0	14.0	39.9			
	Bronx County, N.Y.	11.9	14.3	20.4			
	New York City	9.0	9.6	6.4			
Units in Structure, 2000 % of Total Units	**Neighborhoods:**	**1 Unit Structure**	**2 to 4 Units in Structure**	**5+ Units in Structure**			
	Kingsbridge	9.0	7.8	82.9			
	Marble Hill	6.9	3.1	90.0			
	Kingsbridge Heights	4.9	3.6	91.5			
	Bedford Park	3.4	6.5	90.0			
	Norwood	1.6	5.0	93.4			
	Van Cortlandt Village	4.2	6.1	89.7			
	Jerome Park Reservoir Area	5.0	5.3	89.6			
	Bronx County, N.Y.	11.2	15.8	72.9			
	New York City	16.7	22.4	60.8			
Owner-Occupied Housing Units and Vacancy Rates	**Neighborhoods:**	**% Owner-Occupied Units 1990**	**% Owner-Occupied Units 2000**	**% Change 1990-2000**	**% Vacant 2000 (based on total units)**		
	Kingsbridge	19.3	18.2	-5.9	4.0		
	Marble Hill	5.0	6.7	32.5	3.6		
	Kingsbridge Heights	11.2	11.3	0.6	6.1		
	Bedford Park	4.6	4.8	2.8	4.6		
	Norwood	2.3	3.0	28.4	3.8		
	Van Cortlandt Village	14.7	17.3	17.1	3.2		
	Jerome Park Reservoir Area	9.5	10.2	6.8	4.2		
	Bronx County, N.Y.	17.9	19.6	9.5	5.6		
	New York City	28.6	30.2	5.4	5.6		

TABLE 8.2-10. JEROME PARK RESERVOIR SITE DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
Age of Housing Stock, 2000 % of Total Units	**Neighborhoods:**	**Less than 10 Years Old**	**10 to 19 Years Old**	**Over 20 Years Old**			
	Kingsbridge	0.2	1.2	98.6			
	Marble Hill	1.2	0.2	98.6			
	Kingsbridge Heights	1.2	1.2	911.6			
	Bedford Park	1.6	1.0	97.3			
	Norwood	1.9	4.0	94.0			
	Van Cortlandt Village	1.3	2.1	96.6			
	Jerome Park Reservoir Area	1.2	1.6	97.1			
	Bronx County, N.Y.	4.9	4.4	90.7			
	New York City	4.1	4.9	91.0			
Year Householder Moved into Unit, 2000% of Total Householders	**Neighborhoods:**	**Moved in from 1995 to 2000**	**Moved in from 1990 to 1994**	**Moved in from 1989 to 1980**	**Moved in from 1979 or earlier**		
	Kingsbridge	47.3	14.0	17.3	21.4		
	Marble Hill	42.5	16.6	16.5	24.4		
	Kingsbridge Heights	42.7	16.9	26.9	13.5		
	Bedford Park	58.5	14.2	15.3	13.2		
	Norwood	50.5	20.6	13.3	15.5		
	Van Cortlandt Village	43.6	20.2	15.5	20.8		
	Jerome Park Reservoir Area	47.5	17.1	17.5	18.1		
	Bronx County, N.Y.	43.2	17.4	17.4	22.1		
	New York City	43.1	16.7	16.3	23.9		
Comparison of Median Housing Value, 1990-2000	**Neighborhoods:**	**1990 Median Value[5]**	**2000 Median Value**	**% Change 1990-2000**			
	Kingsbridge	$182,916	$172,613	-5.6			
	Marble Hill	$199,730	$148,775	-25.5			
	Kingsbridge Heights	$200,241	$164,530	-17.8			
	Bedford Park	$180,600	$157,493	-12.8			
	Norwood	$180,525	$176,350	-2.3			
	Van Cortlandt Village	$206,754	$143,880	-30.4			

TABLE 8.2-10. JEROME PARK RESERVOIR SITE DEMOGRAPHIC SUMMARY TABLE

Socioeconomic Feature	Geographic Unit	Details (categories differ by feature)					
	Jerome Park Reservoir Study Area	$191,794	$160,606	-16.3			
	Bronx County, N.Y.	$229,148	$183,800	-19.8			
	New York City	$249,836	$221,200	-11.5			
Comparison of Median Monthly Rent, 1990-2000	**Neighborhoods:**	**1990 Median Rent[5]**	**2000 Median Rent**	**% Change 1990-2000**			
	Kingsbridge	$526	$567	7.9			
	Marble Hill	$539	$567	5.2			
	Kingsbridge Heights	$563	$605	7.3			
	Bedford Park	$560	$629	12.4			
	Norwood	$533	$612	14.8			
	Van Cortlandt Village	$563	$606	11.6			
	Jerome Park Reservoir Study Area	$547	$598	9.2			
	Bronx County, N.Y.	$517	$560	8.4			
	New York City	$590	$646	9.4			

Notes:
1. For block groups partially in a study area, the population was based on the percentage of the block group within the study area.
2. Category appeared as "Native American" in 1990 Census.
3. Category appeared as "Hispanic" in 1990 Census.
4. Adjusted to 1999 dollars based on the New York MSA Consumer Price Index (CPI) for 1989 (130.6) and 1999 (177.0).
5. Adjusted to 2000 dollars based on the New York MSA Consumer Price Index (CPI) for 1990 (138.5) and 2000 (182.5).
Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

In 2000, the education attainment of the residents in the study areas generally reflected that of Bronx County, but was lower than New York County and the City. Block groups in Kingsbridge Heights demonstrated particularly low levels of educational attainment. These included block groups 1 and 2 in tract 265, with 52 to 55 percent of the population over the age of 25 without a high school diploma (see Appendix A).

Roughly 90 percent of the housing units in the Jerome Park Reservoir study area are in structures that contain five or more units (Table 8.2-10). This is largely due to the dense nature of the study area. In 2000, the Jerome Park Reservoir study area had a relatively low percentage of

owner-occupied housing units (11 percent) compared to Bronx County (20 percent) and NYC (30 percent) (Table 8.2-10). The housing stock in the block groups throughout Jerome Park study area is fairly old, with 97 percent of the units built before 1980 (Table 8.2-10). Also, 65 percent of Jerome Park Reservoir study area's householders had moved into their 2000 residence in the ten years prior to the Census (Table 8.2-10).

Van Cortlandt Village. This area generally includes Jerome Park Reservoir, the residential development immediately adjacent to the Reservoir to the north and west, Tracey Towers and Scott Tower, and the educational facilities east of the Reservoir. The area includes all of the block groups in tract 267, tract 273, tract 277, tract 279, and tract 281. Tract 409 contains only one block group, which is entirely in the study area. Prominent residential features in this area include the above-mentioned Tracey Towers and Scott Tower in tract 409, the Amalgamated Houses complex in tracts 281 and 279, and the Kingsbridge Armory in the southern end of tract 409.[6] Founded in 1927, the Amalgamated is reportedly the oldest residential cooperative in the country and is also a Naturally Occurring Retirement Community (NORC), as discussed below.[7]

More than one-third of the Jerome Park Reservoir study area's population, or 38,740 persons, lived in this part of the study area in 2000 (Table 8.2-10). This section gained over 3,700 persons between 1990 and 2000. Despite population increases, tracts 279 and 409 decreased in the number of households by five percent and less than one percent, respectively (see Appendix A, Table 8.2-10). This area was substantially denser than either Bronx County or the City in 2000 (Table 8.2-10). Many of the densities in Table 8.2-10 appear very high. This is due to the small sizes of the block groups and lack of non-residential uses. Perhaps misleading is tract 409's lower density of approximately 11,000 persons per square mile despite the fact that almost all of its population is concentrated in the Tracey and Scott Towers. Because the tract is large and dominated by non-residential uses, its population density is diluted.

[6] The Kingsbridge Armory resides on the border between the southern end of Van Cortlandt Village and the northern end of Kingsbridge Heights and may be referred to as part of the latter neighborhood in other sections of this report.

[7] Amalgamated Housing Corporation. 2002. http://www.amalgamated-bronx.coop/

TABLE 8.2-11. DISTRIBUTION OF OCCUPATIONS IN 2000 JEROME PARK RESERVOIR STUDY AREA

Occupation	% of Study Area Work Force	% of New York County Work Force	% of Bronx County Work Force
Management, professional, and related occupations	28.2	55.8	26.6
Service occupations	24.0	12.4	24.5
Sales and office occupations	27.8	23.5	28.9
Farming, fishing, and forestry occupations	0.0	0.0	0.1
Construction, extraction, and maintenance occupations	7.1	2.3	7.7
Production, transportation, and material moving occupations	12.9	6.0	12.3

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

TABLE 8.2-12. MEANS OF TRANSPORTATION TO WORK IN 2000 JEROME PARK RESERVOIR STUDY AREA

Travel Mode	% of Study Area Work Force	% of New York County Work Force	% of Bronx County Work Force
Drive Alone	22.2	7.6	27.0
Car Pool	8.6	3.4	9.3
Bus	13.1	10.1	15.6
Street Car	0.2	0.1	0.2
Subway or El	40.8	43.6	34.6
Railroad	2.1	1.1	2.0
Ferry Boat	0.1	0.1	0.0
Taxi	1.4	4.7	1.3
Motorcycle	-	0.1	0.0
Bicycle	0.2	0.9	0.2
Walk	8.4	21.9	7.2
Other	0.9	0.8	0.6
Work at Home	2.1	5.8	1.9

Source: U.S. Department of Commerce, Bureau of Census, 2000.

Racial diversity in Van Cortlandt Village varied in 2000 (see Appendix A, Table 8.2-1). For example, tracts 279 and 281, which contain the Amalgamated Houses complex, had higher proportions of white persons (up to 62 percent) than the rest of the neighborhood, the study area, Bronx County, and the City. Meanwhile, the remainder of the tracts had higher proportions of black persons, Asian and Pacific Islanders, and persons of Hispanic or Latino origin.

Tracts 279 and 281 had the highest proportion of elderly (up to 23 percent were over age 65) compared to the other block groups in this section, Bronx County, and the City (see Appendix A, Table 8.2-2). This was due to the fact that the Amalgamated Houses complex is a NORC, meaning it must contain at least 50 percent senior citizens to be eligible for state funding. Also, nursing homes are located in tracts 273, 279, and 281. In 2000, the proportion of children under the age of 20 varied with those block groups in tract 281 having lower proportions (as few as 17 percent), and the block groups in tract 267 with somewhat higher proportions (31 to 40 percent).

Overall, the majority of the block groups' MHI was higher than that of Bronx County ($27,611) in 1999. Block group 3 in tract 279 had the highest MHI of $50,515, while block group 5 in tract 267 had the lowest of $17,389 (see Appendix A, Table 8.2-5). Those block groups that appeared disadvantaged in terms of income, unemployment, and poverty appeared to worsen between 1990 and 2000. Block groups 1, 2, 3, and 5 in tract 267 saw significant increases in the number of persons below the poverty level, ranging from 92 to 108 percent increases during this time period (see Appendix A, Table 8.2-6). Some block groups in this portion of the neighborhood also had significantly high unemployment rates in 2000 including block group 5 in tract 267 (28 percent) and block group 4 in tract 273 (24 percent) (see Appendix A, Table 8.2-7).

In 2000, the majority of the housing stock (72 to 98 percent) was in larger structures containing five or more units (see Appendix A, Table 8.2-10). Block group 2 in tract 277 stands out in that 12 percent of its units are single units (attached or detached), according to 2000 data. This block group includes some of the houses located between Kingsbridge Terrace and Bailey Avenue, west of the Reservoir. Owner-occupancy, in general, increased in this area from 1990 to 2000, though the percentages of owner-occupancy remained low, with percentages less than in Bronx County (20 percent) (Table 8.2-10). Because most of the units were within larger apartment buildings, most ownership opportunities were restricted to those few housing units, condominiums, or cooperatives such as the Amalgamated Houses complex.

Vacancy rates were fairly low according to the 2000 Census data, with the highest rate in block group 2 in tract 273 (five percent). Almost all of the vacant units were either for rent or for sale at the time the 2000 Census was taken. As of the 2000 Census, between 84 and 100 percent of the housing in this area was built before 1980 (see Appendix A, Table 8.2-12). Block group 5 in tract 267 also had a larger proportion (16 percent) of units built after 1980 than all of the other block groups. The data suggest that the population in this neighborhood has been fairly transitional; i.e., large proportions of the householders moved into their residences in the five years before the 2000 Census (see Appendix A, Table 8.2-13). The block groups in tract 281 appeared less transitional, with an average of only 33 percent of householders having lived in their unit for less than five years. This tract may be more stable since the Amalgamated Houses complex, which comprises most of this tract, affords more home ownership opportunities than most of the other tracts in the study area.

Median housing values greatly varied in 2000 (see Appendix A, Table 8.2-14). The average median housing value for this neighborhood decreased approximately 30 percent from 1990 to 2000, almost double the 16 percent decrease for Jerome Park study area. While housing values decreased, the neighborhood's median monthly rent over the same decade increased (see Appendix A, Table 8.2-15). Rent control and stabilization were not accounted for in the Census. In 2000, the median rents varied somewhat in this area, ranging from $511 in block group 1 of tract 277 to $746 in block group 3 of tract 279.

Kingsbridge. This part of the study area includes the narrow strip of land between the Major Deegan Expressway and Kingsbridge Avenue. This area is characterized by commercial, institutional, and residential uses. It includes 283 (block group 1 and block group 2), tract 287 (all of block group 1 and part of 2), tract 285 (a portion of block group 1), tract 289 (all of block groups 1 and 2 and a portion of block groups 3 and 4), and tract 271.01 (comprised of just one block group, which is entirely in the study area).

Approximately 9,700 of the study area's residents lived in this area in 2000. Overall, this portion of the neighborhood's population increased 12 percent from 1990 to 2000. However, both block group 1 in tract 271.01 and block group 3 in tract 289 reported a decrease in population of 13 percent in the same decade (see Appendix A, Table 8.2-16). Tract 271.01, which contains some of the Marble Hill apartments, and block group 2 in tract 289 were substantially denser (154,300 and 193,500 persons per square mile) than the rest of this area, Bronx County (31,700 persons per square mile), New York County (67,000 persons per square mile) and NYC (26,400 persons per square mile). The changes in the number of households from 1990 to 2000 also varied (see Appendix A, Table 8.2-17). The extremes were tract 271.01 with a seven percent decrease and tract 283 with a 39 percent increase.

The block groups in this part of the study area generally differed from one another in racial composition. In 2000, the two racial categories with the greatest variation were white (21 to 74 percent of the population) and black (seven to 55 percent of the population). The racial composition of tract 271.01 was similar to Bronx County, while tracts 283 and 289 were similar to NYC (see Appendix A, Table 8.2-18). A substantial proportion of the block groups' populations (up to 65 percent) were of Hispanic or Latino origin. In terms of age composition, the block groups had a smaller proportion (12 to 32 percent) of children (under the age of 20), in 2000, than Bronx County (33 percent) or NYC (27 percent) (see Appendix A, Table 8.2-19). Conversely, the elderly proportion was higher. Tract 271.01 was an exception with a slightly higher percentage of children.

The area varied in terms of economic well being, with block group 3 in tract 289 having the highest MHI ($50,208) and tract 271.01 having the lowest MHI ($10,825) (see Appendix A, Table 8.2-20). According to 2000 Census data, unemployment rates also varied substantially across this portion of the neighborhood in 2000, varying from a low of zero percent in block group 3 of tract 289 to a high of 33 percent in block group 2 in tract 289 (see Appendix A, Table 8.2-22).

Between 87 and 100 percent of this area's housing units are within larger structures, containing five or more units, according to 2000 data (see Appendix A, Table 8.2-23). An exception is block group 2 in tract 287, where approximately two-thirds of its units were in smaller structures. This block group includes the houses along Kingsbridge Avenue and Corlear Avenue. Correspondingly, this block group had a higher percentage of owner-occupied housing units (56 percent) than the rest of the neighborhood in 2000. Overall, this portion of the study area experienced a decrease in owner-occupancy between 1990 and 2000. The proportion of owner-occupied units lagged behind Bronx County (20 percent) and NYC (30 percent) (see Appendix A, Table 8.2-24).

Vacancy rates in 2000 in this portion of the study area were generally low. Block group 2 in tract 283 had the highest percentage (eight percent) of vacant units in this area. According to 2000 data, roughly 91 to 100 percent of the housing stock was built before 1980 (Table 8.2-10). Block group 1 in tract 271.01 and block group 2 in tract 283 exhibited more stability than the rest of this area, based on the percentages of their populations (58 and 67 percent, respectively) that moved into their year 2000 residence before 1990 (Table 8.2-10). In contrast, 100 percent of the population in block group 3 in tract 289 lived in their residence for less than five years.

Median housing value for this neighborhood greatly varied in 2000, ranging from a low of $37,500 for block group 1 in tract 283 to a high of $407,100 for block group 2 in tract 289. From 1990 to 2000, the median housing value in this portion of the study area decreased by approximately six percent. The median monthly rent for this area varied, with year 2000 rents ranging from $266 (block group 1 in tract 271.01) to $657 (block group 1 in tract 289) (Table 8.2-10). While the majority of block groups saw increases in rent prices, the median monthly rent decreased for three block groups (block group 1 in tract 271.01, block group 2 in tract 283, and block group 3 in tract 289).

Marble Hill. This relatively small neighborhood is located in the extreme northern lobe of Manhattan on the northern bank of the North Harlem River where it turns to meet the Hudson River. As described in Historic and Archaeological Resources discussion, this neighborhood was separated from Manhattan when the shipping canal was expanded, creating the Harlem River. It consists of tract 309.

An estimated 2,700 persons and 1,060 households were located in this neighborhood in 2000 (Table 8.2-10). Block groups 1 and 2 of tract 309 both saw population decreases (two and 16 percent, respectively) from 1990 to 2000, while block groups 3 and 4 both saw population increases (17 and 3 percent respectively) during the same decade (see Appendix A, Table 8.2-29). With the exception of block group 3 in tract 309, the block groups were comparable in density (39,600 to 76,500 persons per square mile) to New York County (67,000). Block group 3 in tract 309 had a higher density of 151,900.

In terms of racial composition, a larger proportion of the population of this area in 2000 was Hispanic or Latino (66 percent) when compared to New York County (27 percent) and NYC (27 percent) (Table 8.2-10). The age composition of this area roughly mirrored that of New York County in 2000. However, there were a higher percentage of children under ten (16 to 18 percent) in this area than New York County (17 percent) (Table 8.2-10).

The economic well being of the residents varied in 2000, with MHI ranging from a low of $16,860 in block group 1 to a high of $37,314 in block group 4 in tract 309. The average MHI in this area ($27,603) was very similar to the MHI for Bronx County ($27,611) but lower than New York County ($47,030) (see Appendix A, Table 8.2-33). According to 2000 data, unemployment rates for block groups in this area ranged from eight to 18 percent (see Appendix A, Table 8.2-35).

Approximately 82 to 99 percent of the housing stock in the block groups was within larger structures in 2000 (structures with five or more units) (see Appendix A, Table 8.2-36). This area had a smaller proportion of owner-occupied units (seven percent) in 2000 compared to New York County (20 percent) (see Appendix A, Table 8.2-37). This low percentage is due to the predominance of apartments in this area, characterized by a group of high-rise apartments known as the Marble Hill Housing Projects. Vacancy rates were relatively low for all block groups in this area (five percent or less). According to 2000 data, most units were built before 1980 (96 to 100 percent) (see Appendix A, Table 8.2-38).

The median housing values in the block groups ranged from $91,900 to $199,000 in 2000, much lower than the average for New York County ($361,100) and NYC ($221,200) (see Appendix A, Table 8.2-40). The median monthly rent in 2000 differed among the block groups, ranging from $374 to $624 (see Appendix A, Table 8.2-41).

Kingsbridge Heights. This neighborhood, south of Jerome Park Reservoir, is generally south of West Kingsbridge Road and includes residential areas, parks, and the U.S. Veterans Medical Center. Portions of seven Census tracts in this neighborhood are located within the study area: tract 261, tract 263, tract 265, tract 269, tract 271.02, tract 399.01, and tract 401.

Approximately 10,800 of the study area's population and 3,200 of the households were in this neighborhood in 2000 (see Appendix A, Table 8.2-42 and Table 8.2-43). All but two tracts, tract 261 and tract 399.01, increased in population from 1990 to 2000. Tract 261 experienced the greatest decrease in population (32 percent) and households (35 percent). In 2000, this portion of the study area’s average population density of 63,100 persons per square mile was much higher than the Bronx County (31,700 persons per square mile) and NYC (26,400 persons per square mile).

The block groups in this area greatly varied in terms of racial composition. Percentages of white persons ranged from seven to 40 percent and percentages of black persons ranged from 17 to 63 percent among the block groups. More than half of the population in this portion of the study area was of Hispanic or Latino origin in 2000 (see Appendix A, Table 8.2-44). Block group 1 in tract 261, block group 1 in tract 263, block group 3 in tract 265, and block group 1 in tract 401 had larger proportions (20, 23, 21, and 25 percent, respectively) of people age 65 or over in 2000 than the remainder of this portion of the study area (four to 13 percent) (see Appendix A, Table 8.2-45). Tract 271.02 had an exceptionally large proportion of children under the age of 20 (47 percent) when compared to Bronx County (33 percent) or NYC (27 percent).

The economic well being of the residents varied, though tracts 263 and 265 appeared to fare worse than the other tracts based on 2000 data. The MHI for these tracts ($26,343 and $21,306, respectively) was substantially less than the rest of the neighborhood (see Appendix A, Table 8.2-46). Unemployment rates, which ranged from 11 to 28 percent, were high for all block groups in 2000 when compared to Bronx County (14 percent) and NYC (ten percent) (see Appendix A, Table 8.2-48).

Roughly 83 to 100 percent of the housing stock in the block groups was within larger structures in 2000 (structures with five or more units) (see Appendix A, Table 8.2-49). Block group 1 in tract 265 had a higher proportion of one-unit structures (14 percent) compared to the other block groups. This block group includes those houses across from the Kingsbridge Armory. This block group, along with block group 2 in tract 269, also had a larger proportion of owner-occupied units in 2000 compared to the other block groups with the exception of tract 261 (67 percent); 14 percent of the units in block group 1 in tract 265 were owner-occupied, as were 18 percent of the units in block group 1 in tract 269 (see Appendix A, Table 8.2-50). Tract 261 had a relatively high vacancy rate in 2000 (15 percent). The majority of housing in this neighborhood was built prior to 1980 (94 to 100 percent) (see Appendix A, Table 8.2-51).

In 2000, the median housing values in the block groups greatly ranged from $57,400 to $266,000 (see Appendix A, Table 8.2-53). Housing values in portions of this area decreased substantially from 1990 to 2000. However, the average rent for the area rose approximately seven percent during this same period. The median monthly rent in 2000 varied among the block groups, ranging from $504 to $801 (see Appendix A, Table 8.2-54).

Bedford Park. Numerous small tracts comprise this part of the study area, which extends east of Jerome Avenue to just beyond the Grand Concourse Boulevard. This area includes tract 403.01 (three block groups entirely in the study area), tract 403.02 (two block groups entirely in the study area), tract 405 (part of two block groups), tract 407.01 (two block groups entirely in the study area), tract 407.02 (one block group entirely in the study area and a portion of another), tract 411 (three block groups entirely in the study area), and tract 413 (a portion of three block groups).

An estimated 28,200 persons lived in this part of the study area in 2000. All of the tracts saw population increases ranging from less than one to 33 percent from 1990 to 2000 (see Appendix A, Table 8.2-55). However, several block groups saw a decrease in number of households despite increases in population (see Appendix A, Table 8.2-56). As with most of the study area, most of the block groups were substantially denser (34,200 to 217,100 persons per square mile) in 2000 than Bronx County, New York County, or NYC (26,400 to 67,000 persons per square mile).

Overall, this area was racially diverse, based on 2000 data, and in many cases was more diverse than NYC (see Appendix A, Table 8.2-57). Most notable are the fairly large proportions of people that are of Hispanic or Latino origin in tracts 403.01, 403.02, and 407.01; the proportions range from 65 percent to 80 percent. Block group 3 in tract 411 had a particularly high proportion (12 percent) of Asian and Pacific Islanders in 2000.

In terms of age composition, the block groups in tract 403.01, 403.02, and 405 had a high proportion of their population under the age of 20 in 2000, ranging from 37 percent to 40 percent (see Appendix A, Table 8.2-58). Overall this area had a younger population when compared with the age compositions for Bronx County, New York County, and NYC (ranging from only 19 to 33 percent of their population under the age of 20 in 2000).

Generally, this part of the study area appeared disadvantaged economically compared to New York County and NYC according to 2000 Census data. In 2000, MHI ranged from a low of $11,708 in block group 2 of tract 407.01 to a high of $36,382 in block group 2 of tract 411 (see Appendix A, Table 8.2-59). This neighborhood's average MHI ($27,043) was similar to Bronx County's ($27,611).

In 2000, between 77 percent and 99 percent of the block groups' housing stock was in a structure containing five or more units (see Appendix A, Table 8.2-62). Accordingly, the percentage of owner-occupancy for block groups was fairly low with a range of zero to 19 percent, based on 2000 data (see Appendix A, Table 8.2-63). The average vacancy rate of less than five percent for this portion of the study area was less than that for Bronx County, New York County, and NYC.

Between 95 percent and 100 percent of the block groups' housing units were constructed before 1980 (see Appendix A, Table 8.2-64). This area appeared to have a more transitional population in that 73 percent of the householders moved into their 2000 residence after 1990, and many after 1995 (see Appendix A, Table 8.2-65). This population seemed more transitional than Bronx County, New York County, and NYC based on the 2000 data. The median housing values for this part of the study varied in 2000 ($62,500 to $257,900) (see Appendix A, Table 8.2-66). The majority of median housing values for this area decreased from 1990 to 2000. Median monthly rents, however, increased in all block groups during this same time period. Median monthly rents were fairly similar among the block groups in 2000, ranging from $560 to $692 (see Appendix A, Table 8.2-67).

Norwood. This neighborhood, which is northeast of Jerome Park Reservoir, is separated from the rest of the study area by the Mosholu Parkway. It includes a mixture of residential, institutional uses (Montefiore Hospital), and neighborhood businesses. Three tracts comprise this section: tract 419 (with portions of three block groups in the study area), tract 421 (three block groups are entirely in the study area, but one has no population) and tract 431 (with portions of two block groups in the study area).

Approximately 7,600 of the study area's residents were in this neighborhood in 2000. This portion of the study area saw its population increase eight percent from 1990 to 2000. Conversely, the number of households in this area decreased by two percent during this same time frame (Table 8.2-10). The block groups' densities varied, according to 2000 data, from a low of 15,300 persons per square mile in block group 5 in tract 419, to a high of 221,900 persons per square mile in block group 3 in tract 421 (see Appendix A, Table 8.2-68).

The block groups' racial diversity varied in 2000, with large proportions of their population classified by the Census as "other" (up to 41 percent) and those of Hispanic or Latino origin (between 21 and 62 percent) (see Appendix A, Table 8.2-70). The age compositions of the block

groups generally reflected the composition of the study area overall and Bronx County, with between 15 and 38 percent of their population under age 20 in 2000 (see Appendix A, Table 8.2-71).

With the exception of block group 2 in tract 421 and block group 4 in tract 431, the block groups' median household incomes were higher than Bronx County's median of $27,611 according to 2000 Census data (see Appendix A, Table 8.2-71). These two block groups also had substantially higher unemployment rates in 2000 than the other block groups in the neighborhood (see Appendix A, Table 8.2-74).

Roughly 81 to 99 percent of the block groups' housing stock was in a structure with five or more units in 2000 (see Appendix A, Table 8.2-75). Block group 1 in tract 419 had the highest percentage of structures containing less than five units. This block group also had a higher percentage of owner-occupied units (ten percent) than the other block groups in 2000 (see Appendix A, Table 8.2-76). Vacancy rates were low, ranging from one to six percent, when the 2000 Census was taken. However, none of these units were boarded up; almost all were for rent at the time of the Census. Similar to the rest of the study area, the majority of the housing in the block groups (85 to 100 percent) was built before 1980 (see Appendix A, Table 8.2-77). The population appeared mobile in that large proportions (46 percent to 55 percent) of the population moved into their 2000 residence after 1995 (see Appendix A, Table 8.2-78).

The median housing values in the block groups greatly ranged from $58,700 to $306,500 in 2000 (see Appendix A, Table 8.2-79). The overall median housing value for this part of the study area was lower than the average for Bronx County, New York County, and NYC. Median monthly rent increased for all block groups in this area from 1990 to 2000. The median monthly rents for the block groups were similar in 2000, ranging from $575 to $648 (see Appendix A, Table 8.2-80).

Property Value. The NYCDCP MISLAND database provided the average selling price for residential units by Census tract annually from 1992 to 2001. Table 8.2-13 shows the average selling prices for the portions of the study area based on the MISLAND data. Data are not reported for each year by type of housing unit. Data are primarily available for one- and two-family units. In general, prices increased in the period 1992-2001 (all dollars were adjusted to 2001 dollars for comparison purposes).

As shown in Table 8.2-13, median housing values in the block groups in the study area in 2000 were comparable. Median values exceeded those of the Bronx County and were slightly higher than those of NYC as a whole.

Study Area Businesses. The study area in the vicinity of Jerome Park Reservoir contains numerous employers, including Lehman College, public schools and community facilities, industrial uses found adjacent to the Major Deegan Expressway, the Montefiore Medical Center in the northeast section of the study area, the Veterans Affairs Medical Center in the southwest portion of the study area, and numerous retail uses. The largest concentration of commercial and retail businesses is located in the western portion of the study area in the vicinity of Broadway and the Major Deegan Expressway. Neighborhood businesses are also scattered among high-

TABLE 8.2-13. AVERAGE SELLING PRICES FOR RESIDENTIAL UNITS IN THE JEROME PARK RESERVOIR STUDY AREA, 1993 TO 2002[1]

Year	Average Selling Price[(2)(3)]				
	One Family	Two Family	Large and Small Walk-Up	Elevator Apartment	Residential Condominium
1993	$188,795	$156,501	N/A	N/A	N/A
1994	N/A	$151,224	N/A	N/A	$145,563
1995	$154,987	$158,536	$313,523	N/A	N/A
1996	N/A	$148,323	N/A	N/A	N/A
1997	$188,754	$157,295	N/A	N/A	N/A
1998	$182,393	$168,760	$416,741	N/A	N/A
1999	$143,112	$189,732	N/A	N/A	N/A
2000	$149,314	$184,539	$505,775	N/A	N/A
2001	$231,593	$262,568	N/A	N/A	N/A
2002	$195,000	$234,000	$733,000	N/A	N/A

Notes:
1. Based on data for Bronx County Census tracts 263, 265, 267, 269, 273, 277, 279, 281, 283, 285, 287, 289, 293, 399.01, 401, 403.01, 403.02, 405, 407.01, 407.02, 409, 411, 413, 419, 421, 431, 435, and New York County Census tract 309.
2. Excludes multiple lot sales, sales less than $1,000, and miscellaneous insignificant sales as determined by NYCDCP.
3. Adjusted to 2002 dollars based on the New York MSA CPI
Source: NYCDCP, 2003.

density residential areas throughout the study area. These businesses include restaurants, retail establishments, and other neighborhood services.

According to the 2000 U.S Census, Bronx County's labor force approximated 500,700 persons in 2000, down from 502,300 in 1990. There were 198,751 people employed in Bronx County in 1999, representing a 2.7 percent increase from 1990. Sales/office, construction, and transportation occupations declined during this time period, while service and management/professional occupations increased. New York County's labor force experienced a slight increase during this time period, climbing from 839,205 in 1990 to 841,633 in 2000. The number of people employed in New York County in 1999 was 2,001,945, down 0.7 percent from 1990. Employment in management/professional and sales/office sectors remained the highest, representing 79 percent of all employment in New York County. The estimated number of jobs within Jerome Park study area was not available.

Water Rate Structure. For this information, refer to the Water Rate Structure discussion for the for the water treatment plant site being analyzed (Eastview Site Section 5.7, Socioeconomic Analysis; Mosholu Site Section 6.7, Socioeconomic Analysis; Harlem River Site Section 7.7, Socioeconomic Analysis).

8.2.2.1.7. Growth Inducement

This analysis addresses the proposed work at the Reservoir site, which would be conducted in conjunction with the proposed Croton project. Therefore, the analysis of any growth inducement effects related to improvements to the NCA is addressed in the Growth Inducement analysis prepared for the water treatment plant sites being analyzed (Eastview Site Section 5.8, Growth Inducement; Mosholu Site Section 6.8, Growth Inducement; Harlem River Site Section 7.8, Growth Inducement).

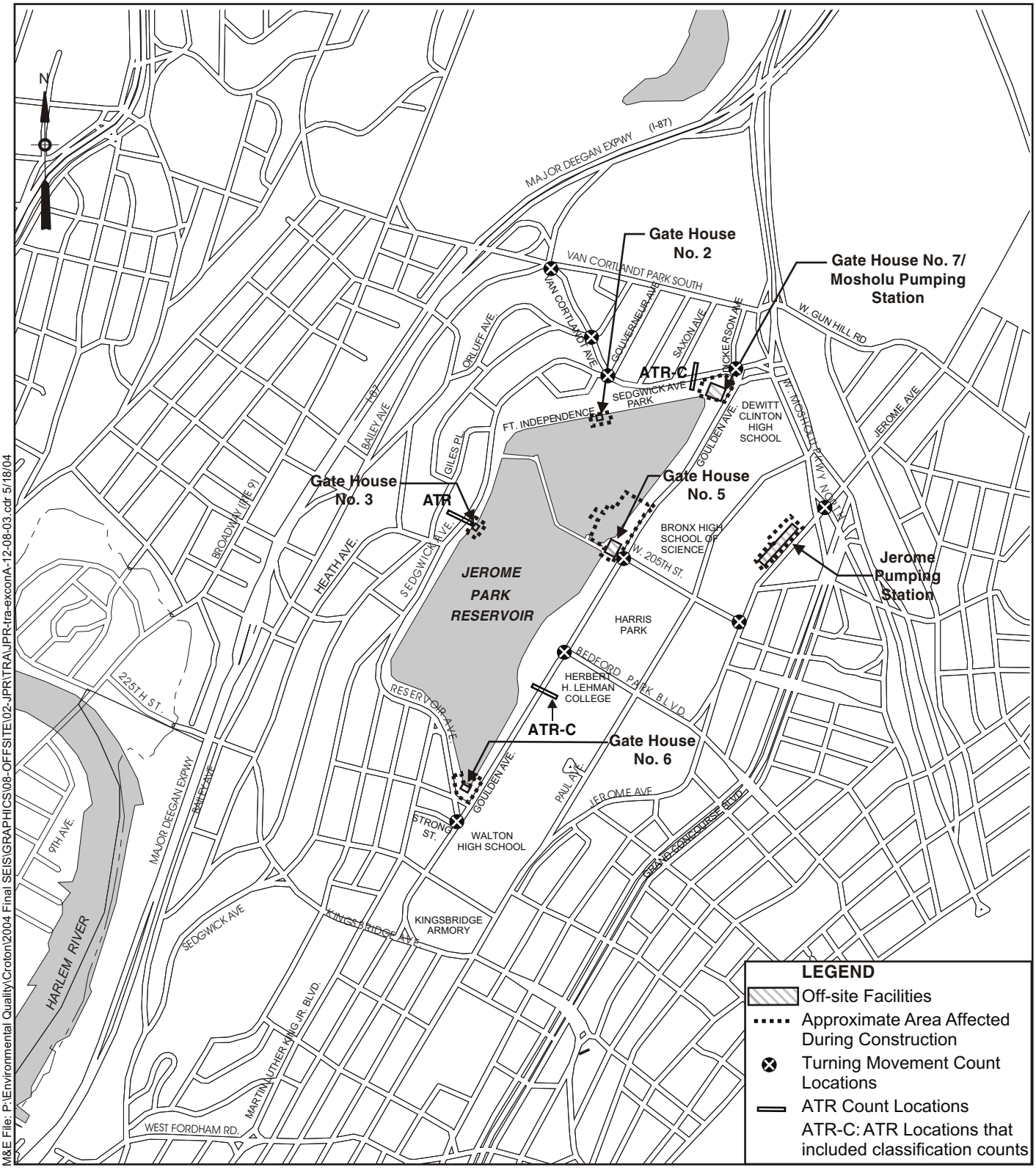
8.2.2.1.8. Traffic and Transportation

The existing operating conditions of the nearby transportation system, including traffic, parking, pedestrian safety and transit are presented. The study areas were established based upon volumes, logical traffic routes, and potentially problematic areas.

Traffic Study Area. This study area has been selected to encompass those roadways most likely to be used by the majority of vehicular traffic traveling to and from the Reservoir site. The primary traffic study area for Jerome Park Reservoir is bounded on the north by Van Cortlandt Park South, on the south by West Fordham Road, on the east by Jerome Avenue, and on the west by Broadway. Figure 8.2-15 shows the traffic study area for the Jerome Park Reservoir.

The main highways serving the study area include the Major Deegan Expressway (I-87), the Henry Hudson Parkway and Mosholu Parkway. Interstate 87 is a six-lane expressway connecting the Bronx and upstate New York. Most trucks use this highway to transport goods throughout the State because commercial traffic is restricted on State Parkways. Access to I-87 in the vicinity of the Reservoir site is located at the Van Cortlandt Park South interchange, east of Broadway. The Henry Hudson Parkway is a four-lane, north-south parkway traversing the Bronx between Manhattan and the Westchester County border (where it becomes the Saw Mill River Parkway). Access to the Henry Hudson Parkway in the vicinity of the Reservoir site is available via interchanges from I-87 and Mosholu Parkway, and via the Broadway interchange, located north of Van Cortlandt Park South. Mosholu Parkway is a two-lane parkway traversing the Bronx between Dr. Theodore Kazimroff Boulevard in the New York Botanical Gardens and the junction of I-87 and Henry Hudson Parkway in Van Cortlandt Park. Access to Mosholu Parkway in the vicinity of the shaft site is available at Sedgwick Avenue and at the terminus of Grand Concourse Boulevard.

The most direct link between the Major Deegan Expressway and the shaft site is via the Van Cortlandt Avenue West/Sedgwick Avenue corridor to Goulden Avenue. This corridor exhibits heavy utilization under existing traffic conditions because Jerome Park Reservoir interrupts the east-west grid system in this area of the Bronx, routing traffic towards these avenues. The analysis of the study area traffic conditions focused on this corridor because a large portion of project generated traffic is anticipated to utilize these avenues. The Van Cortlandt Avenue West/Sedgwick Avenue corridor begins at Broadway and terminates at West Mosholu Parkway in front of DeWitt Clinton High School. Van Cortlandt Avenue West and Sedgwick Avenue in



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Traffic Count Study Locations for Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-15

the vicinity if the shaft site have moderate to steep grades. The traffic analysis considers the effect of these grades on traffic flow.

Within the interior of the study area, the roadway system is comprised almost entirely of local streets with one lane in each direction flanked by curbside parking. West of Jerome Park Reservoir, these local streets serve a residential district. East of the Reservoir, the local street system is sparse and interrupted by superblocks made up of DeWitt Clinton High School, Bronx High School of Science, Harris Park, and Lehman College. Goulden Avenue, one of these local streets, runs along the east side of the Reservoir from Sedgwick Avenue to Reservoir Avenue. Goulden Avenue is a two-way, two-lane street with curbside parking.

Traffic Conditions and Analysis. Traffic counts were collected during June 2002 and September/October 2002. The counts documented traffic conditions on key study area roadways and intersections. The data collection included manual turning movement counts, automatic traffic recorders (ATR), vehicle classification counts, and travel speed runs along principal corridors. Below is a list of intersections where turning movement counts were performed:

Turning Movement Count Locations:

- Van Cortlandt Park South and Van Cortlandt Park West and Bailey Avenue
- Van Cortlandt Park West and Orloff Avenue
- Van Cortlandt Park West and Sedgwick Avenue and Gouvernour Avenue
- Sedgwick Avenue and Dickinson Avenue
- West Mosholu Parkway and Jerome Avenue
- Bedford Park Boulevard and Goulden Avenue
- West 205th Street and Goulden Avenue
- West 205th Street and Jerome Avenue
- Reservoir Road and Strong Street and Goulden Avenue

The turning movement counts (TMC) conducted at the above listed intersections were conducted on mid-weekdays (Tuesday to Thursday) from 7 AM to 10 AM and from 2 PM to 6 PM to capture the morning and afternoon peak hours.

In addition to turning movement counts (TMC), automatic traffic recorder (ATR) counts for Jerome Park Reservoir have been performed for 24-hour period for seven days at the following locations:

ATR Count Locations:

- Goulden Avenue – South of Bedford Park Boulevard
- Sedgwick Avenue – South of Giles Place
- Sedgwick Avenue – East of Saxon Avenue

The vehicle classification counts were performed from 7 AM to 10 AM and from 2 PM to 8 PM. These hours, as well as the hours for which the turning movement counts were performed, were chosen as representative of the periods of heaviest traffic volumes during the construction period. It has been assumed that construction would typically commence at 7 AM and finish at

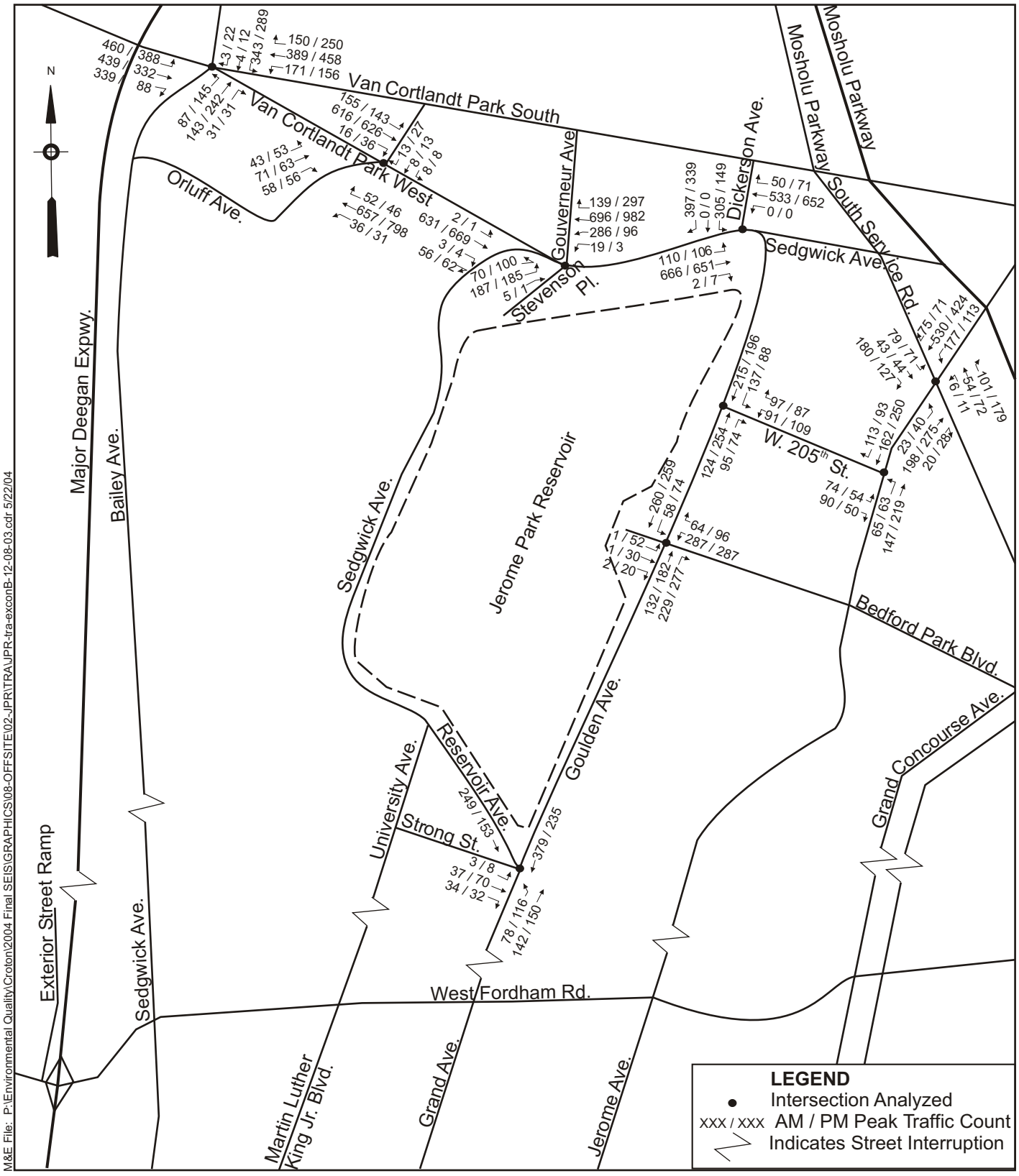
approximately 6 PM. This assumption follows the local ordinances regulating construction hours.

To develop year 2002 traffic volumes for the study intersections, the traffic volumes from the turning movement counts were factored utilizing adjacent ATR counts. The resultant intersection turning movement volumes represent an average mid-weekday volume. Since the study intersections represent only a portion of the roadway networks in the study area, the turning movement volumes of adjacent intersections may not balance. This is due to several possible factors including other intersecting roads and residential and commercial entrances between study intersections, different count days, and counts performed in spring versus fall. The year 2002 traffic volumes for the AM and PM peak hours are illustrated in Figure 8.2-16.

A review of the manual count data and the 24-hour ATR data indicated that traffic in the area exhibits some typical commuter characteristics. Traffic volumes increase from the early morning hours and peak between 8 and 9 AM. Traffic decreases only slightly in the midday periods until the evening peak between 5 and 6 PM.

North of Jerome Reservoir Park Reservoir site, Sedgwick Avenue, with two lanes in each direction plus parking lanes, carries 1,750vph and 1,870vph in the AM and PM peak hours, respectively. Along the west side of Jerome Park Reservoir site, Sedgwick Avenue carries 500 vehicles per minute in both the AM and PM peak hours.

Along the east side of Jerome Reservoir Park Reservoir site, Gouldon Avenue, with two lanes in each direction plus parking lanes, carries 1,190 vph in both the AM and PM peak hours.



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Not To Scale

Jerome Park Reservoir
Existing Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 8.2-16

As noted above, each study area intersection was analyzed in terms of its capacity to accommodate existing traffic volumes and its resulting LOS using the HCM procedures. A summary of findings is presented in Table 8.2-14 with the key findings discussed below. See Section 4.9, Data Collection and Impact Methodologies, Traffic and Transportation, for the procedural details.

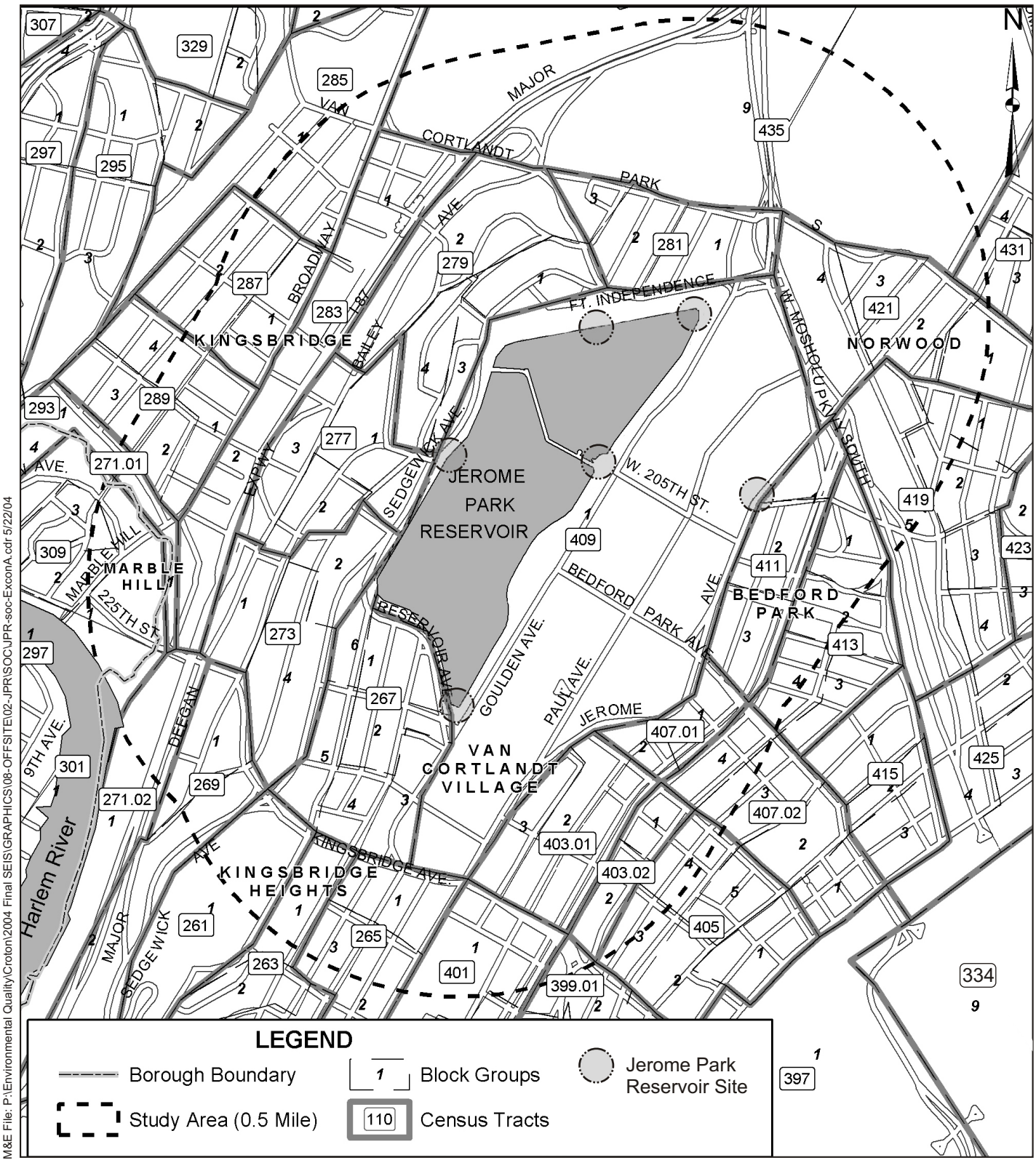
Currently, all of the nine intersections in the study area operate at an overall LOS D or better, although a few lane groups and/or approaches are significantly worse. In some cases, there are insufficient green times to process existing traffic demands. Such disproportions can be easily remedied by shifting a modest amount of time from one approach that has unused green time to another that is congested. One intersection experiences significant existing delays due to high traffic volumes that are not as easily remedied.

The Van Cortlandt Park Avenue at Bailey Avenue intersection experiences a marginally unacceptable LOS D during the AM and PM peak hour. This is due to the high traffic volumes associated with the Major Deegan Expressway interchange. Van Cortlandt Park carries a high east-west traffic volume to and from the Major Deegan Expressway interchange, and the eastbound and westbound left and right turn movements also carry high volumes.

Safety. Accident data information was obtained from the period from 5/01/98 to 4/30/01. Table 8.2-15 below summarizes the accident data. Within the study area, there were a total of 168 reportable accidents between 5/01/98 and 4/30/01, of which none involved fatalities, 122 involved injuries, and 46 were property damage only.

Parking. Parking availability in the study area consists of curbside parking and restricted off-street parking lots for residential, commercial and industrial developments. Alternate-side-of-the-street-parking (8:00 – 11:00 AM and 11:00 AM – 2:00 PM) is located along Goulden Avenue, Van Cortlandt Avenue and Reservoir Avenue/Sedgwick Avenue.

Curbside parking is fully utilized during midday periods. Off-street parking facilities in the vicinity of the Reservoir site are restricted to adjacent academic and commercial institutions; there are no public parking facilities in the vicinity of the Reservoir site. The largest parking facility in the study area is located on the Reservoir site (adjacent to Goulden Avenue) and is currently used by Lehman College. This facility is reserved for faculty members and staff of Lehman College during the day and is available for students after 5:00 PM.



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Not To Scale

Socioeconomic Analysis
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-14

TABLE 8.2-14. 2002 EXISTING TRAFFIC CONDITIONS FOR JEROME PARK RESERVOIR

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
Van Cortland Park (S-W) at Bailey Avenue (N-S)	EB – L	1.02	51.3	D	0.99	47.3	D
	EB – TR	0.70	6.2	A	0.36	2.5	A
	WB – LTR	1.04	66.0	E	1.00	51.4	D
	NB – L	0.54	50.5	D	0.58	43.9	D
	NB – TR	1.01	112.1	F	0.96	82.6	F
	SB – L	0.79	60.4	E	1.01	116.5	F
	SB – LT	0.77	57.2	E	1.02	120.4	F
	Intersection		**47.2**	**D**		**53.9**	**D**
Van Cortland Park West (E-W) at Orloff Avenue (N-S)	EB - LTR	0.77	19.8	B	0.77	19.5	B
	WB - LTR	0.71	24.4	C	0.74	25.1	C
	NB - LTR	0.32	26.0	C	0.34	26.3	C
	SB -LTR	0.06	22.7	C	0.09	23.0	C
	Intersection		**22.4**	**C**		**22.8**	**C**
Van Cortland Park West (E-W) at Sedgwick Avenue (N-S)	EB – LTR	0.50	19.1	B	0.58	23.6	C
	NB – LTR	0.57	20.2	C	0.95	42.0	D
	WB-L	0.41	18.9	B	0.35	15.3	B
	WB-TR	0.79	35.8	D	0.22	14.3	B
	Intersection		**22.0**	**C**		**32.0**	**C**
Sedgwick Avenue (E-W) at Dickerson Avenue	EB - LTR	0.80	28.2	C	0.81	28.4	C
	WB - T	0.39	17.6	B	0.45	18.4	B
	WB - R	0.09	14.7	B	0.12	15.1	B
	SB - L	0.58	27.8	C	0.28	22.0	C
	SB - R	0.81	40.2	D	0.65	30.8	C
	Intersection		**27.2**	**C**		**24.5**	**C**
W. Mosholu Parkway(E-W) at Jerome Avenue (N-S)	EB - LT	0.67	60.7	E	0.78	76.2	E
	EB - R	0.71	58.5	E	0.47	47.3	D
	WB - LTR	0.62	53.0	D	0.91	79.8	E
	NB - LTR	0.14	5.8	A	0.19	6.1	A
	SB - LTR	0.54	14.1	B	0.39	11.9	B
	Intersection		**26.2**	**C**		**30.9**	**C**
Bedford Park (E-W) at Goulden Avenue	EB - LTR	0.00	9.8	A	0.13	10.6	B
	WB - LR	0.64	18.9	B	0.73	22.1	C
	NB - TR	0.48	14.4	B	0.61	16.5	B
	SB - LT	0.43	13.6	B	0.59	17.3	B
	Intersection		**15.7**	**B**		**17.9**	**B**

TABLE 8.2-14. 2002 EXISTING TRAFFIC CONDITIONS FOR JEROME PARK RESERVOIR

SIGNALIZED INTERSECTIONS	LANE GROUP	EXISTING CONDITIONS					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/VEH)	LOS	V/C RATIO	DELAY (SEC/VEH)	LOS
205th Street (E-W) at Goulden Avenue	WB – LR	0.29	12.2	B	0.27	11.9	B
	NB - TR	0.35	13.0	B	0.45	14.0	B
	SB - LT	0.61	17.8	B	0.47	14.8	B
	Intersection		**15.0**	**B**		**13.7**	**B**
205th Street (E-W) at Jerome Avenue	EB - L	0.14	26.5	C	0.09	25.8	C
	EB - R	0.18	27.0	C	0.09	25.9	C
	NB - L	0.12	12.9	B	0.11	12.9	B
	NB - T	0.19	13.5	B	0.26	14.4	B
	SB - T	0.18	13.5	B	0.25	14.2	B
	SB - R	0.17	13.5	B	0.13	12.9	B
	Intersection		**16.8**	**B**		**15.7**	**B**
Reservoir/Strong Street (E-W) at Goulden Avenue (N-S)	EB - LR	0.16	30.8	C	0.21	31.6	C
	WB - T	0.74	54.8	D	0.41	42.8	D
	NB - L	0.53	46.1	D	0.49	40.8	D
	NB - T	0.11	20.1	B	0.10	20.0	B
	SB - T	0.28	22.1	C	0.15	20.6	C
	Intersection		**33.3**	**C**		**29.6**	**C**

ABBREVIATIONS:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

--- HCS results not provided for given lane group

TABLE 8.2-15. JEROME PARK RESERVOIR INVENTORY OF ACCIDENTS

Intersection	Total # of Reportable Accidents[1]	Total # of FTL	Total # of INJ	Total # of PDO
Van Cortlandt Park South and Van Cortlandt Park West and Bailey Avenue	63	0	39	24
Van Cortlandt Park West and Orloff Avenue	16	0	12	4
Van Cortlandt Park West and Sedgwick Avenue and Gouvernour Avenue	12	0	9	3
Sedgwick Avenue and Dickerson Avenue	11	0	9	2
West Mosholu Parkway and Jerome Avenue	11	0	8	3
West Mosholu Parkway and Sedgwick Avenue	0	0	0	0
Bedford Park Boulevard and Goulden Avenue	19	0	17	2
205th Street and Goulden Avenue	26	0	19	7
205th Street and Jerome Avenue	5	0	4	1
Reservoir Avenue/Goulden Avenue and Strong Street	5	0	5	0

NOTES:

1. Reportable accidents consist of all fatal, injury or property damage accidents that exceed NYS criteria for minimum damage.

Source: New York Department of Transportation

ABBREVIATIONS:

FTL – Accidents with a fatality

INJ – Accidents with personal injury

PDO – Property Damage Only Accidents

Transit. Along the Interborough Rapid Transit (IRT) Jerome Avenue Line (served by the No. 4 train), two subway stations are located in the vicinity of the Reservoir site; one station is located south of the Reservoir site at Bedford Park Boulevard; the other station is located north of the Reservoir site at Mosholu Parkway. Along the IND Grand Concourse Line (served by the B and D lines), one station is located in the vicinity of the Reservoir site; this station is located southeast of the Reservoir site at Bedford Park Boulevard. It is anticipated that the Bedford Park Boulevard station along the IRT No. 4 line would accommodate the majority of subway transit trips generated by the proposed work. This is due to the proximity of this station to the Reservoir site. It is anticipated that a significant portion of subway transit trips generated by the proposed work would utilize the Bedford Park Boulevard station along the IND B and D lines.

Bus transit in the vicinity of the Reservoir site includes the Bx1, Bx2, Bx10, Bx22, Bx26, and Bx28 NYC Transit Buses. The Bx1 and Bx2 pass through the study area along Sedgwick Avenue, north of the Reservoir site. The Bx10, Bx22, and Bx26 circle around Harris Park directly east of the study area, while the Bx28 passes through the study area along Paul and Jerome Avenues. The Bx1 and Bx2 provide service to destinations south of the Reservoir site via Grand Concourse and Melrose Avenue, respectively. The Bx10 provides service to destinations north of the Reservoir site via the Henry Hudson Parkway. The Bx22 provides service to destinations southeast of the Reservoir site via Fordham Road and White Plains Road. The Bx26 and Bx28 provide service to destinations east of the Reservoir site via Allerton Avenue and Gun Hill Road, respectively.

8.2.2.1.9. Noise Analysis

Preliminary Noise Screening for Mobile Source Noise Analysis. As outlined in the methodologies section (Section 4.10, Data Collection and Impact Methodologies), and as the initial step in the mobile source noise analysis, a preliminary noise screening using passenger car equivalence (PCE) values was performed to determine whether receptors located near the identified noise-sensitive route segments would experience an increase in level of 3 dBA or more as a result of the additional vehicular traffic generated by the project. Existing and future anticipated traffic data for the noise-sensitive route segments in the vicinity of Jerome Park Reservoir were analyzed to determine a PCE value for each segment for the morning peak hour, the afternoon peak hour, and the lowest traffic-volume off-peak i.e. quietest hour for the existing condition. The preliminary noise screening was performed by comparing the existing PCEs with the existing PCEs plus the addition of the future project-generated PCEs. The equation below was used for the comparison. Future PCEs would be from additional traffic resulting from the proposed project.

$$\text{If } \frac{\text{Existing PCEs + Future Project-Generated PCEs}}{\text{Existing PCEs}} > 2.0 \text{ then an impact may occur.}$$

This comparative analysis of existing PCEs and future PCEs was used to determine whether the receptors near the identified noise-sensitive route segments would potentially experience a doubling or more of PCEs. Three decibels (dBA) is the threshold used for screening purposes since it correlates to an increase that is perceptible to human auditory sensitivity. This thresholdis used as a guideline to determine whether anticipated project impacts warrant further

field measurements and subsequent Traffic Noise Model (TNM) analysis. A doubling of PCEs corresponds to a noise increase of three dBA. CEQR has established a project-induced noise level threshold of 3-5 dBA at receptors. Route segments that did not experience a doubling of PCEs due to project-induced traffic, therefore, would not exceed this impact threshold.

The time period representing the largest increase in future PCEs resulting from the proposed project was used for comparative analysis. The traffic generated by construction activities was not anticipated to change over the course of the construction period. As a result, mobile source noise levels would not fluctuate substantially over the course of the construction phase. The year 2010 was selected as a representative construction year because it falls at the approximate midpoint of the construction schedule.

Table 8.2-16 presents the comparison of existing PCEs to anticipated future maximum PCEs resulting from project related act ivies along route segments.

Following the preliminary noise screening, it was determined that none of the noise-sensitive route segments required a detailed analysis of potential impacts from mobile source noise.

Mobile Source Noise. The roadways considered for mobile source noise analysis at Jerome Park Reservoir are those presented in Table 8.2-17 and Figure 8.2-17. The roadways considered for analysis were those local routes identified as proposed transportation routes and that connect the major thoroughfares to the site. Sensitive receptors along the proposed project's transportation routes were identified. Route segments that did not contain sensitive receptors along them were not considered for further noise analysis. The major access roads for commercial vehicles to the site are the Major Deegan Expressway (I-87) to the west and the Grand Concourse Boulevard to the east. In addition, the major thoroughfare for commuter traffic i.e. passenger cars to access the site is the West Mosholu Parkway to the north. Therefore, the potential for noise impacts along those proposed transportation routes connecting the Major Deegan Expressway, Grand Concourse Boulevard, and West Mosholu Parkway to Jerome Park Reservoir was evaluated. The proposed construction at Jerome Park Reservoir site includes minor construction activities at the Jerome Pumping Station located on Jerome Avenue.

As shown in Table 8.2-16, none of the noise-sensitive route segments would experience a doubling of PCEs. Therefore, it was concluded that the contribution of mobile sources to the total construction-generated noise would not be significant. Noise-sensitive route segments associated with the site were not examined further.

Stationary Source Noise. Stationary source noise monitoring was performed in order to establish existing baseline conditions. Noise monitoring was performed to reflect the construction times, and to account for the receptor types that were within 1,500 feet of the site. Baseline noise monitoring was performed in front of each Gate House at the Reservoir site (Nos. 2, 3, 5, 6, and 7). These locations were selected in order to ensure an accurate representation of baseline measurements over the entire site (see Figure 8.2-18). The dominant noise source at this site was traffic from the streets surrounding the Reservoir.

TABLE 8.2-16. COMPARISON OF EXISTING PCES TO FUTURE PCES FROM CONSTRUCTION IN VICINITY OF JEROME PARK RESERVOIR

	Location	Period of Analysis (Weekday)	Existing PCEs	Time	New Passenger Car	New Trucks	New PCEs	PCE Ratio	Incremental Change in dbA	Further Analysis Required?
1	West Fordham Rd btw Grand Concourse Road and Jerome Avenue Ave	AM Peak	4738	07:45 - 08:45	7	0	7	1.00	0.01	no
		PM Peak	3613	17:00 - 18:00	7	0	7	1.00	0.01	no
		Quietest Period	3410	13:00 - 14:00	0	0	0	1.00	0.00	no
2	West Fordham Rd btw University Ave & Jerome Ave	AM Peak	4877	07:45 - 08:45	3	0	3	1.00	0.00	no
		PM Peak	3543	17:00 - 18:00	3	0	3	1.00	0.00	no
		Quietest Period	3275	13:00 - 14:00	0	0	0	1.00	0.00	no
3	Jerome Ave btw West Fordham Rd & Kingsbridge Rd	AM Peak	1273	07:45 - 08:45	4	0	4	1.00	0.01	no
		PM Peak	1461	17:00 - 18:00	4	0	4	1.00	0.01	no
		Quietest Period	1243	16:00 - 17:00	0	1	47	1.04	0.16	no
5	Jerome Ave btw West 205 St & West Mosholu Pkwy South (service road)	AM Peak	2771	07:45 - 08:45	0	0	0	1.00	0.00	no
		PM Peak	2015	17:00 - 18:00	0	0	0	1.00	0.00	no
		Quietest Period	886	16:00 - 17:00	0	1	47	1.05	0.22	no
6	Bedford Park Blvd btw Jerome Ave & Goulden Ave	AM Peak	1865	07:45 - 08:45	2	0	2	1.00	0.00	no
		PM Peak	1686	17:00 - 18:00	2	0	2	1.00	0.01	no
		Quietest Period	1349	10:00 - 11:00	0	0	0	1.00	0.00	no
7	Reservoir Ave btw Kingsbridge Ave Road & Goulden A	AM Peak	2668	07:45 - 08:45	3	0	3	1.00	0.00	no
		PM Peak	1531	17:00 - 18:00	3	0	3	1.00	0.01	no
		Quietest Period	1526	11:00 - 12:00	0	0	0	1.00	0.00	no
8	Reservoir Ave btw Sedgwick Ave & Goulden Ave	AM Peak	1095	07:45 - 08:45	2	0	2	1.00	0.01	no
		PM Peak	613	17:00 - 18:00	2	0	2	1.00	0.01	no
		Quietest Period	517	11:00 - 12:00	0	0	0	1.00	0.00	no
9	University Ave btw West Fordham Rd & Kingsbridge A	AM Peak	2070	07:45 - 08:45	3	0	3	1.00	0.01	no
		PM Peak	1793	17:00 - 18:00	3	0	3	1.00	0.01	no
		Quietest Period	1721	13:00 - 14:00	0	0	0	1.00	0.00	no
10	Goulden Ave btw Reservoir Ave & Bedford Park Blvd	AM Peak	2496	07:45 - 08:45	1	1	48	1.02	0.08	no
		PM Peak	2270	17:00 - 18:00	1	1	48	1.02	0.09	no
		Quietest Period	2097	10:00 - 11:00	0	1	47	1.02	0.10	no
11	Goulden Ave btw Bedford Park Blvd & West 205 St	AM Peak	2490	07:45 - 08:45	2	1	49	1.02	0.08	no
		PM Peak	1463	17:00 - 18:00	2	1	49	1.03	0.14	no
		Quietest Period	1360	10:00 - 11:00	0	1	47	1.03	0.15	no
12	Goulden Ave btw West 205 St & Sedgwick Ave	AM Peak	1576	07:45 - 08:45	1	1	48	1.03	0.13	no
		PM Peak	1374	17:00 - 18:00	1	1	48	1.03	0.15	no
		Quietest Period	1345	10:00 - 11:00	0	1	47	1.03	0.15	no
13	West 205 St btw Jerome Ave & Goulden Ave	AM Peak	1020	07:45 - 08:45	2	0	2	1.00	0.01	no
		PM Peak	578	17:00 - 18:00	2	0	2	1.00	0.02	no
		Quietest Period	766	10:00 - 11:00	0	0	0	1.00	0.00	no
14	Sedgwick Ave btw Reservoir Ave & Van Cortlandt Par West	AM Peak	1312	07:45 - 08:45	5	0	5	1.00	0.02	no
		PM Peak	1111	17:00 - 18:00	5	0	5	1.00	0.02	no
		Quietest Period	1101	10:00 - 11:00	0	0	0	1.00	0.00	no
15	Sedgwick Ave (Dickenson Ave) btw Van Cortlandt Park West & Goulden Ave	AM Peak	5491	07:45 - 08:45	5	1	52	1.01	0.04	no
		PM Peak	3859	17:00 - 18:00	5	1	52	1.01	0.06	no
		Quietest Period	3505	11:00 - 12:00	0	0	0	1.00	0.00	no
17	Van Cortlandt Park West btw Van Cortlandt Park South & Sedgwick Ave (Gouvernor)	AM Peak	4509	07:45 - 08:45	11	2	105	1.02	0.10	no
		PM Peak	3427	17:00 - 18:00	11	2	105	1.03	0.13	no
		Quietest Period	2416	11:00 - 12:00	0	1	47	1.02	0.08	no

New PCEs = (no. of cars + no. of trucks(47))
PCE ratio = (Existing PCEs + Project generated PCEs) / Existing PCEs
Incremental change in dBA = 10 log (PCE ratio)

Methodology to establish AM/PM peak hour existing and project-induced PCEs discussed in Data Collection and Impact Methodologies, Section 4.10, Noise

Quietest hour existing PCEs calculated from traffic data (automatic traffic recorders, vehicle classifications, and turning movement counts). ATRs and VCs were used establish traffic volume and mix along a route segment. Where ATRs were not available, the TMC count from the peak hour for the adjacent intersection was used to establish the trip assignment for the route segment. ATR and VC data from the nearest physically similar route sement for the quietest hour was used to establish volume and mix.

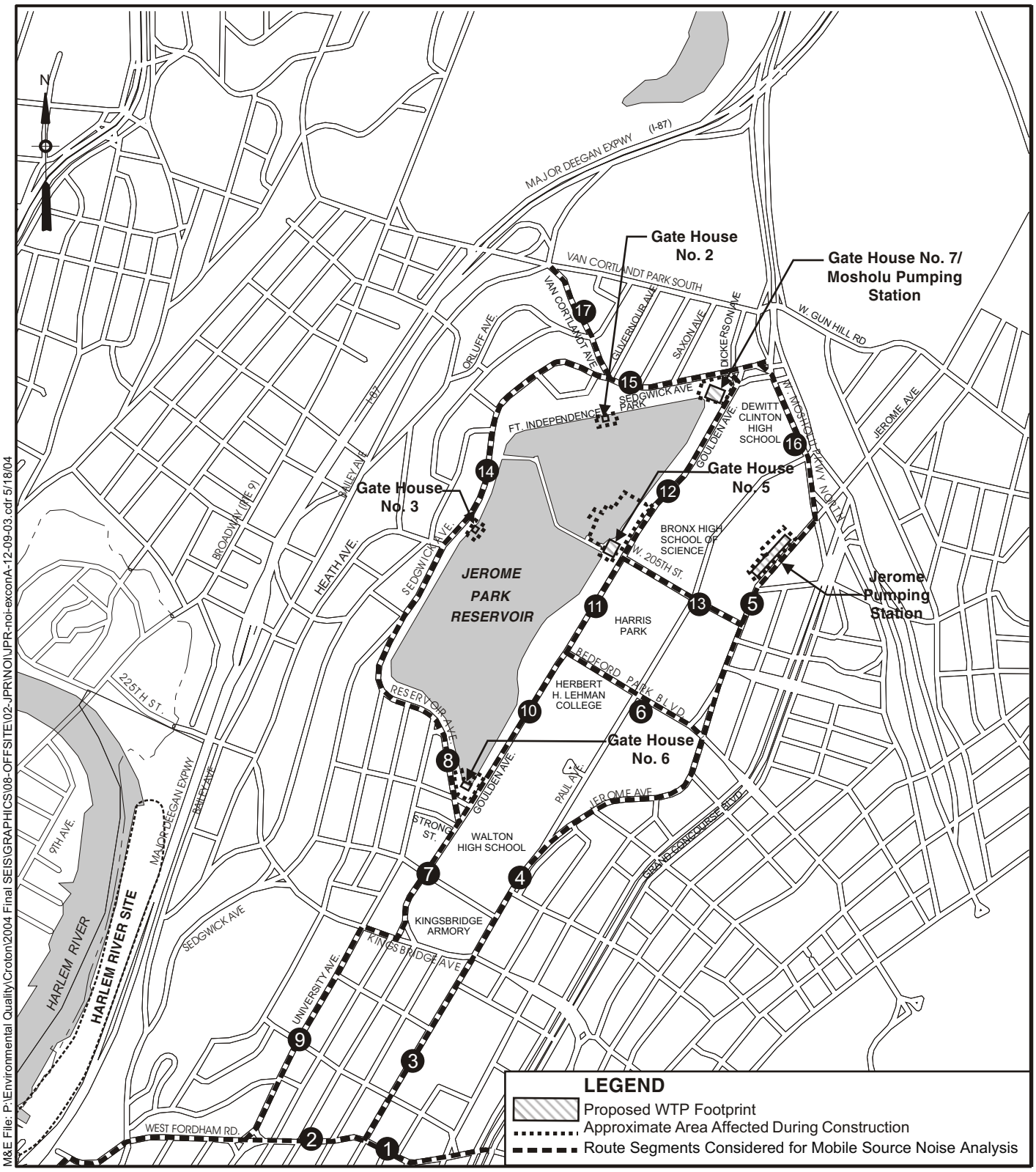
Quietest hour project-induced PCEs derived by assuming deliveries constant between 7 AM and 5 PM. Route segments established in Traffic Analysis Section.

TABLE 8.2-17. ROUTE SEGMENTS CONSIDERED FOR MOBILE SOURCE NOISE ANALYSIS AT JEROME PARK RESERVOIR

No.	Route Segment
1	West Fordham Rd between Grand Concourse Road and Jerome Avenue Ave
2	West Fordham Rd between University Ave and Jerome Ave
3	Jerome Ave between West Fordham Rd and Kingsbridge Rd
4	Jerome Ave between Kingsbridge Rd and W. 205th St.
5	Jerome Ave between West 205 St and West Mosholu Pkwy South
6	Bedford Park Blvd between Jerome Ave and Goulden Ave
7	Reservoir Ave between Kingsbridge Ave and Goulden Ave
4	Reservoir Ave between Sedgwick Ave and Goulden Ave
9	University Ave between West Fordham Rd and Kingsbridge Ave
10	Goulden Ave between Reservoir Ave and Bedford Park Blvd
11	Goulden Ave between Bedford Park Blvd and West 205 St
12	Goulden Ave between West 205 St and Sedgwick Ave
13	West 205 St between Jerome Ave and Goulden Ave
14	Sedgwick Ave between Reservoir Ave and Van Cortlandt Park West
15	Sedgwick Ave (Dickenson Ave) between Van Cortlandt Park West and Goulden Ave
16	West Mosholu Pkwy South (service road) between Jerome Ave and Sedgwick Ave
17	Van Cortlandt Park West between Van Cortlandt Park South and Sedgwick Ave

Noise level measurements were collected at Gate House Nos. 2, 5, 6, and 7 according to the anticipated construction schedule times. Noise level measurements were collected at Gate House No. 3 for 24 hours during a weekday and on a Sunday. Monitoring was performed in order to establish the period of the day with the potential for the greatest incremental change in noise. Monitoring periods were chosen to reflect planned construction activity, which may require 24-hour usage of a ventilation system. No additional operational noise is anticipated at this site following the completion of construction activities. Construction activities are anticipated to take place on Monday through Friday from 7:00 AM to 6:00 PM, and in response to public comment, on the weekends and holidays periodically for the noisiest construction to avoid disrupting classes in the nearby schools.

The baseline noise levels measured on a weekday are presented in Table 8.2-18. The quietest period at Gate House No. 2 had a Leq of 55.6 dBA and the noisiest period had a Leq of 60.9 dBA. The quietest period at Gate House No. 3 had a Leq of 48.4 dBA, and the noisiest period had a Leq of 62.4 dBA. The quietest period at Gate House No. 5 had a Leq of 59.4 dBA, and the noisiest period had a Leq of 66.2 dBA. The quietest period at Gate House No. 6 had a Leq 58.2 dBA, and the noisiest period had a Leq of 63.1 dBA. The quietest period at Gate House No. 7 had a Leq of 65.5 dBA and the noisiest period had a Leq of 67.7 dBA.



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NOTE: Numbers correspond to route segments listed in Table 8.1.6 - 16.

1320 0 1320

SCALE IN FEET
1 INCH = 1/4 MILE

Jerome Park Reservoir Route Segments Mobile Source Noise Analysis

Croton Water Treatment Plant

Figure 8.2-17

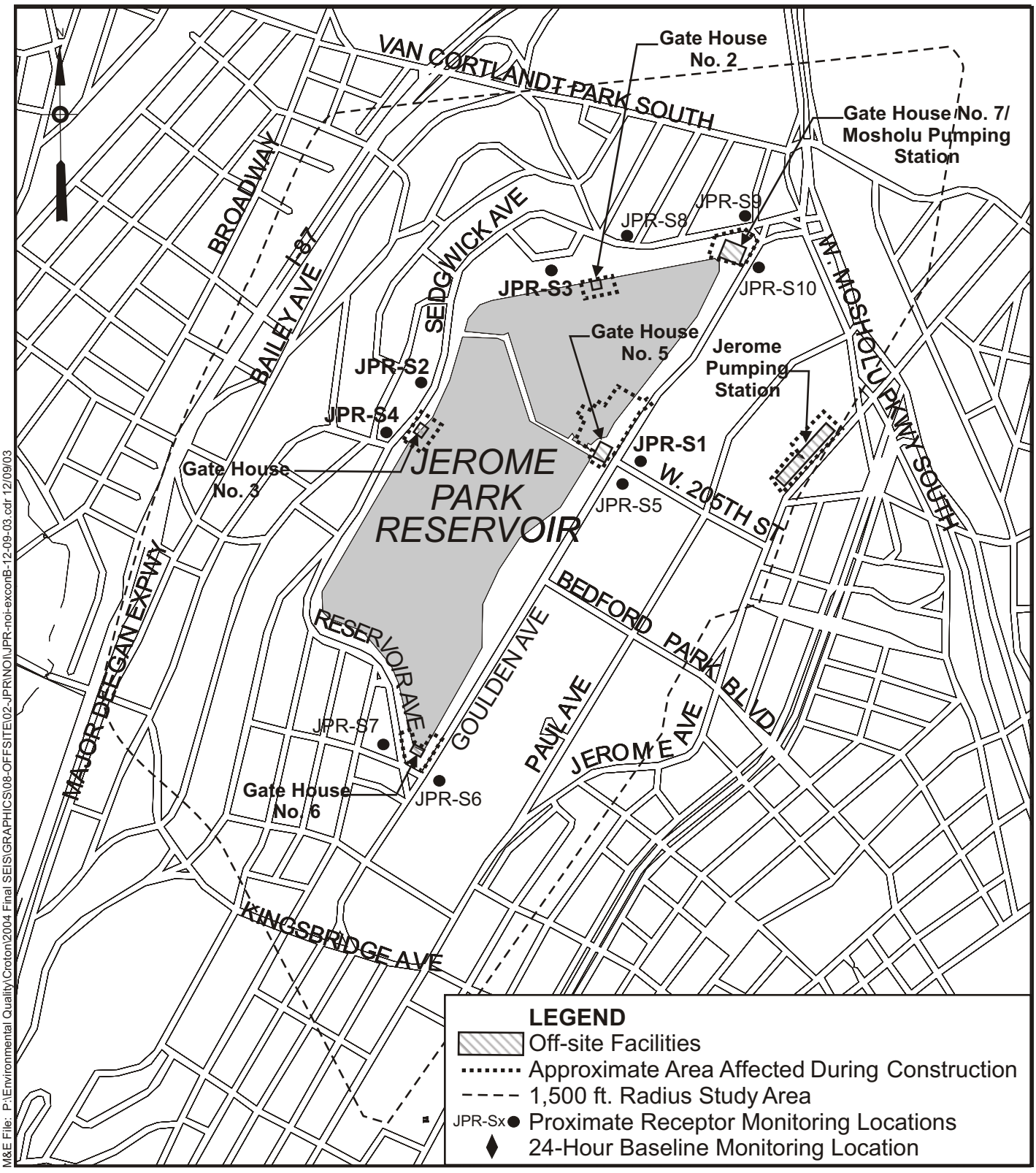
TABLE 8.2-18. MEASURED 24-HOUR NOISE LEVELS (LEQ) ATJEROME PARK RESERVOIR ON A WEEKDAY

Hourly Leq (dBA)												
TIME	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
GATE HOUSE No. 2												
AM	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**60.9**	56.7	55.9	58.6	58.0
PM	56.5	57.1	**55.6**	56.2	55.8	56.9	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
GATE HOUSE No. 3												
AM	53.1	51.6	**48.4**	49.8	51.2	54.1	58.1	60.7	**62.4**	58.8	59.4	59.7
PM	59.9	60.5	61.2	61.3	62.2	60.0	59.6	58.7	59.9	57.2	54.9	54.1
GATE HOUSE No. 5												
AM	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	64.9	64.3	62.4	63.8	**66.2**
PM	62.6	**59.4**	61.3	61.4	60.9	60.3	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
GATE HOUSE No. 6												
AM	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	61.5	61.8	62.8	62.1	62.1
PM	62.8	59.2	59.5	**63.1**	**58.2**	61.7	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
GATE HOUSE No. 7												
AM	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	66.7	66.7	66.3	66.6	66.6
PM	**65.5**	66.8	67.3	**67.7**	67.5	67.2	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Following the initial 24-hour baseline monitoring, 20-minute measurements were taken at sensitive receptors proximate to each of the monitoring locations (see Figure 8.2-18). Table 8.2-19 presents relevant information regarding the proximate receptors. Measurements were conducted at each receptor during those hours that the receptor was sensitive to noise contributions. Residences were assumed to be occupied (and therefore sensitive to noise occupations) at all times.

TABLE 8.2-19. DESCRIPTION OF NOISE SENSITIVE RECEPTORS FOR STATIONARY SOURCE ANALYSIS

Receptor Name	Description of Receptor
JPR-S1	Bronx High School of Science
JPR-S2	Private Residence on Sedgwick Avenue
JPR-S3	Fort Independence Public Park
JPR-S4	Private Residence on Sedgwick Avenue
JPR-S5	Harris Park
JPR-S6	Lehman College
JPR-S7	Private Residence on Reservoir Ave.
JPR-S8	Sheila Menscher-Van Cortlandt Primary School/Middle School 95
JPR-S9	High-rise Apartment Complex
JPR-S10	DeWitt Clinton High School



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Jerome Park Reservoir Stationary Noise Source Monitoring Locations

Croton Water Treatment Plant

Figure 8.2-18

Weekday Monitoring at Receptors. The 20-minute measurements were performed at these locations during the noisiest and quietest times as determined by the initial 24-hour monitoring. Twenty-minute monitoring periods and noise levels for weekdays at proximate receptors are presented in Table 8.2-20.

TABLE 8.2-20. TWENTY-MINUTE MEASURED WEEKDAY NOISE LEVELS AT SENSITIVE RECEPTORS NEAR JEROME PARK RESERVOIR (Leq, dBA)

Monitoring Location	Monitoring Period	Monitoring Time	Noise Level
JPR-S1	Noisiest Daytime	11AM-12PM	63.0
	Quietest Daytime	1-2 PM	65.5
JPR-S2	Noisiest Daytime	8-9 AM	70.6
	Quietest Daytime	2-4 AM	53.0
JPR-S3	Noisiest Daytime	7-8 AM	55.8
	Quietest Daytime	2-3 PM	52.9
JPR-S4	Noisiest Daytime	8-9 AM	74.1
	Quietest Daytime	2-4 AM	54.0
JPR-S5	Noisiest Daytime	11AM-12PM	62.4
	Quietest Daytime	1-2 PM	62.7
JPR-S6	Noisiest Daytime	3-4 PM	67.6
	Quietest Daytime	4-5 PM	63.7
JPR-S7	Noisiest Daytime	3-4 PM	66.2
	Quietest Daytime	4-5 PM	67.1
JPR-S8	Noisiest Daytime	7-8 AM	62.5
	Quietest Daytime	2-3 PM	68.3
JPR-S9	Noisiest Daytime	3-5 PM	69.7
	Quietest Daytime	12-1 PM	70.3
JPR-S10	Noisiest Daytime	3-5 PM	68.8
	Quietest Daytime	12-1 PM	65.4

Sunday Monitoring at Receptors. Twenty-minute monitoring was performed at receptors that may be affected by proposed weekend construction. Twenty-minute monitoring also was performed at JPR-S2 and JPR-S4 (both located close to Gate House No. 3) that may experience an impact from the ventilation fans on weekends when construction is not being performed. Monitoring periods and noise levels for Sundays at receptors proximate to Jerome Park Reservoir are presented in Table 8.2-21.

TABLE 8.2-21. TWENTY-MINUTE SUNDAY NOISE LEVELS AT SENSITIVE RECEPTORS NEAR JEROME PARK RESERVOIR
(Leq, dBA)

Monitoring Location	Monitoring Period	Monitoring Time	Noise Level
Sunday During Possible Construction Hours			
JPR-S1	Noisiest	2-3 PM	65.4
	Quietest	8-9 AM	63.8
JPR-S2	Noisiest	2-3 PM	63.1
	Quietest	8-9 AM	62.4
JPR-S3	Noisiest	2-3 PM	59.5
	Quietest	8-9 AM	58.7
Sunday During Non-Construction			
JPR-S2	Noisiest	8-9 PM	64.4
	Quietest	4-5 AM	51.2
JPR-S4	Noisiest	8-9 PM	65.2
	Quietest	4-5 AM	51.5

8.2.2.1.10. Air Quality

Introduction. The New York State Department of Environmental Conservation (NYSDEC) monitors ambient air quality at a number of locations throughout New York State, including in Westchester County, the Bronx and the other New York City Boroughs. Each of the NYSDEC air monitoring stations monitors one or several regulated air pollutants. The most recent year of available data from these monitoring stations is for calendar year 2002. Monitoring data from the air monitoring stations closest to Jerome Park Reservoir were used to characterize background air quality levels of criteria air pollutants.

Ambient air particulate matter smaller than 2.5 microns ($PM_{2.5}$) data for Jerome Park Reservoir was obtained from Mamaroneck, New York ambient air monitoring station. Mamaroneck, New York is approximately eleven miles to the north-northeast and is the nearest ($PM_{2.5}$) ambient air monitoring station.

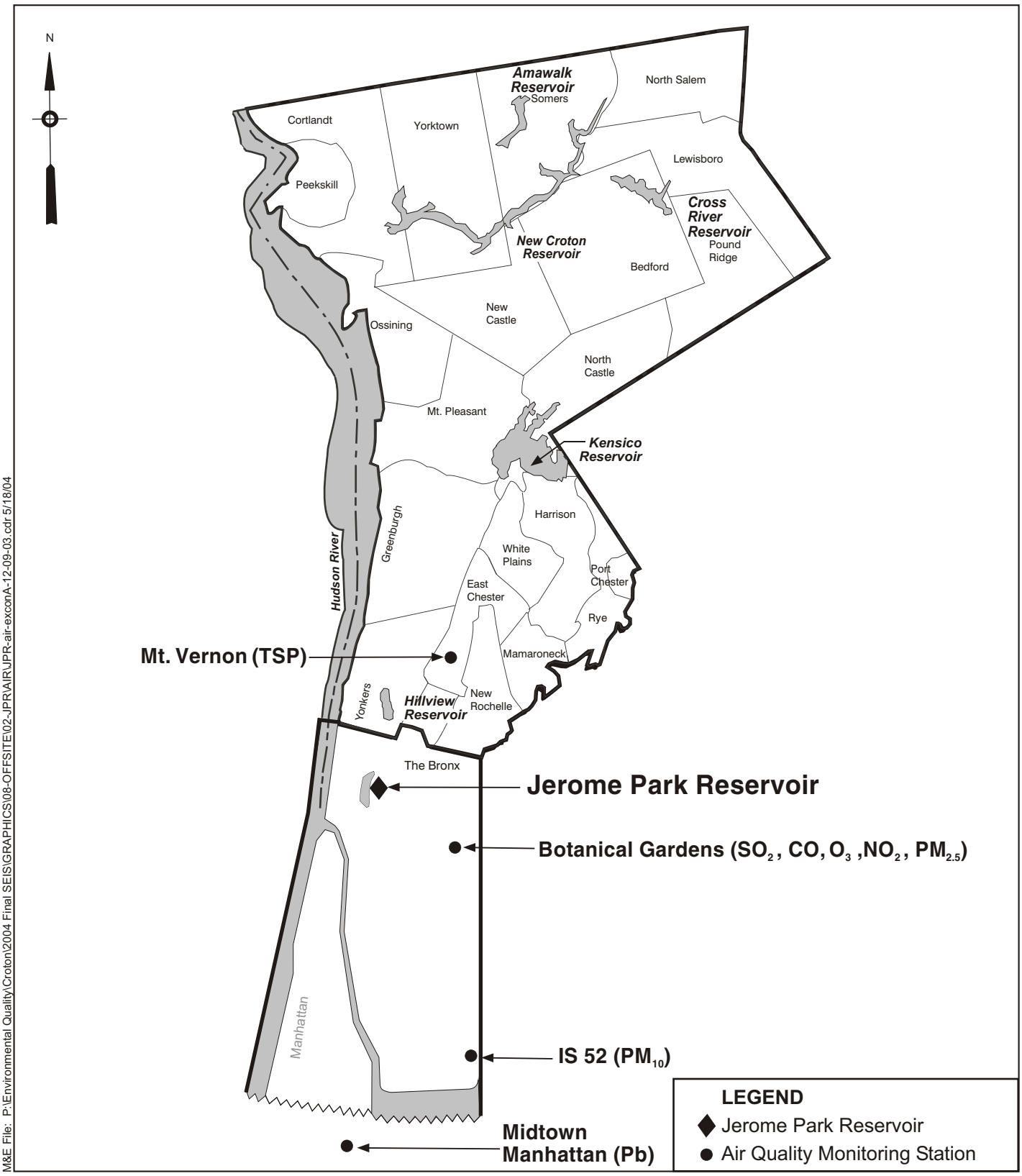
Ambient air Total Suspended Particulates (TSP) data for the shaft site was obtained from Mount Vernon, New York ambient air monitoring station. TSP is no longer federally regulated; TSP monitoring was discontinued after 1998. Mount Vernon is located 3.5 miles to the east-northeast of the Reservoir site and is the nearest TSP ambient air monitoring station.

Ambient air particulate matter smaller than 10 microns (PM_{10}) data for the Reservoir site was obtained from Intermediate School (IS) No. 52 ambient air monitoring station. IS No.52 is the nearest PM_{10} ambient air monitoring station.

Ambient air sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and carbon monoxide (CO), data was obtained from the Botanical Gardens ambient air monitoring station in the Bronx. The Botanical Gardens is located one miles to the south-southeast of the shaft site and is the nearest monitoring station.

The Midtown Manhattan ambient air monitoring station (9.5 miles to the south-southwest of Jerome Park Reservoir) monitored ambient air quality concentrations of airborne lead until 1998. Since lead is no longer used as an additive in gasoline, the lead concentrations in ambient air has dropped to negligible. This has greatly reduced the need for ambient air monitoring for lead. Figure 8.2-19 shows the locations of the ambient air quality monitoring stations.

The background levels were obtained from the NYSDEC monitoring data. Background air quality data is based on the most recent five years of NYSDEC monitoring data, 1998 through 2002. Annual background values are from the year with the highest annual concentration. For averaging times shorter than one year, the background value is the highest second-high value for the five years. Where five contiguous years of recent monitoring data are not available, a minimum of three years was used. Table 8.2-22 summarizes the monitoring data for the site.



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Not To Scale

Jerome Park Reservoir NYSDEC Ambient Air Monitoring Stations

Croton Water Treatment Plant

Figure 8.2-19

TABLE 8.2-22. AIR QUALITY MONITORING DATA FOR YEAR 2002[1]

Pollutant	Monitoring Station	Averaging Period[2]	Ambient Standard	Measured Concentration [6]	
				Highest	2nd Highest
Sulfur Dioxide ppm (µg/m^3)	Botanical Gardens 200th Street & SE Blvd. Bronx	Annual	78 (0.03)	23 (0.009)	- -
		24 hour	364 (0.14)	112 (0.043)	97 (0.037)
		3 hour	1,300 (0.50)	154 (0.059)	146 (0.056)
Carbon Monoxide ppm (µg/m^3)	Botanical Gardens 200th Street & SE Blvd. Bronx	8 hour	10,000 (9.0)	3,315 (2.9)	2,400 (2.1)
		1 hour	40,000 (35)	4,915 (4.3)	4,229 (3.7)
Ozone[3] ppm (µg/m^3)	Water District Pumping Station Garage, Orchard Street, White Plains	1 hour	235 (0.12)	306 (0.156)	260 (0.133)
Nitrogen Dioxide ppm (µg/m^3)	Botanical Gardens 200th Street & SE Blvd. Bronx	Annual	100 (0.053)	53 (0.028)	- -
Lead[4] (µg/m^3)	Midtown Madison Avenue (47th – 48th Streets) Manhattan	3 month	1.5	0.13	0.12
Total Suspended Particulates[5] (µg/m^3)	Mt. Vernon 260 South Sixth Ave. Mt. Vernon, NY	Annual	75	33	- -
		24-hour	250	78	76
Inhalable Particulates, PM_{10} (µg/m^3)	I.S. 52 681 Kelly Street Bronx, NY	Annual	50	21	- -
		24 hour	150	91[6]	45
Respirable Particulates[3], $PM_{2.5}$ (µg/m^3)	Mamaroneck, NY Thruway Exit 9 Service Area.	Annual	15	11.8	- -
		24-hour	65	33.1	33.0

TABLE 8.2-22. AIR QUALITY MONITORING DATA FOR YEAR 2002[1]

Pollutant	Monitoring Station	Averaging Period[2]	Ambient Standard	Measured Concentration [6]	
				Highest	2nd Highest

Notes:

1. Source: New York State Department of Environmental Conservation. 2002. Annual New York State Air Quality Report, Ambient Air Monitoring System. New York, NY.
2. Generally the ambient standards for averaging periods of 24 hours or less may not be exceeded more than once per year. Therefore, measured second highest concentrations are included for these averaging times.
3. The 1-hour ozone standard is not to be exceeded more than an average of one day per year based on the last three years. Two exceedences of the standard, denoted in bold type, were reported in 2001. The 8-hour ozone and the $PM_{2.5}$ standards were not adopted until July 1997 and will not go into effect until fall of 2005.
4. Monitoring for lead was discontinued after 1998.
5. The 24-hour NYS standard is 250 $\mu g/m^3$. TSP is no longer a federally regulated pollutant. TSP data is for 1998; monitoring was discontinued after 12/31/1998.
6. The highest value of 91 $\mu g/m^3$ exceeds the second highest value by more than 100 percent and is not considered representative. It is shown as reported but is not used in this analysis.

Abbreviations:

ppm = parts per million
$\mu g/m^3$=micrograms per cubic meter
1 ppm nitrogen dioxide = 1,880 $\mu g/m^3$
1 ppm sulfur dioxide = 2,620 $\mu g/m^3$

Table 8.2-23 summarizes the ambient air quality monitoring data representative of air quality in the vicinity of Jerome Park Reservoir. A comparison of the monitored ambient levels in this table with the corresponding standards reveals that none of the Federal and State standards were exceeded. However, as discussed in Section 4.11, Data Collection and Impact Methodologies, Air Quality, Jerome Park Reservoir lies within a "severe" non-attainment area for ozone (O_3). The site is in an attainment area or unclassified area with respect to the other criteria pollutants.

TABLE 8.2-23. SUMMARY OF THE SELECTED AMBIENT AIR MONITORING DATA FOR BACKGROUND POLLUTANT CONCENTRATION

Pollutant	Monitoring Station	1998		1999		2000		2001		2002	
SO_2: 3-hour	Botanical Garden		--		--	162 (0.062)	µg/m^3 (ppm)	**183 (0.070)**	µg/m^3 (ppm)	146 (0.056)	µg/m^3 (ppm)
24 hours			--		--	99 (0.038)	µg/m^3 (ppm)	**120 (0.046)**	µg/m^3 (ppm)	97 (0.037)	µg/m^3 (ppm)
Annual			--		--	*23 (0.009)	µg/m^3 ppm)	**26 (0.010)**	µg/m^3 ppm)	23 (0.009)	µg/m^3 (ppm)
NO_2: Annual	Botanical Garden	56 (0.030)	µg/m^3 (ppm)	54 (0.029)	µg/m^3 (ppm)	54 (0.029)	µg/m^3 (ppm)	**58 (0.031)**	µg/m^3 (ppm)	53 (0.028)	µg/m^3 (ppm)
CO: 1-hour	Botanical Garden	5372 (4.7)	µg/m^3 (ppm)	6515 (5.7)	µg/m^3 (ppm)	**6858 (6.0)**	µg/m^3 (ppm)	5601 (4.9)	µg/m^3 (ppm)	4,229 (3.7)	µg/m^3 (ppm)
8-hours		3658 (3.2)	µg/m^3 (ppm)	**4572 (4.0)**	µg/m^3 **(ppm)**	4001 (3.5)	µg/m^3 (ppm)	3,086 (2.7)	µg/m^3 (ppm)	2,400 (2.1)	µg/m^3 (ppm)
PM_{10}: 24 hours	IS 52	--		22.0	µg/m^3	45.0	µg/m^3	42.0	µg/m^3	**45.0**	µg/m^3
Annual		--		16.0	µg/m^3	21.0	µg/m^3	21.0	µg/m^3	**21.0**	µg/m^3
$PM_{2.5}$: 24 hours	Botanical Garden	--		27.6	µg/m^3	**42.4**	**µg/m^3**	36.0	µg/m^3	34.9	µg/m^3
Annual		--		13.5	µg/m^3	14.3	µg/m^3	**14.4**	**µg/m^3**	13.5	µg/m^3

Note:

-- denotes air sampling did not occur or monitoring data is not available.

Bold denotes highest value (maximum 2nd high for 1-hr, 3-hr, 8-hr, and 24-hr data) in last 5 years.

* denotes annual means is based on data captured is less than 75% for calendar year 2000.

The PM_{10} data collection at IS 52 monitoring station began in July1999.

Source: State of New York Department of Environmental Conservation, Air Quality Reports for Calendar Years 1998 to 2002

Mobile Sources. Air quality impacts from motor vehicles can have localized, or microscale, effects on ambient air quality for CO, PM_{10} and $PM_{2.5}$. Air quality impacts for these pollutants at intersections adjacent to the Reservoir site from construction or operation project generated vehicle trips were considered. No intersections were identified with more than 21 construction or operation project generated vehicle trips per hour for the Reservoir site. Since the number of project-induced vehicle is small, a mobile source analysis was not conducted for this site.

Stationary Sources. The pollutants of concern from stationary sources analysis are PM_{10}, $PM_{2.5}$, NO_2, SO_2 and CO. The concentrations of these pollutants measured at the nearest NYSDEC monitoring stations, shown in Table 8.2-23, were assumed to be representative of existing levels in the study area. No new regulated stationary sources of air emissions are associated with the Reservoir site.

8.2.2.1.11. Historical and Archaeological Resources

Historical Background. The first official purchase of lands from the Native Americans of the Bronx area took place in 1639 by the Dutch West India Company. Two years later Jonas Bronk became the first white settler of the region when he bought 500 acres between the Harlem and Bronx Rivers. As with the rest of the Borough, Kingsbridge was rural farmland until the time of intensified residential and commercial development in the mid-to-late nineteenth century. Historically, Jerome Park Reservoir site was in the township of West Farms (Fordham), which was incorporated into the township of Westchester in 1788, and then established as a separate township in 1846. The Bronx then became the Annexed District of New York City in 1874 and was chartered as a Borough in 1898.[8]

Kingsbridge was laid out in the township of West Farms just north of Papirinemen Hill, an Indian name meaning, "a place parceled out." Kingsbridge is not far from Marble Hill - named for old marble quarries. The community was named for the first bridge built across the Harlem River in 1693 by Frederick Philipse, linking Manhattan to what is now the Bronx. The community is not far from the neighborhood of Marble Hill, which was named for old marble quarries.

By 1673 the Albany Post Road had been laid out through the Bronx, crossing the Harlem River at Kingsbridge near its intersection with the Boston Post Road. This early route connected Manhattan with the vast trading post at Fort Orange, now Albany. Stagecoach service was established on it in 1785. The north-south route of the Albany Post Road ran just west of Jerome Park Reservoir in the approximate location of what is now Bailey Avenue. It nearly paralleled the Boston Post Road, which ran along the route of Kingsbridge Road and through Jerome Park Reservoir site.[9]

During the American Revolution both British and American militia recognized the strategic importance of safe passage over the Harlem River at Kingsbridge. As a result, Kingsbridge

[8] Jenkins, S. 1912. The Story of the Bronx. G.P. Putnam's Sons. NY.
[9] Jenkins. 1912.

witnessed extensive Revolutionary War activity with several fortifications built nearby. Under the command of Major-General Charles Lee, a total of seven sites were selected for redoubts, two on the northern end of Manhattan, and five in the Kingsbridge area of the Bronx. Three forts were built on Spuyten Duyvil Neck and Tippett's Hill, west of Jerome Park Reservoir site. These were captured by the English in November of 1776, and were subsequently abandoned by 1779.

Fort Independence (a.k.a. Fort No. 4), and Fort No. 5 were the two forts closest to Jerome Park Reservoir site. The extant Fort Independence Park at the north end of the Reservoir and Old Fort Park at the south end of the Reservoir approximate the two forts' eighteenth century locations.

Following the American Revolution Jerome Park Reservoir site remained vacant farmland until the late 1800s. After the Civil War the American Jockey Club controlled a large tract in the neighborhood and laid out a track for racing purposes. The track proved to be successful, and the racetrack flourished until 1894 when the City of New York acquired the property for the purpose of erecting Jerome Park Reservoir.[10]

The Jerome Park Reservoir, situated directly west of Harris Park, is an important element in New York City's Water Supply System; its construction in the early twentieth century reflects the evolution of the water system as the City expanded. The Croton Water Supply System is the oldest system supplying water to the City and is the one closest to the City. The major architectural features of the Reservoir structure itself are low ring walls of massive rock-faced, stone blocks. On the west side and on much of the north side, the Reservoir wall is built above the level of the street, and the water is not visible. Physically, the Reservoir is set apart from its surroundings. Much of it is raised above eye-level and its use and design are different from that of the neighborhood. It is, however, a structure that, due to its scale and placement in the area, is a defining element of the neighborhood.

The construction of the Reservoir basin, as we see it today, was completed in 1906. Critical to understanding the placement of gate house chambers and the changes over time is an understanding of the original design of Jerome Park Reservoir. First proposed ca. 1884 as a part of the construction plans for the New Croton Aqueduct, the "Reservoir" was to function as a receiving and distributing Reservoir (based in the 24th Ward) to ensure the City of at least a 10-day consumption source. The design flow was 50 million gallons a day. The location of the Reservoir, on the grounds of Jerome Park Racetrack, was selected in 1885 due to its elevation. The plans specified construction of the Reservoir bottom at an elevation that would guarantee gravity flow into the Reservoirs in Central Park. “A study of the available topographical maps showed that Jerome Park and vicinity contained the only site in the Annexed District [24th Ward] at the proper elevation for the construction of such Reservoir”.[11] Construction plans did not move forward for many years.

When the contract for the proposed Reservoir was first circulated in 1894, the planned capacity was 1.5 billion gallons, corresponding nominally to seven and one-half days' drinking water supply. However, by 1895 the plans and specifications were amended to increase the capacity to

[10] McNamara, J. 1984. History in Asphalt. Bronx, N.Y.: The Bronx County Historical Society. New York, NY.
[11]DWSG&E. 1907. Department of Water Supply, Gas, and Electric - Annual Report. New York, NY.

2 billion gallons. As envisioned at that time, the Reservoir was to be comprised of an easterly and westerly basin, with a massive stone-dividing wall running the north-south length of the entire Reservoir. The dividing wall would support a new conduit to replace the old aqueduct, and a new aqueduct was to pass approximately 100 feet beneath the Reservoir. A series of shafts and tunnels would connect the flow of water between the basin and aqueducts.[12]

The Reservoir construction, under the supervision of John B. McDonald of McDonald & Onderdonk, was not completed in 1902 as originally scheduled. By that year, the contract was amended again to the following reduced capacity: easterly basin, 1.13 billion gallons and the westerly basin, 773.4 million gallons. When the Reservoir was officially opened in 1906 only the smaller westerly basin was completed and functioning.

The second basin, east of the dividing wall (now Goulden Avenue), was still planned in 1906, and the land was cleared and partially excavated in preparation for construction. Two gate houses, No. 4 and No. 6, were first built well east of what is now the eastern ring wall of the Reservoir on the assumption that the proposed two-basin Reservoir would be completed. In 1912, the two-basin plan was officially abandoned. In 1913, the possibility of erecting a filtration plant in the east basin area was studied and funds ($8,690,000) were tentatively appropriated for construction; however, the funding was rescinded and the City did not act on the proposal.[13] The excavated area of the east basin was eventually filled and graded. The east basin site was turned over to the City for other uses. It was later developed into Lehman College, a subway yard for two subway lines, three high schools, a park, and several public housing developments.

Prior to the completion of the Reservoir, an important law, Chapter 724 of the Laws of 1905, concerning the management of New York City's Water Supply, went into effect. This law was largely a reaction to the realization that, even with the imminent completion of Jerome Park Reservoir, an additional water supply was of vital consequence. The Board of Water Supply eventually became the City's agency for constructing additions to its water supply system. As each addition or a portion thereof was completed, the physical structures were turned over to the Department of Water Supply, Gas and Electricity (DWSG&E) for operation and maintenance. The DWSG&E thus assumed the maintenance of the Reservoir and associated appurtenances. The following discussion, therefore, relies heavily on the original Aqueduct Commissioners' contract drawings of the Reservoir and the subsequent annual reports, plans, and records available from the DWSG&E. There are, however, gaps in the information on the Gate Houses at the Reservoir. Both the NYCDEP archives and the City's Municipal Reference Library are missing critical drawings, plans, and plates of the Gate Houses.

Other major architectural features of Jerome Park Reservoir are the brick gate house superstructures located along the periphery of the structure. Gate House No. 5 on Goulden Avenue at West 205th Street is a substantial structure, while most of the others are smaller buildings. The gate houses were built to provide proper distribution and handling of water. The gate house substructures, buried below grade, host the vital piping and pumps necessary to

[12] DWSG&E. 1907.

[13] DWSG&E. 1913. Department of Water Supply, Gas, and Electric - Annual Report. New York, NY.

maintain the required water flow. Visible to the public on today's landscape are the gate house superstructures, which serve as above-grade access structures for the piping and pump mechanisms. Although Jerome Park Reservoir was completed in 1906, no gate house superstructures were erected at that time.

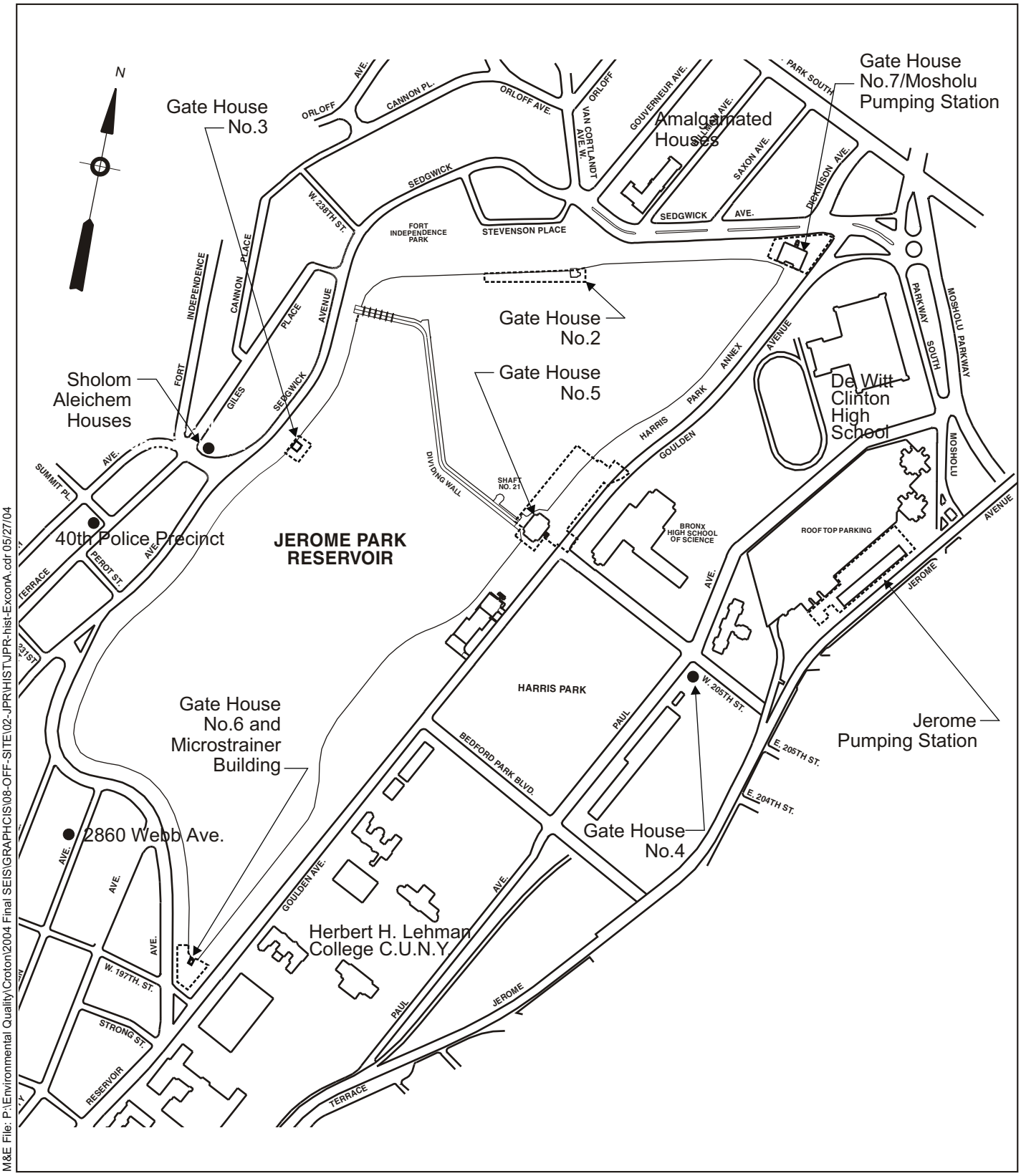
In 1906, designs were prepared for at least five gate houses (Nos. 2, 3, 4, 6, and 7). Designs for bold rock-faced stone gate houses with copper cornices and Spanish tile roofs were completed by the prominent architectural firm of Trowbridge & Livingston. Gate Houses Nos. 4 and 6, which were subterranean systems in 1906, never functioned. Gate House No. 4 was eventually abandoned. Gate House No. 6 was rebuilt, and the control chambers and valves moved to the southern tip of the west basin where it stands today.

In 1909, designs were prepared under the auspices of chief engineer F. S. Cook for Gate House No. 1. In 1920, another design was prepared for this Gate House. Apparently, no construction was undertaken. A design was prepared for Gate House No. 2 in 1925; again, no construction was undertaken. There may have been other shelved gate house design projects as well.

In 1938, designs were prepared for Gate Houses Nos. 2, 5, and 7. Plans were prepared by the Design Unit, Project Planning Section, Division of Operations, and Works Progress Administration (WPA).[14] No architect's name is associated with these designs since they were prepared by the federal staff of the WPA for the New York City DWSG&E. There is no evidence that the construction of these gate houses entailed any changes to the mechanical systems of the Reservoir. While apparently there had been interest in building gate house superstructures from the time that Jerome Park Reservoir opened in 1906, it was not until 1938 that funds were available for this work. The smaller gate houses surrounding the Reservoir appear to be similar to those designed by the WPA in 1938, but no evidence has been located as to how these were funded or who built them.

Historic Resources. The Jerome Park Reservoir is a historically important complex. Based on the recommendation of the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), Jerome Park Reservoir and adjacent associated buildings, structures, and sites are listed on the New York State Register of Historic Places. In 2000 Jerome Park Reservoir was also listed on the National Register of Historic Places (NR). The Jerome Park Reservoir's statement of significance includes two criteria: Criterion A. Property associated with events that have made a significant contribution to the broad patterns of our history; and Criterion C. Property embodies the distinctive characteristics of a type, period, or methods of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction. The site encompasses an approximately 125-130 acre Reservoir-park that consists of 94 acres of open water and the surrounding 30 acres of constructed and landscaped earth; it lists 5 contributing buildings, 11 contributing structures, and 3 contributing sites (Figure 8.2-20).

[14] Quilty, P. 1939. "WPA Projects in New York City." Municipal Engineers Journal Vol. 25:106-107.



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Historic Resources in the Area of JPR, Bronx, NY

Croton Water Treatment Plant

Figure 8.2-20

The 11 contributing structures listed in the NR nomination are found encircling, under, or inside the west side of the completed Reservoir: the basin, east wall, west wall, core wall dam, conduits of the Old and New Croton Aqueducts, system of stabilizing revetments, Shaft No. 21, blow-off, pipe vault portal, and south portal. The 5 contributing buildings are Gate Houses 2, 3, 5, 6, and 7. The three contributing sites are Old Fort Four Park, Fort Independence Park, and the Harris Park Annex.

The WPA funded a significant number of New York City projects relating to the water system, including surveys, water main installations, and the alteration, repair, and construction of buildings. The designs for Gate Houses Nos. 2, 5, and 7 are nearly identical to the completed buildings. The buildings generally retain their integrity. A discussion of Jerome Park Reservoir Gate Houses Nos. 2, 3, 4, 5, 6, and 7 follows.

The following summary of Gate Houses Nos. 2 through 7 was taken primarily from the descriptions found in the 1907 *Report of the Aqueduct Commissioners* (DWSG&E) on file at NYC Municipal References.

Gate House No. 2. Gate House No. 2 is a small "outlet structure" on the edge of the Reservoir on Sedgwick Avenue. It was originally designed to contain 48-inch pipes connected directly to the City's distribution system. The substructure as originally designed, has two inlet chambers, one admitting the water from the West Basin of the Reservoir through a bottom, middle, and surface inlet, and the other drawing water from the central gate house, No. 5, by two lines of 48-inch pipe laid on the bottom of the Reservoir.

The two 48-inch mains running northwest into Van Cortlandt Avenue are laid through the north embankment of the Reservoir in a brick culvert, and are provided with suitable manholes and a vault entrance. This vault was built to prevent any leakage from coming in contact with the earthen embankment, and to divert it into the sewer built therein. This culvert also originally covered a waste and drainage sewer, which is constructed from Gate House No. 2.

Although the proposed 1906 and 1909 elaborate gate houses were not built, it is assumed that some form of simple frame structure was erected at Gate House No. 2 shortly after construction of the aqueduct.

According to plans and elevations on file with the NYCDEP Job No. 254, the extant Gate House No. 2 superstructure was built as part of the 1937-38 WPA effort for the DWSGE. The Gate House No. 2 superstructure is an irregularly shaped, one-story, flat-roofed structure, and the projecting brick piers, with limestone lintels, divide the walls into bays. On the Reservoir facade, or south elevation, are three windows set into the bays. The massive ashlar foundation is visible from the Reservoir. Originally, it was fitted with a wood-paneled door. A limestone cornice is on all sides. On the street facade, or north elevation, is a concrete rectangular plaque over the door opening; a series of smaller square plaques ornament all elevations. Currently, the windows are boarded up, a corrugated metal overhead door covers the entry, and there is considerable deterioration of a portion of the facade and cornice.

Gate House No. 3. Gate House No. 3 is also a small "outlet structure" on the edge of the Reservoir on Sedgwick Avenue. It was originally designed to contain 48-inch pipes connected directly to the city's distribution system. This Gate House, constructed on the west side of the Reservoir, has the same general plan as Gate House No. 2; however, it contains no waste chamber. Instead, a special waste-weir built about half-way between Gate Houses Nos. 2 and 3 is joined with the drainage culvert of the former by a masonry drain; this drain was built in a tunnel (4 feet wide by 7 feet high), which was constructed outside the Reservoir wall by Clark & Company. This Gate House controls the flow into two lines of 48-inch mains running westerly along the Boston Road. As with the discussion above regarding Gate House No. 2, it is assumed that some form of simple frame structure was erected at Gate House No. 3 shortly after the aqueduct construction.

Over several years, WPA workers built at least three and possibly five of the brick superstructures over Jerome Park Reservoir Gate Houses. DWSG&E annual reports do not always identify the actual gate house superstructure that was completed by the WPA in any one year; however, the uniform design and materials indicate that Gate House No. 3 was completed at approximately the same time as Gate Houses Nos. 2, 5, 6, and 7. The massive ashlar foundation is visible from the Reservoir. The Gate House is a one-story, flat- roofed structure with a limestone cornice; its projecting brick piers, with concrete lintels, divide the walls into bays. On the Reservoir side are three windows set into the bays. On the street facade, or west elevation, is a limestone rectangular plaque over the door opening; smaller square plaques ornament all elevations. The sidewall fenestration originally consisted of three narrow single-stacked pane windows. The Gate House No. 3 superstructure, approximately 27.5 feet by 32 feet, has an iron-railing balcony projecting over the Reservoir.

Gate House No. 4. East of Goulden Avenue, Gate House No. 4 (substructure only) was built just south of West 205th Street on what is now the Transit Yard. The Gate House was built at the time of original Reservoir construction, circa 1900, when the original plans called for the Reservoir to be twice as large; Goulden Avenue was planned as a dividing wall between the two large basins. Although the Gate House has since been removed, remnant foundation walls can still be seen in the Transit Yard. The Gate House is outside the impact area, but is part of the study area.

Gate House No. 4, the substructure only, was constructed on the easterly side of the two-basin Reservoir, based on the same general plan as Gate Houses Nos. 2 and 3. It differs, however, in that it was arranged for three lines of 48-inch mains, one supplying the high-service pumping station built by the DWSG&E on Jerome Avenue (a.k.a, the "High Pumping Station," a National Register property described in detail below), and the other two being connected with the distribution system. Gate House No. 4, like Gate House No. 2, has an overflow and waste-chamber. A 48-inch pipe conveys the wastewater to the sewer constructed in Jerome Avenue and in 204th Street.

Plates for Gate House No. 4 (#102-105) referred to in the 1907 report were not appended to the report reviewed at Municipal Archives. Because Gate House No. 4 was constructed on the "same general plan" as Gate House Nos. 2 and 3, we can assume that the below-grade construction of extant Gate Houses Nos. 2 and 3 is similar.

As with the discussion above regarding Gate House No. 2, it is assumed that some form of simple frame structure was erected at Gate House No. 4 shortly after the aqueduct's construction. It also is assumed that sometime after abandoning the plan to construct an east basin and the transfer of the property to another city agency, any Gate House No. 4 superstructure was then demolished. There is currently no Gate House No. 4 superstructure.

Gate House No. 5. Gate House No. 5 is the main Jerome Park Reservoir Gate House, built near Shaft No. 21. Shaft No. 21 links the NCA at 115 feet below grade to the surface. Gate House No. 5, located near the intersection of Goulden Avenue and West 205th Street was designed, when originally constructed, it served the following purposes:

- It was to receive water from the Old Croton Aqueduct and from the branch conduit leading from the New Croton Aqueduct, and discharge this water into the east or west basin of the Reservoir or into both; or let the water pass to the City in the new or old aqueduct without entering the Reservoir.
- It would provide a connection between the two basins of the Reservoir.
- It would control the inlet into the 48-inch pipes laid on the bottom of the Reservoir from this Gate House to Gate Houses Nos. 2, 3, and 4 and ensure a supply of water to the Gate Houses when one or both basins of the Reservoir are empty.
- It would provide a connection to Shaft No. 21 of the new aqueduct, which is located in a tunnel, about 100 feet directly below the bottom of the West Basin of the Reservoir.

According to the New York City Aqueduct Commissioners Report[15], the original plan for the Gate House was as follows:

> The water flowing in the branch conduit from the new aqueduct passes through three inlets, each 5 feet 3 inches wide, into an inlet chamber and thence, through four pairs of 2 x 8-foot sluice-gates, into a main chamber. The inlets are arched over and each is provided with a double set of grooves for stop-planks. The water from the old aqueduct can either pass through two arched inlets 5 feet 3 inches wide, controlled by sluice-gates, into the inlet chamber mentioned above, or it can flow in a conduit built around the Gate House and in the top of the division wall to the southerly end of the Reservoir where it enters the old aqueduct structure leading to New York.
>
> When the water is to enter the Gate House, stop-planks are placed in a double set of grooves constructed, at the Gate House, in the conduit built for the old aqueduct. Each of the inlets from the old aqueduct is controlled by a double 2 x 8 foot sluice gate, on each side of which a double set of grooves for stop-planks is provided. This makes it possible to enclose the gates by cofferdams of stop-planks when repairs may be needed.

[15] New York City Aqueduct Commissioners. 1907. "Report to the Aqueduct Commissioners, by The President, John F. Cowan." New York, NY.

All the inlets, outlets, and other gate openings in Gate House No. 5 are made uniformly 5 feet 3 inches wide, and, with the exception of the three inlets from the new aqueduct mentioned above, each gate opening (sluiceway) is controlled by a double 2x8-foot sluice gate, having on each side a double set of grooves for stop-planks.

From the inlet chamber the water passes through four double 2x8-foot sluice-gate openings into a main or central chamber, 34 feet by 50 feet 3 inches in plan, having its bottom at Elevation 107. A masonry viaduct, 17 feet wide, is constructed over the central part of this chamber, resting on two arches, each 14 feet wide, through which the water can pass from one side of the chamber to the other. Above these openings, and at right angles to them, there is an arched passage 9 feet wide, through the viaduct, leading from the inlet to the southerly end of the outlet chamber.

The water may be discharged into the Reservoir at the Gate House at different levels, through two bottom and one upper sluiceways into the East Basin and through one bottom and one upper similar sluiceways into the West Basin. Instead of discharging the water at the Gate House, it may be made to pass southerly [through] conduits...constructed in the division wall. One discharges into the East Basin and the other into the West Basin, about 2,025 feet south of the center of the Gate House.

Four blow-offs, each 5 feet 3 inches wide, are constructed in the Gate House. Each of the blow-offs is provided with a double set of grooves for stop-planks.

The main water chamber is, also, connected with Shaft No. 21 of the new aqueduct by a circular conduit, 11 feet in diameter and about 185 feet long, constructed below the bottom of the Reservoir. This conduit discharges in the Gate House into a small arched chamber from which the water passes through four 2 x 8-foot sluice gateways into the main water chamber. On top of the conduit six arches support a viaduct with a roadway 13 feet wide, constructed to reach the top of Shaft No. 21 for maintenance.

Any one or all of the water chambers of the Gate House may be emptied by a system of drainage pipes, from which the water is taken by a 20-inch iron drain pipe, laid under the bottom of the Reservoir to Gate House No. 2, where this 20-inch pipe discharges into the drainage culvert[16] [Gate House No. 5 Plates, 105-108, referred to in the 1907 report are not appended to the report].

The pipes (48-inch cast iron) connecting Gate House No. 5 with Gate Houses Nos. 2, 3, and 4 were not constructed as originally designed. The pipes were to be simply laid along the bottom of the Reservoir but that proved impossible as they floated when empty. It was decided to lay the pipes for Gate Houses Nos. 2 and 3

[16] New York City Aqueduct Commissioners. 1907.

> on concrete piers. Each pier contains 2 cubic yards of concrete, reinforced with two-inch expanded metal rods. The rods were placed within the concrete to prevent cracking or breading apart.[17]

The 1907 report states that the pipe connection between Gate Houses Nos. 4 and 5 was laid in a trench below the bottom of the Reservoir. This pipe connection, consisting of two 48-inch pipes, does show on a survey of the construction project but it is unclear as to the date of completion of this connection and when and how this connection was later altered when Gate House No. 4 was decommissioned. An elevation of Gate House No. 5, ca.1906, clearly shows conduits to both basins. Elevations of Gate House No. 5, dated 1965, depict both a "West Basin outlet" and a "plugged outlet" that obviously once directed water to Gate House No. 4.[18]

According to 1909 Minutes of the Aqueduct Commissioners, contract specifications for a Gate House No. 5 superstructure were approved and filed with the Corporation Counsel. It is assumed that a simple, frame superstructure was erected fairly soon after this October 1909 action. A new one story, frame "field office" was built at Gate House No. 5 in 1936. This field office may have not functioned as a superstructure but may have been in direct response to the increased activity along Goulden Avenue as a WPA work force moved into the area to complete many Reservoir repairs and new construction. The Gate House No. 5 superstructure was replaced three years later by the extant one-story fireproof building. The superstructure - at 205th Street and Goulden Avenue - measures roughly 91 feet by 131 feet. This same year the two 48-inch mains leading from what had become Goulden Avenue into Gate House No. 5 were encased in concrete and that section of the Croton Aqueduct between Gate Houses Nos. 5 and 7 was waterproofed.[19] By 1965 Gate House No. 5's superstructure chamber was subdivided to accommodate a chlorination room and two chlorine storage rooms and an employee locker room.[20]

The flat roofed, single story structure has small recessed side, one bay, projecting walls connected to the front facade by narrow 45-degree angled walls. The red brick structure rests on a raised ashlar block foundation that is defined by a projecting beltcourse of polished stone blocks. Limestone lintels top the tall, slender windows. Additional light reaches the sluice gate operator chamber through two overhead skylights. There is a limestone beltcourse above the windows and a limestone (block) cornice. The building's seven bay facade, with the wide center block steps, makes a strong 1930s statement of a public facility as it faces Goulden Avenue. The opposite west elevation, leading to the Shaft No. 21 service road, is seven bays but is unornamented. The north and south facades are five bays wide. The east elevation's dominant central double doors are set within a limestone architrave surround and multi-paned light transoms (now covered over). Rectangular, stepped parapeted, projecting blocks of stone and concrete frame this entry bay.

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[17] New York City Aqueduct Commissioners. 1907.

[18] New York City Board of Water Supply, Research and Development Dept. 1965. "Croton Rehabilitation Studies, Plan: Jerome Park Reservoir - General Plan," Acc. XC-208/8/2/65. New York, NY.

[19] DWSG&E. 1939. Annual Report. New York City Department of Water Supply, Gas, and Electric. New York, NY.

[20] New York City Board of Water Supply, Research and Development Dept. 1965.

Over the years Gate House No. 5 has absorbed an array of extra duties. Today the large main room is dominated by a series of 17 upright hand wheels that control water flow through sluice gates. Currently it also houses the Reservoir rescue skiff, an office, and an employee lounge.

Gate House No. 6. Gate House No. 6 was originally constructed at what was to be the eastern end of the larger Reservoir, east of Goulden Avenue near what is now the Kingsbridge Armory. It was later moved to its present location at the southern edge of the south basin. In 1939 a new superstructure was built over Gate House No. 6.

Gate House No. 6 was constructed at the southerly end of the easterly Reservoir to control the flow into two lines of 48-inch mains. Detailed information on the construction of the relocated Gate House 6 at the southern tip of the western basin has not been located. It is assumed that a subterranean foundation plan, similar to those already functioning as part of the complex, was executed sometime just prior to 1939. In 1939, the city paid the A.W.B. Contracting Corporation for laying 1,483.8 linear feet of 48-inch pipe in Reservoir Avenue, the roadway that connects the sites of the old and new Gate House No. 6. The annual report of that year further states that the original Gate House No. 6 was eliminated, and the property it occupied adjacent to the Kingsbridge Armory on Kingsbridge Road was released to the Armory Board.

It is assumed that the extant, one-story, flat-roofed, parapeted superstructure was probably built under the same subterranean chamber contract, since it is somewhat similar in style to the other gate houses of this vintage but does not have the same ornamental detail. Approximately 30 feet by 22 feet, the gate house is relieved by projecting brick bays on three facades, as well as a limestone beltcourse and cornice. However, there are no windows, plaques, or balconies. Vertical brick stretchers form a stringcourse between the foundation and the superstructure. On the east elevation, an at-grade service door pierces the stringcourse. The single bay front facade, or south elevation, focuses on the single door set within a slender limestone architrave surround. Although there are no transoms above the door as in Gate House No. 5, the header bonding does make the "transom area" distinctive.

Gate House No. 7. According to the DWSG&E's 1907 report, Gate House No. 7 was situated at the north end of the division wall for the following purposes:

- To admit water from the new aqueducts that will, in all probability, be built in the near future.
- To discharge the water of the old and new aqueduct at the northerly end of the Reservoir with a view for producing circulation.
- To control the outlet from the Reservoir at this point through eight lines of 48-inch mains.

Gate House No. 7 consists of two substructures, one on each side of the division wall, which is connected by two concrete conduits. The substructure on one side of the division wall is the exact counterpart of the one on the other side. Each substructure has a horseshoe-shaped inlet to which a branch conduit from one of the proposed new aqueducts may be attached.

The Gate House was designed to have, in all, nine 2-foot by 8-foot double sluice gates and twelve 2-foot x 5-foot sluice gates. A system of drainpipes was provided for emptying the different water chambers, and the water was conveyed by a 20-inch iron pipe laid on the bottom of the Reservoir to Gate House No. 2, where it was discharged into the culvert.

In 1939, the extant superstructure at the intersection of Sedgwick and Goulden Avenues was built as part of the WPA work effort. The superstructure, measuring roughly 97 feet by 124 feet, is really two separate structures that are joined by one roof. The gates and portals originally installed to conduct water into the east basin of the Reservoir were bricked-up. By 1965, the superstructure chamber of Gate House No. 7 had undergone some changes, being subdivided to accommodate a chlorinating room in the east building and a transformer room in the west building. It is unclear if the "switch room" and "office" in the east building was original to the 1939 plan or was added later.

Dominating the Sedgwick and Goulden Avenue intersection, Gate House No. 7 is a combination of design elements from the smaller outlet Gate Houses (Nos. 2, 3, and 6) and the larger central Gate House (No. 5). The at-grade, front facade maintains a seven-bay rhythm defined by projecting brick piers with limestone lintels. Attention is focused on the central bay, a 14-foot and eleven-inch drive-through entrance that mimics, minus the ashlar blocks, the Gate House No. 5 stepped parapet entrance. It should be noted that the at-grade driveway corresponds to the below-grade routing of the two aqueduct conduits feeding the Reservoir. A limestone cornice encircles the entire irregularly shaped building. On the south, east, and west elevations, the seven bays are defined by tall slender windows, now boarded, without pronounced lintels. The central bay in the south elevation, or drive-through, is recessed. On the south elevation, the projecting brick piers are limited to forming limestone-capped quoins.

Currently, the Gate House No. 7 superstructure, in addition to housing a series of sluice gate floor stands for flow control and chlorinating equipment, serves as an occasional manned office when work is being conducted on the nearby subterranean Mosholu Pumping Station.

Other historic structures in the vicinity of the Reservoir include the Jerome Avenue Pump Station, the Mosholu Pump Station, the Kingsbridge Armory, the 40th Police Precinct Station House, the Shalom Aleichem Houses, and the Amalgamated Houses, DeWitt Clinton High School, Hunter College and the house located at 2860 Webb Avenue.

Jerome Pumping Station. The Jerome Pump Station, or High Pumping Station, listed on the National Register of Historic Places, is located on the west side of Jerome Avenue between Mosholu Avenue and 206th Street, several blocks east of the Reservoir. The structure, built between 1901 and 1906, was designed to pump water from the Reservoir to consumers throughout the borough. The pump station was designed by George W. Birdsall, built by the DWSG&E, and constructed as part of the Jerome Park Reservoir complex, an adjunct to the Croton Aqueduct system. In 1981 the structure received “Landmark” status from the New York City Landmarks Preservation Commission (NYCLPC), and in 1983 it was listed on the National Register of Historic Places.

Mosholu Pumping Station. The Mosholu Pump Station is an underground pump facility located at the corner of Goulden and Sedgwick Avenues. No aboveground features are associated with this facility. The station consists of a shaft that houses pipes and pumping equipment. The inner workings of this facility have been repeatedly updated through the years. None of the original workings are still in place. Although this facility may once have been eligible for the National Register as a component to the aqueduct system, it has not retained its integrity, and thus no longer meets the necessary criteria.

40th Police Precinct Station House. The 40th Police Precinct Station House (now a community center), located at 3101 Kingsbridge Terrace, is currently a New York City Landmark.

Sholom Aleichem Houses. The Shalom Aleichem Houses, located at Giles Place at Sedgwick Avenue, are eligible for listing on the National Register of Historic Places.

Amalgamated Houses. The Amalgamated Houses, located at Sedgwick Avenue, Hillman Avenue, Van Cortlandt Park South, Gouvernour Avenue, and Saxon Avenue, are eligible for listing on the National Register of Historic Places.

DeWitt Clinton High School. The DeWitt Clinton High School, located at Mosholu Parkway South between Goulden and Paul Avenues, is eligible for listing on the National Register of Historic Places.

Hunter College. Hunter College, now Lehman College, has four original buildings (Main, Gym, Davis, and Gillet) that are eligible for listing on the National Register of Historic Places.

2860 Webb Avenue. A Queen Anne house at 2860 Webb Avenue, located on the southeast corner of Reservoir Avenue and known as Our Lady of Angels Rectory, is eligible for listing on the National Register of Historic Places.

Archaeological Resources. The earliest cartographic source reviewed depicting aboriginal habitation in the vicinity was the Hendricks Map of 1616, which shows the Wikagyl (Wiechquaesgeek) Indians inhabiting the southern New York mainland just north of the Manhattes Indians on Manhattan Island. The Wiechquaesgeek are identified as the group of Indians living in northern Manhattan, Bronx County, and southern Westchester County in a number of seventeenth century Dutch and English manuscripts, deeds, treaties, and maps.[21,22] Documented nearby settlements include:

- Shorakapkock: near 230th Street and Broadway, just east of Jerome Park Reservoir.[23,24,25,26,27]

[21] Bolton, R. 1934. Early History And Indian Remains on The Throg's Neck, Borough of The Bronx, City of New York. Bronx Society of Arts and Sciences. New York, NY.
[22] Grumet, R.S. 1981. Native American Place Names in New York City. Museum of the City of New York. New York, NY.
[23] Tieck, W.A. 1968. Riverdale, Kingsbridge, and Spuyten Duyvil, New York City. William A. Tieck, New York.

- Nipinichsen: a palisaded fort variously located in Riverdale near 230th Street, west of Jerome Park Reservoir site.[28,29,30,31]
- Gowahasuasing: several blocks southwest of Jerome Park Reservoir site on Tibbett's Neck.[32,33]
- Keskeskick: in Van Cortlandt Park north of Jerome Park Reservoir site. A prehistoric village site.[34]
- Saperewack: located on the Harlem River in the Marble Hill area west of Jerome Park Reservoir site.[35]

Published literature supports the ethno-historic reports of aboriginal occupation. Some of these sites are probably part of the same camps and/or villages reported in the earlier sources.

- Kingsbridge Post Office, 5517 Broadway near 230th Street: several blocks west of Jerome Park Reservoir Site. The site yielded projectile points, pottery, shell, and a Native American burial. Tieck suggests that this may represent the Village of Shorakapkock.[36]
- 231st Street, Kingsbridge: west of Jerome Park Reservoir Site. A prehistoric hearth containing a clay pot was found.[37]
- Ewen Park at 231st Street: west of Jerome Park Reservoir Site. Shell and ashes were reported, and near the Henry Hudson monument, a food storage pit was uncovered.[38]
- Marble Hill, Broadway and 230th Street: just west of Jerome Park Reservoir Site. Shell and prehistoric artifacts were found at "the Wading Place".[39]
- Paparinemin Island: a large site was found on high ground that was originally Paparinemin Island near 231st Street west of Jerome Park Reservoir Site. Smaller

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[24] Jenkins. 1912.

[25] Bolton, R. 1920. "New York in Indian Possession." Indian Notes and Monographs, 2(7). Museum of the American Indian, Heye Foundation. New York, NY.

[26] Fluhr, George J. 1960. Historical Geography of The West Bronx. The Aiden Press. New York, NY

[27] McNamara. 1984.

[28] Jenkins. 1912.

[29] Skinner, A. 1915. The Indians of Manhattan Island and Vicinity - 1961 Reprint. Ira J. Friedman, Inc. Port Washington, NY:

[30] Bolton. 1934.

[31] Fluhr. 1960.

[32] Grumet, R.S. 1981. Native American Place Names in New York City. Museum of the City of New York. New York, NY.

[33] Kearns, B. and C. Kirkorian. 1986. Archaeological Sensitivity Study for the Quality Housing Rezoning Project. Prepared for Allee, King Rosen, and Fleming, Inc. New York, NY.

[34] Bolton. 1934.

[35] Grumet. 1981.

[36] Tieck. 1968.

[37] Bolton. 1934.

[38] Bolton. 1934.

[39] Bolton. 1934.

prehistoric temporary encampments were also reported for the Island area, but their exact location was not given.[40,41]

- Tibbett's Neck: several blocks southwest of Jerome Park Reservoir Site. "Very extensive shell middens" were located below the bluffs.[42]
- Spuyten Duyvil Hill: about a mile southwest of Jerome Park Reservoir Site. Several small shell deposits were found here.[43]
- Van Cortlandt Park: directly north of Jerome Park Reservoir Site. Several sites were located including an extensive two to three foot thick shell midden and several burials covering fourteen acres in the southwestern section of the park, and shell pockets near the mansion. The parade ground had once been used as Indian planting fields. Storage pits, pottery, and stone tools were reported.[44,45,46]
- Chapel Farm Site: just northwest of Jerome Park Reservoir Site in Riverdale. A possible prehistoric quartz quarry site was identified on the highest knoll in the Bronx.[47]

Evidence of Native American occupation has been observed to the west in Kingsbridge, Spuyten Duyvil, and Inwood Hill Park, north in Van Cortlandt Park, south in Fordham, and east in the New York Botanical Gardens and at Pelham Bay Park.[48] The extensive documentation of aboriginal occupation throughout the area suggests that Jerome Park Reservoir parcel was, at the very least, used in a limited capacity prehistorically. Knolls, which rose above streams, which formerly ran through Jerome Park Reservoir site would, have been sought for temporary encampments and possibly longer-term occupations.

The OPRHP site file search reported site number A061-01-0114, the Harlem River Shell heaps, about a half mile south of Jerome Park Reservoir site adjacent to the Harlem River. The midden site included the remains of dog burials. Just south of this, site A061-01-0538, another shell midden of unknown age was exposed during the grading of Tenth Avenue.

A site files search conducted at the New York State Museum (NYSM), which inventories only prehistoric sites, reported fourteen sites either directly adjacent to or within a mile of Jerome Park Reservoir. NYSM site numbers 709, 711, 2823, 2838, 2839, 4052, 4053, 4054, 4055, 4056, 5320, 5321, 5322 and 7727 are all located nearby. Some of these sites are duplicates of the sites described above.

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[40] Bolton. 1934.
[41] Bolton. 1934.
[42] Jenkins. 1912.
[43] Skinner. 1915.
[44] Bolton. 1934.
[45] Tieck. 1968.
[46] Skinner. 1915.
[47] Historical Perspectives. 1990. Cultural Resource Investigations, Chapel Farm II, Bronx, New York. Prepared for Kahn Associates. New York, NY.
[48] Kearns, B. and C. Kirkorian. 1986.

Prehistoric Potential and Sensitivity. There is strong evidence of an extensive Native American presence in the neighborhood of Jerome Park Reservoir as indicated by the numerous habitation sites and trails. The known Indian trail "Sachkerah," which once passed through the north basin of the Reservoir but has since been obliterated, strongly supports the prehistoric Native American presence in the immediate area. Prehistoric campsites were frequently situated on well-drained knolls in proximity to fresh water sources, similar to those that existed within Jerome Park Reservoir site prior to Reservoir construction.[49] However, the creation of the Reservoir obliterated all of these potentially sensitive land forms within Jerome Park Reservoir, and almost certainly destroyed any which may have once existed directly outside of the basin.

The pre-Reservoir topography of the site ranged in elevation from 123 feet to 158 feet above sea level (ASL).[50] Soil borings conducted in 1991[51] show that the pre-Reservoir elevations were drastically reduced with extensive excavations, with the basin floor now laying between 108 feet and 109 feet above mean sea level (MSL). The knolls which may have once hosted archaeological deposits were leveled, with between fourteen and forty-nine feet of earth removed for the creation of the Reservoir. Even the lowlands and streams around the knolls, also in the Reservoir basin and once depicted as about 123 feet above MSL[52,53] have been removed and the land lowered by at least 14 feet to 109 feet above MSL.

Historical Potential and Sensitivity. Historically, the study area was heavily utilized during the American Revolution, which may have resulted in the deposition of potentially important archaeological materials within Jerome Park Reservoir site. Fort Independence, ca.1776, was located directly north of the north basin, and Fort No. 5 was located just south of the south basin.

When the excavations began, the workmen turned up with their tools, several cannon balls, bayonets, swords, buttons, and other military relics, one man throwing out a shovelful of earth, which turned up an English sovereign. All through this section, from time to time, similar relics have been unearthed, including several skeletons, one of which by means of the regimental buttons and shreds of uniform that remained was identified as that of a British officer.[54]

Following the Revolutionary War, the study area remained undeveloped and used as farmland through the late nineteenth century. A small farm complex was situated in what is now the north Reservoir basin between the 1880s and 1890s.

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[49] Viele, E. 1874. Topographical Atlas of The City of New York, Including Annexed Territory. NY

[50] The Aqueduct Commissioners. 1895. Jerome Park Reservoir in The 24th Ward, New York City. The Aqueduct Commissioners, City of New York.

[51] Warren George Inc. 1991. Jerome Park Reservoir Boring Logs. Prepared for Metcalf and Eddy-Hazen and Sawyer, New York. October 1991

[52] Viele. 1874.

[53] The Aqueduct Commissioners Map. 1895.

[54] Jenkins. 1912.

Well-drained knolls and upland once within Jerome Park Reservoir site probably hosted historically important revolutionary war period and late nineteenth century farmstead archaeological deposits. However, the massive earth moving that occurred during the creation of the Reservoir obliterated all of these potentially sensitive landforms within the basin, and almost certainly any which may have existed immediately outside its perimeter.

To the south, north and west of the Reservoir, undisturbed "pockets" of land now under fill may still be moderately sensitive for revolutionary war related archaeological resources. As recently as 1958 an archaeological excavation at the Giles home lot on Giles Place, west of the Reservoir complex, found stone foundations from Fort Independence's living quarters, as well as evidence of campfire hearths, a refuse dump, and miscellaneous camp and military equipment. These Revolutionary War features and artifacts had been preserved underneath the back dirt from the excavation of the Giles' basement.[55] Similar small pockets of undisturbed land may exist outside of the Reservoir basin.

8.2.2.1.12. Hazardous Materials

There is the potential for hazardous materials to exist within structures around Jerome Park Reservoir. These materials could consist of asbestos-containing materials (ACM) or lead-based paint. A hazardous material evaluation will be conducted within all structures around Jerome Park Reservoir in order to ensure environmental safety for construction workers and NYCDEP personnel and to ensure compliance with all applicable hazardous material rules and regulations. In addition, potential contamination within structures would not pose a threat to public health or safety since the facility is a restricted use facility. The information gathered as part of this evaluation will be used to develop a Construction Contamination Management Plan (CCMP) and to determine the proper disposal requirements for material removed from the facility as part of the rehabilitation conducted as part of this project. The hazardous materials investigation to determine the appropriate level of material handling in accordance with a detailed CCMP would ensure the safety of public health. Therefore, no potential hazardous material impact is anticipated.

Property History. To assess existing conditions on and near Jerome Park Reservoir, Sanborn maps were obtained from Sanborn Mapping and Geological Information Service. The Sanborn maps were used by the insurance industry to list properties for emergency or claims purposes. As a result, the maps identify properties including company name, generic title such as filling station, etc.), but generally do not provide detail on the nature of operations that were performed at that location. Nonetheless, since these maps go back as far as the late 1800s for older, more established communities, they were useful for identifying potential hazardous material sites along the aqueduct alignments, particularly prior to the era of current environmental regulations (i.e., pre-1970).

[55] Lopez, J. 1978. "The History and Archeology of Fort Independence on Tetard's Hill, Bronx County, NY," The Bulletin of The New York State Archaeological Association. 73, 1-28. NY.

Copies of maps with coverage of Jerome Park Reservoir and its study area for the years 1900, 1914, 1950, 1979, and 1989 were obtained from the Sanborn Mapping and Geographic Information Service to evaluate whether past activities may have contributed to the potential for contamination to the Reservoir or its study area. The Reservoir has been part of the New York City water supply prior to when the first Sanborn maps were available for this area.

1900 Sanborn Maps. The maps from 1900 show Jerome Park Reservoir as one large Reservoir with a proposed capacity of 3,000 million gallons. The Sanborn maps show several two- and three-story structures, likely to be dwellings, off the west side of Reservoir Avenue to the southwest of the Reservoir. Within this residential area there is a delivery company. Further north, between Giles Place and Sedgwick Avenue, there are subdivided lots each occupied by a two-story dwelling. At the northern intersection of Giles Place and Sedgwick Avenue, the maps depict a stable. West of the stable is an icehouse with an attached stable. On the north side of the Reservoir, a boarding house was identified, and in the northeast corner of the Reservoir there is a "High Service Station" with an Engine Room Boiler/ Coal House identified on later maps as the Jerome Pumping Station. To the east of the Reservoir the maps shows many one- to three-story dwellings, churches and stables. The New York Central Railroad Putnam Division is depicted west of the Reservoir.

1914 Sanborn Maps. The 1914 maps show a smaller Jerome Park Reservoir than the 1900 map. The northeastern corner had been developed, and the southern tip was rezoned to be made into an armory. There are five gate houses structures on the Reservoir site. The Sanborn maps also show two-story structures, designated as dwellings, and small one-story structures to the east and west of Jerome Park Reservoir. Between 1900 and 1914 there was an increase of residential developments and the number of lots increased during this period. To the west of the Reservoir the maps depict a police precinct and a builder's materials company. To the south the armory of the 8th Coast Artillery, District National Guard of New York City was shown to be under construction. Across the street from the armory was a large florist shop. The Jerome Pumping Station is shown on the 1914 maps parallel to the west side of Jerome Avenue. From south to north, the facilities at the Jerome Pumping Station include a vaulted yard, a pump house, a brick chimney, and a bank of five motors. The 1914 maps also show a three-story structure with an attached vault west of the northern end of the Jerome Pumping Station. A one-story dwelling, a stable, and one other building are shown off the northwest corner of the pumping station. The 1914 maps show what is identified as Gate House No. 1, in the current location of Gate House No. 7, near the intersection of Sedgwick Avenue and West Mosholu Parkway South. There is a temporary contractor's plant there and a blacksmith shop, office building, carpentry shop, and three other small buildings located between Gate House No. 1 and Sedgwick Avenue. There is a temporary laborer's boarding house north of this Gate House as well.

1950 Sanborn Maps. In the 1950 Sanborn maps the eastern basin of the Reservoir has been made into streets and blocks, while the western basin is surrounded by four gate houses also seen in the 1914 maps. Many of the structures that are shown on the 1900 and 1914 Sanborn maps do not appear on the 1950 maps. The 1950 maps show the area west and north of the Reservoir populated with numerous multifamily dwellings and apartment buildings. The area to the west of the Reservoir primarily consists of one- to two-story dwellings, while in the areas adjacent to the northern edge of the north basin the development was more dramatic between

1914 and 1950. This development included many two-story dwellings, a large apartment building, numerous smaller apartment buildings, a private and public school and a home for the elderly.

On the east side of Goulden Avenue the proposed east basin site was used for city projects including, four schools, a Concourse Yard for the Board of Transportation and a Materials Stage Yard for the Department of Highways. The schools, from north to south, are DeWitt Clinton High School, Hunter College, Walton High School and Public School No. 86. The maps depict Hunter College as having two buildings, an instructional building and a gymnasium. The other schools area all one building. The two buildings at Hunter College are shown to be connected by a sub-cellar pipe tunnel. According to the 1950 maps, these buildings were heated by coal-generated steam and powered by electricity. Walton High School was built in 1930 and Public School No. 86 was built in 1929. The maps show the Armory south of Public School No. 86, having been completed between 1914 and 1950.

The structures around the pumping station changed significantly between 1914 and 1950. The only buildings remaining from the 1914 maps is the Jerome Pumping Station. To the west of the Jerome Pumping Station, the 1950 maps show several buildings built since 1914; these include an IRT Company inspection shed, and other facilities. The 1950 maps show Gate House No. 7 in its current location and indicate that it was built in 1939. The contractor's buildings shown near what was called Gate House No. 1 on the 1914 maps do not exist on the 1950 maps. At the corner of Goulden Avenue and Sedgwick Avenue, the 1950 maps show a switch house and a compressor house along with two other small structures. The 1950 maps show Gate House No. 5 opposite West 205th Street and indicate that it was built in 1938.

1978 Sanborn Maps. Between 1950 and 1978 the Sanborn maps show no change in the Reservoir, but a continued rise in the amount of residential development in the study area. Since 1950 there has been an increase in the number of large apartment buildings, churches, synagogues, libraries, nursing homes and schools. To the west, Junior High School No. 143 was built between Kingsbridge Terrace and 231st Street, and the Bronx High School of Science was built on 205th Street between Goulden and Paul Avenues. The two southern buildings of Hunter College had been turned into the Herbert H. Lehman College while supporting facilities for both colleges were constructed, including a library, administration building, cafeteria and more classrooms. Locker rooms and a garage were added to the north of the Armory.

The 1978 maps show the train yard west of the Jerome Pumping Station covered by an open-deck parking facility. However, the two small buildings northwest of the northern end of the pumping station, shown on the 1950 maps, do not exist on the 1978 maps. In approximately the same location, two high-rise apartment towers (Tracey Towers) are depicted. Another high-rise apartment building is shown southeast of the pumping station at the intersection of West 205th Street and Paul Avenue (formerly Navy Avenue). The maps show a filling station at the southwest intersection of Bedford Park Boulevard and Jerome Avenue, and to the south a New York Telephone Facility.

1989 Sanborn Maps. The 1989 Sanborn maps show a NYCDEP water treatment facility on the east bank of the Reservoir south of Gate House No. 5. The Sanborn maps show that additional classrooms were built for Public School No. 86 between 1978 and 1989, and that the Scott Towers were completed during that period as well. There were also significant additions made to the Herbert H. Lehman College, which now incorporates the old Hunter College buildings. The area south of West 205th Street and between Goulden and Paul Avenues had been turned into a baseball fields since the 1978 Sanborn maps were made.

Records Search. The records search focused on an area radiating one-quarter mile from the shaft site. The search was conducted to assess land-use history with respect to hazardous materials, and to ascertain the presence of, or potential for, contamination of the shaft site. The records search included direct contact with United States Environmental Protection Agency (USEPA), the New York State Department of Environmental Conservation (NYSDEC), and the Emergency Response Unit of the NYCDEP and computerized database searches.

Table 8.2-24 identifies the various hazardous materials release sites within one-quarter mile of Jerome Park Reservoir. Spill sites represent the most prevalent type of hazardous material sources that could potentially affect the environment and the Reservoir. Figure 8.2-21 depicts the locations of hazardous materials releases within one-quarter mile of the Reservoir.

Table 8.2-25 identifies the various types of environmentally regulated sites within one-quarter mile of Jerome Park Reservoir excluding hazardous materials release sites described above. These hazardous materials sites include registered bulk storage facilities (e.g., tanks), RCRA hazardous waste generators, and facilities that were formerly regulated under RCRA. These types of regulated sites are (or were) authorized to store hazardous materials or waste but may not have been involved in incidents, which resulted in the release of these materials. Figure 8.2-22 depicts the locations of hazardous materials regulated sites within one-quarter mile of the Reservoir.

The site/incident reports that were reviewed to identify the characteristics of each of the listed sites are provided in Appendix E. Each environmentally regulated site has a unique identification number (ID#), which corresponds to the site detail report search ID number in the Appendix. The non-geocoded (NON GC) sites represent sites that did not have complete addresses but were assumed to be within one-quarter mile of Jerome Park Reservoir.

The environmentally regulated sites summarized in Tables 8.2-24 and 8.2-25 were identified from a review of various regulatory database sources (i.e., RCRA, spills, tanks). In general, the results represent two types of sites: (1) Sites where hazardous materials releases are known or suspected to have been released occurred, and (2) sites where regulated hazardous materials or wastes were handled and could potentially have been released to the environment. The following summarizes the results by regulatory database source.

Sites Where Known or Suspected Releases to the Environment Have Occurred.

National Priority List (NPL). NPL is the USEPA's database of uncontrolled or abandoned hazardous waste sites that have been identified for probable remedial action under the Superfund Program. There are no NPL sites within a one-quarter mile of the Reservoir site.

Spill Incidents and Leaking Storage Tanks. The New York SPILLS database identifies incidents that have resulted in the release of hazardous materials. The database includes both tank test failures (i.e., tanks that failed tightness testing) and known tank failures (i.e., leaking tanks in the ground or tanks noted to be leaking upon removal). The list of tank test failures includes tanks that are located only below ground (underground storage tanks), whereas the list of tank failures includes both tanks that are either below or above ground. The database also lists spills that have occurred during the transportation of chemicals. The spill statistics identify incidents that occurred after 1990 and spills that occurred between 1980 and 1989.

Spill sites represent the most significant type of hazardous materials sources that could potentially affect the environment and Jerome Park Reservoir (see Table 8.2-26). Information pertaining to the most significant spill incidents (i.e., releases) in the vicinity of Jerome Park Reservoir is summarized in Table 8.2-26. In many instances, the reported releases occurred in basements, vaults, manholes, or other structures where complete or partial containment was available thereby minimizing the potential that contaminants migrated to the surrounding environment.

In general, the number and type of hazardous material releases that have occurred in proximity to Jerome Park Reservoir are not unusual given the high number of buildings containing tanks in this area. Reports of deliberate waste dumping (ID #45, 41, 17, 60) on or near the Reservoir are unusual. Based on information contained in the incident reports, it does not appear as if these events resulted in the release of hazardous materials to the environment and could thus potentially affect activities associated with the proposed action.

TABLE 8.2-24. HAZARDOUS MATERIALS RELEASES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
Spills Occurring in 1990 and After					
45	Jerome Reservoir	197th St & Reservoir	Bronx NY 10468	0.02 SW	9411769/Closed
39	East 205 St & Goulden St	East 205 St & Goulden St	Bronx NY 10468	0.03 SE	9410995/Closed
41	Goulden Ave E 205th St	Goulden Ave & E 205th St	Bronx NY 10468	0.03 SE	9708284/Closed
42	Herbert Lehman College	2900 Goulden Ave	Bronx NY 10468	0.03 SE	9704225/Active
53	Vault 0318	Gulden Ave/205th St	Bronx NY 10468	0.03 SE	9909879/Active
49	Manhole 29103	Sedgwick Ave/Saxon Ave	Bronx NY 10463	0.05 NW	0105690/Closed
46	Lehman College Cuny/Bx	Bedford Pk Blvd West	Bronx NY 10468	0.08 SE	9100022/Closed
22	2805 University Ave	In Front Of	Bronx NY 10468	0.12 SW	0000792/Closed
55		2755 Reservoir Avenue	Bronx NY 10463	0.15 SW	9713375/Closed
58		Hillman Ave/Van Courtlandt	Bronx NY 10463	0.16 NW	0100203/Closed
30	3971 Gouvernour Ave	3971 Gouvernour Ave	Bronx NY 10463	0.17 NW	9702031/Closed
51	Residence	3971 Gouvenour Ave	Bronx NY 10463	0.17 NW	9802811/Closed
56		Sendrick Ave/Van Cortland	Bronx NY 10463	0.17 NW	9809641/Active
33	50 Van Cortlandt Ave	50 Van Cortlandt Ave	Bronx NY 10463	0.18 NW	9212556/Active
27	2885 Jerome Ave	2885 Jerome Ave	Bronx NY 10468	0.18 SE	9303969/Closed
28	2885 Jerome Ave/Bx	2885 Jerome Ave	Bronx NY 10468	0.18 SE	9006798/Closed
29	3400 Paul Ave.	3400 Paul Ave.	Bronx NY 10468	0.18 SE	9208818/Closed
31	40 W Mosholu Pkwy/Bx	40 West Mosholu Parkway	Bronx NY 10467	0.18 SE	9005899/Active
32	40 West Mosholu Pkwy	40 West Mosholu Pkwy	Bronx NY 10467	0.18 SE	9207685/Closed

TABLE 8.2-24. HAZARDOUS MATERIALS RELEASES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
52	Tracy Towers	40 West Mosholu Pkwy S.	Bronx NY 10468	0.18 SE	9805355/Active
40	Episcopal Mission	2749 University Ave	Bronx NY 10468	0.18 SW	9804660/Closed
25	2835 Webb Ave	2835 Webb Ave	Bronx NY 10468	0.19 NW	9502954/Closed
21	2800 Jerome Ave	2800 Jerome Ave	Bronx NY 10468	0.19 SE	9111802/Closed
44	Jerome Gas N Go	2895 Jerome Ave	Bronx NY 10468	0.19 SE	9914054/Active
16	150 W. 197th St	150 W. 197th St	Bronx NY 10468	0.21 NW	9411639/Closed
54	Zachary Reality Assoc.	150 W 197th St	Bronx NY 10468	0.21 NW	9607486/Closed
34	75 W. Mosholu Pkwy.	75 W. Mosholu Pkwy.	Bronx NY 10467	0.22 NE	9211065/Active
26	2851 Webb Ave	2851 Webb Ave	Bronx NY 10468	0.22 NW	9711440/Active
24	2830 Sedgwick Ave	2830 Sedgwick Ave	Bronx NY 10463	0.23 NW	9213113/Closed
35	Apartment House	1 E. 198th St	Bronx NY 10468	0.23 SE	9709804/Active
50	Myrvete Mulosmanaj Apts	1 East 198th St	Bronx NY 10468	0.23 SE	9706558/Closed
17	2717 Reservoir Ave	2717 Reservoir Ave	Bronx NY 10468	0.23 SW	9504140/Closed
23	2819 Sedgewick Ave	2819 Sedgewick Ave	Bronx NY 10463	0.24 NW	9512433/Active
57		3320 Reservoir Oval	Bronx NY 10468	0.24 NW	0104745/Active
191	Fort Independence Ave+	Sedgwick Ave	Bronx NY 10463	0.24 NW	0107643/Active
18	2755 Morris Ave	2755 Morris Ave	Bronx NY 10468	0.24 SE	9509315/Closed
19	2775 Morris Ave	2775 Morris Ave	Bronx NY 10468	0.24 SE	9210680/Closed
37	Concourse Yard	Bedford Pk/Jerome & Paul	Bronx NY 10468	0.24 SE	9600881/Active
38	Concourse Yard	W 205 St/Jerome & Paul Av	Bronx NY 10468	0.24 SE	9514239/Active

TABLE 8.2-24. HAZARDOUS MATERIALS RELEASES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
48	Manhole 23622	West 195th St/Jerome Ave	Bronx NY 10468	0.24 SE	9900237/Closed
186	Concourse Yard	Concourse & Jerome Ave	Bronx NY	0.24 SE	9912396/Closed
20	2792 Morris Ave	2792 Morris Ave	Bronx NY 10468	0.25 SE	9512457/Active
36	Apt House	20-40 W Mosholu Pkwy	Bronx NY 10468	0.25 SE	9805344/Active
43	Jerome Ave/Van Cortland	Jerome Ave/Van Cortland	Bronx NY 10468	0.25 SE	9510224/Closed
47	Manhole 23489	Ifo 2784 Morris Ave	Bronx NY 10468	0.25 SE	9809711/Active
180	1227 Pinton Ave	1227 Pinton Ave	Bronx NY	NON GC	9515857/Closed
181	1926 Chiefflin Ave	1926 Chiefflin Ave	Bronx NY 10468	NON GC	9212273/Active
182	2417 Baltic Avenue	2417 Baltic Avenue	Bronx NY	NON GC	9502949/Closed
183	3520 Adlevall Ave	3520 Adlevall Ave	Bronx NY	NON GC	9210522/Closed
184	710 Pinton Ave	710 Pinton Ave	Bronx NY	NON GC	9814333/Closed
185	Bayside Fuel	1975 Frederick Ave	Bronx NY	NON GC	9711348/Closed
187	Jim Curry	630 Main Avenue	Bronx NY	NON GC	9300161/Closed
188	Manhole 23021	Paul Ave	Bronx NY 10468	NON GC	9903212/Closed
189	Service Box 16884	West Side Of Jerome Ave	Bronx NY 10468	NON GC	9903032/Closed
190		3243 Chall Ave	Bronx NY 10463	NON GC	9811600/Closed
192	Van Cortland Park/Pkwy So	Van Cortland Park/Pkwy So	Bronx NY 10463	NON GC	9307941/Closed
Spills Occurring 1980 Through 1990					
66	NYC Reservoir-Jerome Pk	Mosholu Pkwy-3050 Goulden	Bronx NY 10468	0.03 SE	8907664/Closed
64	Herbert Lehman College/Bx	Bedford Park Blvd West	NY NY 10468	0.08 SE	8802821/Closed
65	Lehman College	Bedford Pk Blvd W	Bronx NY 10468	0.08 SE	8802453/Closed
61	2885 Jerome Avenue / N.Y.	2885 Jerome Ave	NY NY 10468	0.18 SE	8607920/Closed
62	2947 Jerome Ave/Bx/Sunoco	2947 Jerome Ave	NY NY 10468	0.19 SE	8905658/Active
63	5 East 196th	5 East 196th St	Bronx NY	0.21 SE	8800347/Closed

TABLE 8.2-24. HAZARDOUS MATERIALS RELEASES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
	St/Bronx		10468		
59	125 West 195th St/Bx	125 West 195th Street	Bronx NY 10468	0.21 SW	8905711/Closed
60	20 Mosholu Parkway S.	20 Mosholu Parkway S.	Bronx NY 10468	0.25 SE	8704186/Closed
Emergency Response Notification System (ERNS) Sites					
15	Beneson Funding Incorp.	2851 Webb Ave.	Bronx NY 10468	0.22 NW	564192/Pipeline

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
Underground and Aboveground Storage Tanks					
141	Jerome Park Reservoir	205 Street/Goulden Ave	Bronx NY 10468	0.03 SE	CBS2-000259/Active Facility
122	88 W 197 St	88 West 197th St	Bronx NY 10468	0.06 SW	PBS2-259683/Active PBS Facility
121	85 Strong St	85 Strong St	Bronx NY 10468	0.07 SW	PBS2-160474/Active PBS Facility
155	S Y Realty Co	2824 University Ave	Bronx NY 10468	0.08 NW	PBS2-362964/Active PBS Facility
144	Lehman College - CUNY	250 Bedford Park Boulevard West	Bronx NY 10468	0.08 SE	PBS2-477842/Active PBS Facility
120	80 Strong Street	80 Strong Street	Bronx NY 10468	0.08 SW	PBS2-129798/Active PBS Facility
128	Bronx High School Of Science - X445	75 West 205th Street	Bronx NY 10468	0.09 SE	PBS2-352624/Active PBS Facility
156	Sabosa Realty Co. Llc	2800 University Avenue	Bronx NY 10468	0.09 SW	PBS2-206814/Active PBS Facility
111	2855 University Ave	2855 University Ave	Bronx NY 10468	0.10 NW	PBS2-601288/Active PBS Facility
112	2865 University Ave	2865 University Ave	Bronx NY 10468	0.10 NW	PBS2-338192/Active PBS Facility
93	2780 University	2780 University	Bronx NY	0.11 SW	PBS2-374261/Active

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
	Assoc	Ave	10468		PBS Facility
71	134 E Mosholu Parkway	134 W Mosholu Parkway S	Bronx NY 10463	0.12 NE	PBS2-406163/Admin Closed
67	115-117 West 197th St	115-117 West 197 St	Bronx NY 10468	0.12 NW	PBS2-206253/Active PBS Facility
68	116 W 197th St	116 West 197th St	Bronx NY 10468	0.12 NW	PBS2-159816/Active PBS Facility
152	Public School 95	3961 Hillman Ave.	Bronx NY 10463	0.12 NW	PBS2-604203/Active PBS Facility
164	X-440 DeWitt Clinton HS	W Mosholu Pkwy South / Paul Ave	Bronx NY 10467	0.12 SE	PBS2-352616/Active PBS Facility
98	2805 University Ave	2805 University Ave	Bronx NY 10468	0.12 SW	PBS2-373850/Active PBS Facility
107	2850 Claflin Ave	2850 Claflin Ave	Bronx NY 10468	0.13 NW	PBS2-153508/Active PBS Facility
89	2766 University Ave.	2764-66 University Ave	Bronx NY 10468	0.13 SW	PBS2-241687/Active PBS Facility
96	2791 University Realty	2791 University Ave	Bronx NY 10468	0.13 SW	PBS2-062618/Active PBS Facility
157	Saint Patricks Home	66 Van Cortlandt Park S.	Bronx NY 10463	0.14 NE	PBS2-239518/Active PBS Facility
103	2825 Claflin Ave	2825 Claflin Ave	Bronx NY 10468	0.14 NW	PBS2-094595/Active PBS Facility
110	2855 Claflin Ave	2855 Claflin Ave	Bronx NY 10468	0.14 NW	PBS2-404217/Active PBS Facility
94	2785 Univ Corp	2785 University Ave	Bronx NY 10468	0.14 SW	PBS2-270695/Active PBS Facility
159	Senargis Properties	2807-09 Claflin Ave	Bronx NY 10468	0.14 SW	PBS2-159808/Active PBS Facility
87	2761 University Ave	2761 University Ave	Bronx NY 10468	0.15 SW	PBS2-159492/Active PBS Facility
90	2769 University Ave	2769 University Ave	Bronx NY 10468	0.15 SW	PBS2-201774/Active PBS Facility
125	Apartment Bld	2755 Reservoir Ave	Bronx NY 10468	0.15 SW	PBS2-304271/Active PBS Facility
83	2751 University Ave	2751 University Ave	Bronx NY 10468	0.16 SW	PBS2-096563/Active PBS Facility
132	Diplomacy Realty Assoc	95 West 195th St	Bronx NY 10468	0.16 SW	PBS2-277118/Active PBS Facility

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
117	3951 Gouvernour Ave	3951 Gouvernour Ave	Bronx NY 10463	0.17 NW	PBS2-210625/Active PBS Facility
118	Apt House	3971 Gouvernour Ave	Bronx NY 10463	0.17 NW	PBS2-291285/Active PBS Facility
86	2757 Claflin Ave	2757 Claflin Avenue	Bronx NY 10468	0.17 SW	PBS2-335444/Active PBS Facility
147	Nikgjonaj Realty Corp.	2754 Claflin Avenue	Bronx NY 10468	0.17 SW	PBS2-603894/Active PBS Facility
108	2850 Webb Ave Corp	2850 Webb Avenue	Bronx NY 10468	0.18 NW	PBS2-604330/Active PBS Facility
124	A.H. Consumers Society	50 Van Cortlandt Ave W	Bronx NY 10463	0.18 NW	PBS2-268224/Active PBS Facility
127	Bell Atlantic	2885 Jerome Avenue	Bronx NY 10468	0.18 SE	PBS2-343595/Active PBS Facility
158	Scott Tower Housing	3400 Paul Ave	Bronx NY 10468	0.18 SE	PBS2-199109/Active PBS Facility
161	Tracey Towers Assoc	40 W Mosholu Pkwy So	Bronx NY 10467	0.18 SE	PBS2-269042/Active PBS Facility
104	2825 Webb Ave	2825 Webb Ave	Bronx NY 10468	0.19 NW	PBS2-061506/Active PBS Facility
131	Denn Owners Corp	2835 Webb Ave	Bronx NY 10468	0.19 NW	PBS2-329614/Active PBS Facility
149	Our Lady of Angels Convent	2859 Webb Ave	Bronx NY 10468	0.19 NW	PBS2-606645/Active PBS Facility
163	Webb Ave Associates	2847 Webb Ave	Bronx NY 10468	0.19 NW	PBS2-404225/Active PBS Facility
140	Jerome Minerva Gas/Go	2895 Jerome Ave	Bronx NY 10468	0.19 SE	PBS2-603000/Active PBS Facility
160	Sunset Jerome Oil Corp.	2947 Jerome Ave	Bronx NY 10468	0.19 SE	PBS2-099511/Active PBS Facility
82	2745 Reservoir Ave	2745 Reservoir Ave	Bronx NY 10468	0.19 SW	PBS2-277967/Active PBS Facility
133	Dran Vataj	2856 Webb Ave	Bronx NY 10468	0.20 NW	PBS2-602086/Active PBS Facility
92	2776 Jerome Ave	2776 Jerome Ave	Bronx NY 10468	0.20 SE	PBS2-287644/Active PBS Facility
95	2786 Jerome Ave	2786 Jerome Ave	Bronx NY 10468	0.20 SE	PBS2-601590/Active PBS Facility
100	2816 Jerome Ave	2816 Jerome Ave	Bronx NY 10468	0.20 SE	PBS2-362867/Active PBS Facility

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
79	2735 University Ave	2735 University Ave	Bronx NY 10468	0.20 SW	PBS2-278157/Active PBS Facility
73	150 W 197th St Bronx	150 West 197th St	Bronx NY 10468	0.21 NW	PBS2-114154/Active PBS Facility
123	91 Van Cortlandt Ave	91 Van Cortlandt Ave W	Bronx NY 10463	0.21 NW	PBS2-253189/Active PBS Facility
75	26 Realty Co	2760 Jerome Ave	Bronx NY 10468	0.21 SE	PBS2-295868/Active PBS Facility
77	2727 Realty Co	2727 University Ave	Bronx NY 10468	0.21 SW	PBS2-279684/Active PBS Facility
134	Fuel Oil Storage Tank	125 West 195th St	Bronx NY 10468	0.21 SW	PBS2-205095/Active PBS Facility
162	Walton High School	2780 Reservoir	Bronx NY 10468	0.21 SW	PBS2-603976/Active PBS Facility
126	Apartment House	55 West Mosholu Parkway N	Bronx NY 10467	0.22 NE	PBS2-294578/Active PBS Facility
136	Hunter Hall, Llc	75 West Mosholu Pkwy	Bronx NY 10467	0.22 NE	PBS2-602890/Active PBS Facility
74	165 West 197th St	165 West 197th St	Bronx NY 10463	0.22 NW	PBS2-339318/Active PBS Facility
109	2851 Webb Ave	2851/53 Webb Ave	Bronx NY 10468	0.22 NW	PBS2-153486/Active PBS Facility
130	Coco Realty Corporation	2849 Webb Ave	Bronx NY 10468	0.22 NW	PBS2-333905/Active PBS Facility
143	Jorif Associates	51 West Mosholu Parkway N	Bronx NY 10467	0.22 SE	PBS2-239666/Active PBS Facility
70	130 West 195 St	130 West 195 St	Bronx NY 10468	0.22 SW	PBS2-159433/Active PBS Facility
78	2734 Claflin Llc	2734 Claflin Ave	Bronx NY 10468	0.22 SW	PBS2-265160/Active PBS Facility
106	2840 Sedgwick Ave	2840 Sedgwick Ave	Bronx NY 10463	0.23 NW	PBS2-365270/Active PBS Facility
135	Halpern & Pintel Inc.	2830 Sedgwick Ave	Bronx NY 10463	0.23 NW	PBS2-602659/Active PBS Facility
69	12 East 196th St	12 East 196th St	Bronx NY 10468	0.23 SE	PBS2-216836/Active PBS Facility
72	15 E 196 Realty, L.L.C.	15 E 196th St	Bronx NY 10468	0.23 SE	PBS2-191957/Active PBS Facility
101	2819 Morris Ave	2819 Morris Ave	Bronx NY 10468	0.23 SE	PBS2-457485/Active PBS Facility

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

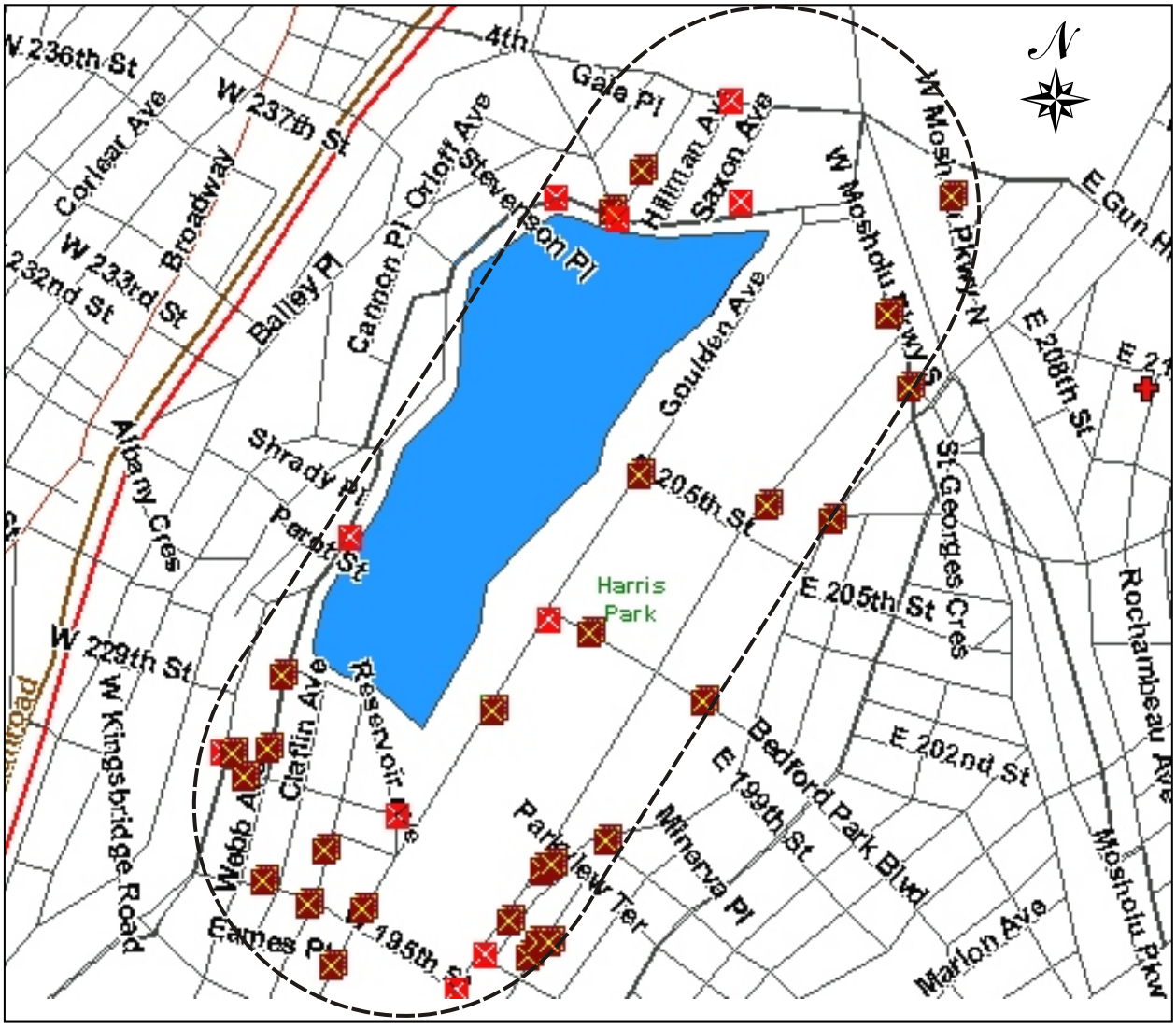
ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
145	Myruete Mulosmanai	1 East 198 St	Bronx NY 10468	0.23 SE	PBS2-098116/Active PBS Facility
97	2800 Sedgwick Ave	2800 Sedgwick Ave	Bronx NY 10468	0.23 SW	PBS2-192570/Active PBS Facility
150	Power Test/Getty 00265	2717 Reservoir Ave	Bronx NY 10468	0.23 SW	PBS2-153028/Admin Closed
105	2829 Sedgwick Ave	2829 Sedgwick Ave	Bronx NY 10463	0.24 NW	PBS2-274267/Active PBS Facility
85	2755 Inc.	2755 Morris Ave	Bronx NY 10468	0.24 SE	PBS2-602197/Active PBS Facility
91	2775 Morris Ave	2775 Morris Ave	Bronx NY 10468	0.24 SE	PBS2-159751/Active PBS Facility
99	2810 Morris Ave. Corp.	2810 Morris Ave.	Bronx NY 10468	0.24 SE	PBS2-605896/Active PBS Facility
102	2820-24 Morris Ave	2820-24 Morris Ave	Bronx NY 10468	0.24 SE	PBS2-160725/Active PBS Facility
129	Bujar Realty Corp	2830 Morris Ave	Ny Ny 10468	0.24 SE	PBS2-098108/Active PBS Facility
138	J.M.V. Realty	2767 Morris Ave	Bronx NY 10468	0.24 SE	PBS2-331414/Active PBS Facility
139	Jak Milicaj Gates Place Realty	3405 Gates Pl	Bronx NY 10467	0.24 SE	PBS2-360325/Active PBS Facility
146	Neiler Associates Llc	2771 Morris Ave	Bronx NY 10468	0.24 SE	PBS2-154032/Active PBS Facility
153	Refika Realty Co.	4 East 198th Street	Bronx NY 10468	0.24 SE	PBS2-316423/Active PBS Facility
76	2715 Claflin Avenue	2715 Claflin Ave	Bronx NY 10468	0.24 SW	PBS2-364754/Active PBS Facility
116	3425 Gates Associates	3425 Gates Place	Bronx NY 10467	0.25 NE	PBS2-603579/Active PBS Facility
119	66 West Gun Hill Road	66 West Gun Hill Road	Bronx NY 10467	0.25 NE	PBS2-481629/Active PBS Facility
113	3065 Sedgwick Owners	3065 Sedgwick Ave	Bronx NY 10468	0.25 NW	PBS2-240338/Active PBS Facility
114	3115 Sedgwick Corp	3115 Sedgwick Ave	Bronx NY 10463	0.25 NW	PBS2-111171/Active PBS Facility
115	3363 Sedgwick Owners	3363 Sedgwick Ave	Bronx NY 10463	0.25 NW	PBS2-210617/Active PBS Facility
148	Our Lady of Angels Church	2860 Sedgwick Avenue	Bronx NY 10463	0.25 NW	PBS2-606642/Active PBS Facility

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
84	2751-55 Morris Ave	2751-55 Morris Ave	Bronx NY 10468	0.25 SE	PBS2-509833/Active PBS Facility
142	Jerome Yard	Jerome Ave / Cortlandt Ave	Bronx NY 10468	0.25 SE	PBS2-190217/Active PBS Facility
154	Roban Mgmt	2784 Morris Ave	Bronx NY 10468	0.25 SE	PBS2-256846/Active PBS Facility
80	2737 Webb Ave	2737-9 Webb Ave	Bronx NY 10468	0.25 SW	PBS2-255467/Admin Closed
81	2737-39 Webb Ave	2737-39 Webb Ave	Bronx NY 10468	0.25 SW	PBS2-603083/Active PBS Facility
88	2766 Sedgewick Ave	2766 Sedgwick Ave	Bronx NY 10468	0.25 SW	PBS2-509957/Active PBS Facility
137	Imperio Realty	2785 Sedgwick Ave	Bronx NY 10468	0.25 SW	PBS2-320005/Active PBS Facility
151	Public School 86	2756 Reservoir Ave	Bronx NY 10468	0.25 SW	PBS2-606260/Active PBS Facility
RCRA Permitted Facilities (Generators)					
4	NYCDEP - Jerome Park	3055 Goulden Ave	Bronx NY 10468	0.02 SE	NYR000057273/VGN
7	NYCDEP Jerome Park Reservoir	205th St & Goulden Ave	Bronx NY 10468	0.03 SE	NYR000105171/LGN
5	NYCDEP - Shaft 3	Sedgwick & Goulden Aves	Bronx NY 10468	0.04 NE	NYR000092247/VGN
6	NYCDEP - Shaft 4	Goulden Ave & Strong St	Bronx NY 10468	0.07 SW	NYR000092270/VGN
2	Lehman College Chem	250 Bedford Park Blvd W	Bronx NY 10468	0.08 SE	NY0000113134/LGN
3	Public School 95	3961 Hillman Ave	Bronx NY 10463	0.12 NW	NYR000010652/VGN
177	NYCDEP - Shaft 4b	Bedford Park Blvd &	Bronx NY 10468	0.15 SE	NYR000092296/VGN
1	Hue Pham Cleaners	56 Van Cortlandt Ave W	Bronx NY 10463	0.18 NW	NYD981877954/VGN
178	NYCDOT Bin 2241940	W 205th St Bridge	Bronx NY 10468	0.22 SE	NYR000052431/SGN
179	NYCDEP - Shaft 2	Van Cortland Park S	Bronx NY 10471	0.24 NE	NYR000092239/VGN

TABLE 8.2-25. REGULATED HAZARDOUS MATERIALS SITES WITHIN 1/4 MILE OF THE JEROME PARK RESERVOIR (GATE HOUSE NOS. 5, 6, 7)

ID #	Site	Address		Distance (miles)	Regulatory ID/ Status
8	NYCDOT Bridge Bin 224193	Bedford Park Blvd Between	Bronx NY 10468	0.24 SE	NYR000019331/TR
Former RCRA Permitted Facilities (No Longer Regulated)					
12	Bronx HS of Science	75 W 205th St	Bronx NY 10468	0.09 SE	NY0000380006/NLR
9	Dewitt Clinton HS	100 W Mosholu Pkwy S	Bronx NY 10468	0.12 SE	NYD982727257/NLR
11	Walton High School	196th St & Reservoir Ave	Bronx NY 10468	0.12 SE	NYD986882561/NLR
10	New York Telephone Co	2885 Jerome Ave	Bronx NY 10468	0.18 SE	NYD987030566/NLR
14	Sunoco Service Station	2895 Jerome Ave/199 St	Bronx NY 10468	0.19 SE	NYD000707232/NLR
13	NYCTA Jerome Ave Yard	Jerome Ave & Van Cortlandt Ave.	Bronx NY 10468	0.25 SE	NYD980648679/NLR



Not To Scale

Legend

- Single Site
- Multiple Sites
- 1/4 Mile Radius Study Area

Note: Does not include 11 releases which were not geo-coded because of incomplete address

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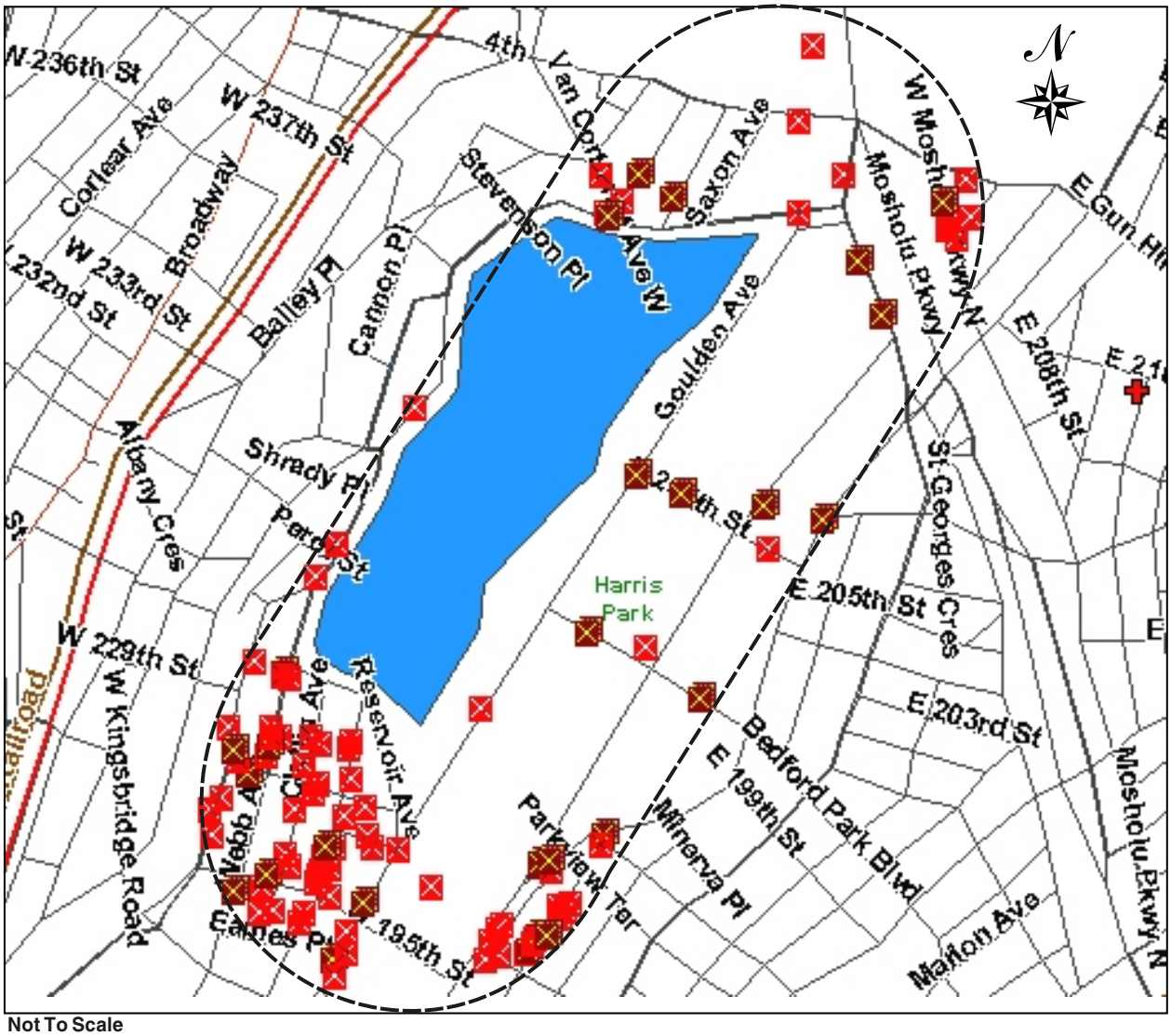
Approximate Locations of All Reported Hazardous Materials Releases Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-21



Not To Scale

Legend

- Single Site
- Multiple Sites
- 1/4 Mile Radius Study Area

Note: There were no non-geocoded regulated sites within 1/4 mile of Jerome Park Reservoir

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Regulated Hazardous Materials Sites
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-22

TABLE 8.2-26. SIGNIFICANT SPILL INCIDENTS IN THE VICINITY OF GATE HOUSE NO. 5

Site ID#	Site Name	Distance/ Direction	Material Spilled	Cause of Spill	Comments
45	Jerome Park Reservoir	--	Waste Oil	Deliberate	5 – 5 gal drums abandoned on the bank of the Reservoir; unknown if any waste was released (1994)
41	Goulden Ave & E 205th Street	0.03 E	Unknown	Deliberate	Glass jars containing unknown material abandoned (1997)
42, 173, 64	Herbert Lehman College	0.03 E	Diesel; fuel Oil	Tank Overfill	Soil contamination under investigation (1997); spill (1988)
46, 176	Herbert Lehman College	0.03 E	Fuel Oil	Tank Failure	Fuel line leaked; contaminated soil removed (1991)
65	Herbert Lehman College	0.03 E	Unknown (ether?)	Deliberate	83 abandoned containers removed and detonated for disposal (1988)
55	2755 Reservoir Ave	0.15 SW	Fuel Oil	Tank Overfill	200 gals spilled onto sidewalk; cleaned-up (2002)
28, 167	NY Telephone 2885 Jerome Ave	0.18 SE	Gasoline	Tank Failure	4-550 gals closed tanks filled with water; tanks pumped out and removed
29	Scott Tower Housing 3400 Paul Ave	0.18 SE	Fuel Oil	Tank Failure	Tank cracked; closed in place (1992)
52	Tracy Towers 40 West Mosholu Pkwy	0.18 E	Fuel Oil	Unknown	300 gals (est.) fuel oil found in roadway and cleaned-up (1998)
21,	2800 Jerome Ave	0.19 SE	Fuel Oil	Tank Overfill	50 gals (est.)

TABLE 8.2-26. SIGNIFICANT SPILL INCIDENTS IN THE VICINITY OF GATE HOUSE NO. 5

Site ID#	Site Name	Distance/ Direction	Material Spilled	Cause of Spill	Comments
165					spilled on the land (1992)
44, 175	Jerome Gas n Go 2895 Jerome Ave	0.19 SE	Gasoline	Tank Failure	Tanks removed; soil contamination found (2000)
26	2851 Webb Ave	0.22 NW	Fuel Oil	Equipment Failure	Oil return line leaked; repaired (1998)
17	Armory Auto Parts 2717 Reservoir Ave	0.23 SW	Waste Oil	Deliberate	Discharge to sewer; no facilities to store waste oil (1995)
23	2819 Sedgwick Ave	0.24 NW	Fuel Oil	Unknown	Oil seeping through walls and into manhole (1996)
37, 38, 186	Concourse Yard (NYCTA) Bedford Park/ Jerome & Paul Ave	0.24 E	Unknown	Unknown	Soil tested and found to contain semi-volatile organic compounds (1996); fuel oil spill due to a fire (2000)
60	20 Mosholu Pkwy South	0.25 E	Unknown	Deliberate	Liquid released and flowed to storm drain (1987)

Resource Conservation and Recovery Act (RCRA) Corrective Action Sites. This is part of the USEPA's Resource Conservation and Recovery Information System (RCRIS) system that tracks specific RCRA events, which have occurred at a facility (e.g., facility assessment, stabilization), as well as corrective action program priority (high/medium/low). There are no RCRA Corrective Action sites within a one-quarter mile radius of Jerome Park Reservoir site.

NYSDEC Inactive Hazardous Waste Disposal Sites. NYSDEC's list of hazardous waste sites that have had known environmental releases. There are no NYSDEC Inactive Waste Disposal sites within a one-quarter mile radius of Jerome Park Reservoir site.

Emergency Response Notification System Sites (ERNS). The USEPA'S spills database showing all USEPA response action to emergency spill incidents. The ERNS sites are presented by impacted media (i.e., land, water, air). There is one ERNS site within a one-quarter mile radius of Jerome Park Reservoir site. See Table 8.2-24.

Toxic Release Inventory Sites (TRIS). The Toxics Release Inventory was established for Emergency Planning and Community Right-to Know Act, Section 313 submissions. TRIS contains information reported by a variety of industries on their annual estimated releases of certain chemicals to the environment. Data include the maximum amount stored on site; the estimated quantity emitted into the air, discharged into bodies of water, injected underground, or released onto land; methods used in waste treatment and their efficiency; and the transfer of chemicals off-site. There are no TRIS sites within a one-quarter mile radius of Jerome Park Reservoir site.

Accidental and Permitted Release Sites. The NYSDEC database of State Pollutant Discharge Elimination System (i.e., SPDES) permits maintained by the Division of Water. There are no accidental or permitted (i.e., NPDES) release sites within a one-quarter mile radius of Jerome Park Reservoir site.

Sites Where Hazardous Materials or Wastes Have Been Used or Stored.

RCRA Regulated Sites. The USEPA's list of all registered hazardous waste generators. They are classified as TSD (treatment, storage, disposal), LGN (large quantity), SGN (small quantity), VGN (very small quantity), and NLR (no longer regulated) generator facilities. Compliance Monitoring and Enforcement List (CMEL) and RCRA Administrative Action Tracking System (RAATS) information are also included. There are 17 RCRA current and formerly regulated sites within a one-quarter mile radius of The Jerome Park Reservoir. See Table 8.2-24. Two of the 11 RCRA generators (ID #4 and #7) are located on Jerome Park Reservoir property and there is no indication that these or any of the other generators released hazardous substances to the environment.

Regulated Underground and Aboveground Storage Tanks. NYSDEC's list of registered underground and aboveground bulk (i.e., >1,100 gallons) storage tanks includes petroleum and chemical bulk storage tanks but excludes unregistered fuel oil tanks used in residential applications (<1,100 gallons). There are 98 facilities, which have registered tanks within a one-quarter mile radius of Jerome Park Reservoir site. See Table 8.2-24.

As previous indicated, the large number of registered underground and aboveground tanks is not unusual in this area considering the number of structures within a one- quarter mile of the Reservoir.

NYSDEC Inactive Hazardous Waste Disposal Sites. NYSDEC's list of hazardous waste sites that have had known environmental releases. There are no NYSDEC Inactive Waste Disposal sites within a one-quarter mile radius of Jerome Park Reservoir site.

Solid Waste Landfills. This database includes a listing of landfills, incinerators, transfer stations, recycling centers, and other sites that manage solid waste. There are no solid waste management facility sites within a one-quarter mile radius of Jerome Park Reservoir site.

USEPA's FINDS Database Sites. The USEPA's database of all programs (e.g., air, water, hazardous waste) and identification numbers for a given facility. The FINDS database includes listing for:

- National Compliance Data Base System (NCDB)
- Resource Conservation and Recovery Information System (RCRIS)
- AIRS (Aerometric Information Retrieval System) Facility Subsystem (AFS/AIRS)
- Federal Facility Information System (FFIS)
- Enforcement Docket System (ENF Docket)

There are no FINDS listed sites within a one-quarter mile radius of Jerome Park Reservoir site.

Nuclear Permitted Sites. Facilities that are permitted to handle radioactive materials. There are no nuclear permitted sites within a one-quarter mile radius of Jerome Park Reservoir site.

On-Site Reconnaissance. Visual field inspections of potentially significant hazardous materials sites and the Reservoir were performed to verify and update information derived from a NYCDEP database, the historical map review, and the listings of environmentally regulated sites near the Reservoir. Field inspection activities can be beneficial when they confirm the general conclusion from the regulatory database search. The inspections confirmed that several highly developed areas in proximity to the Reservoir extensively use or store hazardous materials or may have been impacted by various spill events. The Reservoir covers the majority of Jerome Park Reservoir property. Historically, it has been used as a public drinking water distribution Reservoir. No hazardous materials were encountered on the Reservoir property.

Environmental Quality. The following describes the quality of soils and groundwater in proximity to Jerome Park Reservoir. In general, soils above the water table (i.e., unsaturated or vadose zone) and surrounding the Reservoir are not anticipated to be significantly contaminated by hazardous materials from industrial sources but may have been impacted urban fill materials and hazardous materials from nearby sources. Activities performed at the Reservoir have been under NYCDEP control for years and have involved the use of water treatment chemicals (i.e., gaseous chlorine) and small quantities of petroleum-related materials. Therefore, it is unlikely that vadose zone soils at the Reservoir would be contaminated from on-site sources.

Groundwater flow may accelerate the migration of hazardous materials from up-gradient off-site sources and potentially cause contaminants to be transported toward the shaft site. If contaminants have been transported in this manner and the soils below the water table or the groundwater have been disturbed, the subsurface contaminated media would be appropriately managed.

Soil. Construction activities associated with the proposed action in proximity to Jerome Park Reservoir would primarily involve subsurface work (e.g., tunneling) or work in existing structures, Gate House No. 5. An environmental assessment investigation was performed in the vicinity of various other structures including Gate House Nos. 5, 6, 2, 3, 7 and Jerome Avenue Pump Station at the Reservoir site in 1995[56]. For a map showing sampling locations refer to Appendix E. A summary of the soil testing results derived from the 1995 assessment is presented in Table 8.2-27. In general, the 1995 assessment focused on soil testing in areas of known or suspected hazardous material releases (e.g., leaks from underground tanks). Although localized, soil contaminants were detected in all the areas tested. Volatile organic contaminants (e.g., benzene, toluene) are likely to have originated from the release of gasoline while semi-volatile organic compounds (e.g., anthracene, naphthalene, chrysene, benzo(a)pyrene) may have originated from fuel oil, diesel fuel, or various petroleum hydrocarbon residues (e.g., coal tar, creosote).

TABLE 8.2-27. SUMMARY OF SOIL TESTING RESULTS AT THE JEROME PARK RESERVOIR SITE (1995)

	Soil Piles Between Gate Houses 2 and 3		Soil Around UST at Gate House No. 5		Soil Around UST at Gate House No. 6		Soil Between Gate Houses Nos. 5 and 7		Around USTs at Jerome Pump Station	
Parameter	**Freq**	**Max Conc**	**Freq**	**Max Conc**	**Freq**	**Max Conc**	**Freq**	**Max Conc**	**Freq**	**Max Conc**
RCRA Metals (mg/Kg)										
Arsenic	3/3	4.8								
Barium	3/3	128								
Chromium	3/3	28.1								
Lead	3/3	68.6								
Mercury	3/3	0.41								
Selenium	2/3	2.1								
Volatile Organics (mg/Kg)										
1,1,1-Trichloroethane	3/3	0.023					6/6	0.15		
Benzene									2/6	13
Toluene									2/6	200
Ethylbenzene									2/6	100
Xylenes (total)									2/6	510
Styrene									1/6	5.3
Isopropylbenzene									2/6	10
n-Propylbenzene									2/6	48
1,3,5-Trimethylbenzene									3/6	68
4-Chlorotoluene									1/6	0.33
1,2,4-Trimethylbenzene									3/6	260
sec-Butylbenzene									2/6	7.2
4-Isopropyltoluene									2/6	1.9
n-Butylbenzene									3/6	40
1,2-Dichlorobenzene										
Naphthalene			3/3	0.014						

[56] New York City Department of Environmental Protection. 1995. Phase II – Environmental Assessment, The Croton Water Plant at Jerome Park Reservoir, Borough of the Bronx, City of New York.

TABLE 8.2-27. SUMMARY OF SOIL TESTING RESULTS AT THE JEROME PARK RESERVOIR SITE (1995)

Parameter	Soil Piles Between Gate Houses 2 and 3		Soil Around UST at Gate House No. 5		Soil Around UST at Gate House No. 6		Soil Between Gate Houses Nos. 5 and 7		Around USTs at Jerome Pump Station	
	Freq	Max Conc	Freq	Max Conc	Freq	Max Conc	Freq	Max Conc	Freq	Max Conc
Semi-Volatile Organics (mg/Kg)										
Acenapthene					1/2	0.048 J	2/6	0.45	2/12	6.5
Acenaphthylene					2/2	0.33	3/6	0.086 J		
Anthracene	1/3	0.056 J			2/2	0.78 J	5/6	1.6	2/12	4.3
Benzo(a)anthracene	3/3	0.3 J			2/2	2.7	6/6	2.3	2/12	0.072J
Benzo(b)fluoranthene	3/3	0.24 J			2/2	2.2	6/6	2.1		
Benzo(k)fluoranthene	3/3	0.24 J			2/2	1.9	6/6	1.6		
Benzo(a)pyrene	3/3	0.29 J			2/2	2.2	6/6	1.5		
Benzo (g,h,i) perylene	3/3	0.16 J			2/2	1.3 J	6/6	0.22 J		
Butyl Benzyl Phthalate							4/6	0.083 J		
bis(2-Ethylhexyl) phthalate							6/6	0.23 J		
Chrysene	3/3	0.3 J			2/2	2.7	6/6	2.2	2/12	0.15 J
Fluoranthene	3/3	0.48			2/2	5.6	6/6	6.4	2/12	0.34 J
Fluorene					2/2	0.39 J	2/6	0.51	2/12	1.9
Indeno (1,2,3-cd) Pyrene	3/3	0.15 J			2/2	1.3 J	6/6	0.25 J		
Naphthalene							2/6	0.042 J	3/6	36
2-Methyl Naphthalene							1/6	0.14 J	2/12	13
Phenanthrene	3/3	0.14 J			2/2	3.1	6/6	3.4	3/12	4.4
Pyrene	3/3	0.42			2/2	4.2	6/6	3.4	2/12	0.58

Notes: J = estimated concentration

A supplemental environmental assessment investigation was performed in August 2003 focusing on the area near Gate House No. 5 and the top of the reservoir wall between Gate House Nos. 5 and 7. Thirteen soil samples were collected from borings located near Gate House No. 5. Soil cores extending from the surface to depths of approximately 8 ft. were obtained using direct push (i.e., Geoprobe) equipment. The entire length of each core was subsampled and composited to prepare each sample for laboratory analysis. The soil cores and composite samples were initially screened to identify total volatile organic compounds, and samples from all 13 locations (i.e., B-18 through B-30) were analyzed for metals. Based on the screening results, metals analyses, and field observations, five samples (i.e., B-19, B-20, B-22, B-23, and B-30) were selected for comprehensive organic characterization including volatile and semi-volatile organics, pesticides, PCBs, and diesel range and gasoline range total petroleum hydrocarbons (TPH). Summaries of the metals and the organic constituent data for soil in the vicinity of Gate House No. 5 are presented in Tables 8.2-27a, and 8.2-27b, respectively.

TABLE 8.2-27A. SUMMARY OF METALS DATA FOR SOIL IN THE VICINITY OF GATE HOUSE NO. 5 (2003)

Sample	B-18	B-19*	B-20*	B-21	B-22*	B-23*	B-24	TAGM #4046
Target Analyte List Metals (mg/Kg)								
Aluminum	8510	12900	11500	12200	2400	4100	9880	SB
Antimony	<0.22	<0.21	<0.22	<0.22	2.2	15.9	<0.22	SB
Arsenic	4.6	2.6	6.0	1.3	**44.2**	**60.4**	1.9	7.5 or SB
Barium	166	141	170	120	**336**	**439**	54.7	300 or SB
Beryllium	**0.38**	**0.23**	**0.32**	**0.23**	**0.45**	**1.1**	**0.30**	0.16 or SB
Cadmium	<0.13	<0.13	<0.13	<0.13	0.62	2.1	<0.13	1 or SB
Calcium	3660	4160	2480	1960	8080	14400	1610	SB
Chromium	**22.0**	**65.9**	**43.2**	**56.5**	9.4	**12.6**	**21.9**	10 or SB
Cobalt	7.8	13.0	10.3	11.2	3.4	4.4	8.4	30 or SB
Copper	**30.3**	**34.2**	**24.6**	**26.2**	**346**	**210**	15.9	25 or SB
Iron	**14300**	**25900**	**22000**	**19800**	**6540**	**11200**	**14800**	2000 or SB
Lead	104	49.5	95.2	7.5	183	508	5.6	SB
Magnesium	4810	8350	5840	7830	1490	456	4460	SB
Manganese	300	384	331	347	48.5	74.5	255	SB
Mercury	**0.20**	0.08	**0.21**	**0.17**	**0.13**	**0.22**	0.06	0.1
Nickel	**15.0**	**61.2**	**24.0**	**30.0**	9.5	**14.8**	**15.6**	13 or SB
Potassium	1570	6820	4240	5590	441	513	1430	SB
Selenium	<0.46	<0.45	<0.47	<0.47	**18.4**	**13.6**	<0.45	2 or SB
Silver	<0.29	<0.29	<0.30	<0.30	0.42	1.7	<0.29	SB
Sodium	<108	<106	<112	<111	<122	174	<108	SB
Thallium	<0.34	<0.33	<0.35	<0.34	<0.38	<0.39	<0.33	SB
Vanadium	40.2	58.0	46.9	45.0	20.3	50.5	28.4	150 or SB
Zinc	**140**	**89.7**	**94.1**	**44.2**	**218**	**995**	**31.1**	20 or SB

Notes: *Sample selected for organic analyses, SB = site background**, BOLD** = exceeds criteria

(continued)

TABLE 8.2-27A. SUMMARY OF METALS DATA FOR SOIL IN THE VICINITY OF GATE HOUSE NO. 5 (2003)

Sample	B-25	B-26	B-27	B-28	B-29	B-30*	TAGM #4046
Target Analyte List Metals (mg/Kg)							
Aluminum	11700	10300	6590	6640	9850	12100	SB
Antimony	<0.21	<0.22	<0.22	<0.22	<0.22	<0.23	SB
Arsenic	1.5	1.8	0.66	0.56	1.1	1.9	7.5 or SB
Barium	105	59.5	46.2	47.4	56.8	79.7	300 or SB
Beryllium	**0.21**	**0.31**	**0.16**	0.15	**0.26**	**0.31**	0.16 or SB
Cadmium	<0.13	<0.13	<0.13	<0.13	<0.13	<0.14	1 or SB
Calcium	2150	2310	7440	1640	3390	3200	SB
Chromium	**28.7**	**29.0**	**15.7**	**14.4**	**23.0**	**45.3**	10 or SB
Cobalt	11.8	8.1	6.6	6.5	8.9	10.2	30 or SB
Copper	36.3	17.2	18.4	19.4	23.0	22.0	25 or SB
Iron	**19900**	**15100**	**11500**	**10800**	**15900**	**18400**	2000 or SB
Lead	1.8	2.8	3.7	1.5	2.2	16.8	SB
Magnesium	7310	5260	6870	4210	5720	7240	SB
Manganese	309	261	228	197	258	247	SB
Mercury	0.03	0.02	<0.01	<0.01	0.02	<0.01	0.1
Nickel	**39.6**	**18.3**	12.6	12.0	**16.0**	**22.8**	13 or SB
Potassium	3790	1650	1860	1600	1860	2430	SB
Selenium	<0.45	<0.46	<0.46	<0.47	<0.46	<0.47	2 or SB
Silver	<0.29	<0.30	<0.30	<0.30	<0.30	<0.30	SB
Sodium	<107	<109	<110	<111	<110	<113	SB
Thallium	<0.33	<0.34	<0.34	<0.34	<0.34	<0.35	SB
Vanadium	40.4	29.5	20.6	20.1	31.7	43.7	150 or SB
Zinc	**53.7**	**29.5**	**29.0**	**24.1**	**29.1**	**48.0**	20 or SB

Notes: *Sample selected for organic analyses, SB = site background, **BOLD** = exceeds criteria

TABLE 8.2-27B. SUMMARY OF ORGANIC CONSTITUENTS FOR SOIL IN THE VICINITY OF GATE HOUSE NO. 5 (2003)

Sample Location	B-19	B-20	B-22	B-23	B-30	TAGM #4046
Volatile Organics (µg/Kg)	ND	ND	ND	ND	ND	NA
Semi-volatile Organics (µg/Kg)						
Phenanthrene	<350	79	300	310	130	50000
Anthracene	<460	<48	<52	84	<48	50000
Fluoranthene	360	170	520	840	200	50000
Pyrene	370	170	630	810	180	50000
Benzo(a)anthracene	<350	120	**320**	**520**	130	224
Chrysene	<560	100	350	**450**	100	400
bis(2-Ethylhexyl)phthalate	<350	<37	<40	120	<37	50000
Benzo(b)fluoranthene	440	150	460	620	110	1100
Benzo(k)fluoranthene	<910	<96	180	300	<96	1100
Benzo(a)pyrene	<530	**120**	**340**	**530**	**99**	61 or MDL
Indeno(1,2,3-cd)pyrene	<560	<59	180	190	<59	3200
Dibenz(a,h)anthracene	<530	<56	**70**	**79**	<56	14 or MDL
Benzo(g,h,i)perylene	<460	72	210	200	<56	50000
Pesticides and PCBs (µg/Kg)	ND	ND	ND	ND	ND	NA
Diesel TPH (mg/Kg)	13	<1.9	12	9.5	<1.9	NA
Gasoline TPH (µg/Kg)	ND	ND	ND	ND	ND	NA

Notes: ND = not detected, NA = not applicable; MDL = method detection limit

Visual observations and laboratory analytical data suggest that the soil in the vicinity of Gate House No. 5 is highly variable. This variability may be attributed to the sources of material used to fill the area during construction of the Reservoir and Gate House No. 5, and subsequent activities that may have taken place in the vicinity that could have resulted in the localized release of hazardous materials (e.g., fuel spills, waste disposal) to the environment. The soil near Gate House No. 5 was observed to contain brick, stone, construction debris, and ash.

The distribution of metals in the soil in the vicinity of Gate House No. 5 appears to have been impacted by anthropogenic sources consistent with the distribution of various types of urban fill material. Inspection of the metals data and evaluation of the concentration trends suggests that arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc are present at elevated concentrations and may warrant management procedures applicable to hazardous materials if disturbed by the proposed action.

A series of twelve semi-volatile organic compounds, all polynuclear aromatic hydrocarbons (PAHs), was detected in the five soil samples collected in the vicinity of Gate House No. 5. These compounds are ubiquitous in urban soils and often associated with petroleum hydrocarbon fuels (e.g., diesel), coal combustion residues (including cinders and bottom ash), or other complex organic mixtures such as coal tar and asphalt. Concentrations of benzo(a)anthracene, chrysene, benzo(a)pyrene, and dibenz(a,h)anthrazene were sufficiently elevated in localized

areas to warrant management procedures applicable to hazardous materials if disturbed by the proposed action.

Diesel range TPH (Total Petroleum Hydrocarbons) were detected in three of the five samples from Gate House No. 5. Diesel range TPH represent the combined concentration of a mixture of organic compounds typically representative of the components found in diesel fuel. In addition, other complex organic materials some of which may be naturally occurring and not associated with petroleum hydrocarbon fuels can also affect the measurement of diesel range TPH. The identification of a series of fuel-related PAHs in all three samples containing diesel range TPH suggests that the soil is probably contaminated with low levels of diesel or fuel oil.

No volatile organic compounds, pesticides, PCBs or gasoline range TPH were detected in any of the soil samples from Gate House No. 5.

In addition, 16 soil samples were collected at 100 feet intervals along the eastern edge of the road on top of the reservoir wall between Gate House No. 5 and Gate House No. 7. The New Croton Branch Aqueduct is contained within the reservoir wall beneath the proposed alignment, and samples of the 1- to 2-foot layer of soil above the aqueduct were obtained using manual excavation (i.e., shovel). An aliquot of each sample was blended to prepare a composite for laboratory analysis. The soil samples were initially screened to identify total volatile organic compounds, and samples from all 16 locations (i.e., B-2 through B-17) were analyzed for metals. Based on the screening results, metals analyses, and field observations, four samples (i.e., B-2, B-4, B-16, and B-17) were selected for comprehensive organic characterization including volatile and semi-volatile organics, pesticides, PCBs, and diesel range and gasoline range total petroleum hydrocarbons (TPH). Summaries of the metals and the organic constituent data for soil along the proposed chemical feed line conduit are presented in Table 8.2-27c, and Table 8.2-27d, respectively.

TABLE 8.2-27C. SUMMARY OF METALS DATA FOR SOIL IN THE VICINITY OF GATE HOUSE NO. 7 (2003)

Sample	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	TAGM #4046
Target Analyte List Metals (mg/Kg)									
Aluminum	9770	10000	10800	10400	7770	9240	10500	9320	SB
Antimony	0.34	<0.31	<0.26	<0.29	<0.26	<0.25	0.60	<0.26	SB
Arsenic	**8.5**	7.1	**10.2**	7.1	4.2	2.8	5.2	5.1	7.5 or SB
Barium	84.8	75.8	78.7	81.4	60.7	60.9	64.3	62.1	300 or SB
Beryllium	**0.36**	**0.36**	**0.47**	**0.41**	**0.24**	**0.28**	**0.28**	**0.25**	0.16 or SB
Cadmium	2.5	0.94	**2.1**	0.56	0.24	<0.15	0.36	0.24	1 or SB
Calcium	3570	3430	3070	2480	9520	1470	7410	23200	SB
Chromium	**43.4**	**49.7**	**29.8**	**28.6**	**22.0**	**24.4**	**26.3**	**20.1**	10 or SB
Cobalt	8.9	8.9	9.0	8.4	7.4	8.3	10.1	10.0	30 or SB
Copper	**60.9**	**72.1**	**49.6**	**69.3**	**48.9**	24.5	**69.6**	**66.6**	25 or SB
Iron	**16600**	**17400**	**17100**	**17500**	**12900**	**14500**	**15900**	**14600**	2,000 or SB
Lead	510	330	459	412	175	25.8	136	108	SB
Magnesium	4780	5140	4520	4190	5220	4360	7540	15100	SB
Manganese	306	359	330	378	275	327	219	224	SB
Mercury	**0.20**	**0.14**	**0.18**	**0.16**	**0.14**	0.04	**0.20**	**0.13**	0.1
Nickel	**32.9**	**33.7**	**26.5**	**23.0**	**21.0**	**17.9**	**23.2**	**26.3**	13 or SB
Potassium	1550	2010	1120	1210	1190	1100	1150	1200	SB
Selenium	1.0	<0.65	0.95	<0.61	0.54	<0.52	0.77	<0.55	2 or SB
Silver	1.3	<0.42	0.76	0.39	<0.35	<0.33	<0.38	<0.35	SB
Sodium	1600	1490	1100	1080	1080	651	1490	1360	SB
Thallium	<0.41	<0.48	<0.40	<0.45	<0.40	<0.38	<0.44	<0.41	SB
Vanadium	80.4	65.9	81.5	68.2	42.8	30.3	51.8	54.7	150 or SB
Zinc	**734**	**400**	**753**	**288**	**145**	**108**	**153**	**127**	20 or SB

Notes: SB = site background, **BOLD** = exceeds criteria

(continued)

TABLE 8.2-27C. SUMMARY OF METALS DATA FOR SOIL IN THE VICINITY OF GATE HOUSE NO. 7 (2003)

Sample	B-10	B-11	B-12	B-13	B-14	B-15	B-16	B-17	TAGM #4046
Target Analyte List Metals (mg/Kg)									
Aluminum	11100	9950	6350	12200	9640	9870	10500	9540	SB
Antimony	<0.24	0.31	1.2	<0.25	<0.24	<0.28	<0.25	<0.25	SB
Arsenic	5.3	5.6	**7.6**	6.0	6.0	6.8	**10.0**	8.0	7.5 or SB
Barium	77.5	69.5	78.4	106	100	92.8	147	162	300 or SB
Beryllium	**0.40**	**0.34**	**0.31**	**0.44**	**0.36**	**0.39**	**0.39**	**0.41**	0.16 or SB
Cadmium	<0.15	0.27	0.34	0.30	0.57	1.6	0.18	0.95	1 or SB
Calcium	23300	3950	121000	6960	10600	2560	2730	2790	SB
Chromium	**24.3**	**25.7**	**19.4**	**35.6**	**32.4**	**36.2**	**45.6**	**32.4**	10 or SB
Cobalt	8.5	8.7	6.7	9.6	8.2	9.4	9.3	9.0	30 or SB
Copper	**28.0**	**55.3**	**33.5**	**40.9**	**39.7**	**54.9**	**79.6**	**156**	25 or SB
Iron	**17000**	**16000**	**12700**	**18800**	**15500**	**15900**	**20900**	**16300**	2,000 or SB
Lead	53.9	226	150	195	241	377	324	282	SB
Magnesium	14700	4120	6550	7000	8470	4800	5170	4370	SB
Manganese	311	312	368	344	272	350	319	520	SB
Mercury	**0.18**	**0.14**	**0.15**	**0.20**	**0.15**	**0.22**	**0.22**	**0.24**	0.1
Nickel	**16.2**	**22.7**	**19.0**	**24.8**	**22.9**	**27.3**	**30.8**	**26.2**	13 or SB
Potassium	765	1200	1380	1510	1640	1680	2110	1630	SB
Selenium	<0.51	<0.55	<0.59	0.69	0.73	<0.58	0.81	0.63	2 or SB
Silver	<0.33	<0.35	0.41	<0.34	<0.33	<0.37	<0.33	<0.33	SB
Sodium	933	1690	1020	1220	972	963	1690	1010	SB
Thallium	<0.38	<0.40	<0.43	<0.39	<0.38	<0.43	<0.38	<0.38	SB
Vanadium	42.7	57.3	43.3	60.6	59.3	69.1	73.5	62.0	150 or SB
Zinc	**73.6**	**146**	**124**	**182**	**221**	**650**	**170**	**258**	20 or SB

Notes: SB = site background, **BOLD** = exceeds criteria

TABLE 8.2-27D. SUMMARY OF ORGANIC CONSTITUENTS FOR SOIL IN THE VICINITY OF GATE HOUSE NO. 7 (2003)

Sample	B-2	B-4	B-16	B-17	TAGM #4046
Volatile Organics (µg/Kg)	ND	ND	ND	ND	NA
Semi-volatile Organics (µg/Kg)					
Naphthalene	64	<100	<96	88	13000
2-Methylnaphthalene	160	<100	160	84	36400
Acenaphthylene	460	230	360	250	41000
Acenaphthene	170	130	750	260	50000
Dibenzofuran	96	<85	470	160	6200
Fluorene	280	220	1100	400	50000
Phenanthrene	4400	3400	14000	4500	50000
Anthracene	<610	390	3500	770	50000
Carbazole	250	170	1300	470	NA
Fluoranthene	5800	3900	22000	7500	50000
Pyrene	7200	4200	20000	7400	50000
Butylbenzylphthalate	<43	<85	<81	61	50000
Benzo(a)anthracene	**2700**	**1600**	**10000**	**3300**	224
Chrysene	**3400**	**1800**	**9200**	**3600**	400
bis(2-Ethylhexyl)phthalate	110	<85	<81	80	50000
Benzo(b)fluoranthene	**3400**	**1900**	**13000**	**5100**	1100
Benzo(k)fluoranthene	**1600**	870	**5900**	**2400**	1100
Benzo(a)pyrene	**3000**	**1600**	**9700**	**3600**	61 or MDL
Indeno(1,2,3-cd)pyrene	620	480	1300	740	3200
Dibenz(a,h)anthracene	**360**	<130	**1200**	**470**	14 or MDL
Benzo(g,h,i)perylene	850	630	2200	1000	50000
Pesticides and PCBs (µg/Kg)	ND	ND	ND	ND	NA
Diesel TPH (mg/Kg)	29	32	53	32	NA
Gasoline TPH (µg/Kg)	ND	ND	ND	ND	NA

Notes: ND = not detected, NA = not applicable; MDL = method detection limit, **BOLD** = exceeds criteria

Consistent with the visual observations and laboratory analytical data for the soils near Gate House No. 5, the soil from the top of the reservoir wall between Gate House No. 5 and Gate House No. 7 is also highly variable. This variability may be attributed to the sources of material used to fill the area during construction of the Reservoir and the asphalt road on top of the reservoir wall, and subsequent activities that may have taken place in the vicinity that could have resulted in the localized release of hazardous materials (e.g., service vehicle fluid releases) to the environment. The soil was observed to contain brick, stone, and construction debris.

The distribution of metals in the soil appears to have been impacted by anthropogenic sources consistent with the distribution of various types of urban fill material. Inspection of the metals data and evaluation of the concentration trends suggests that arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc are present at elevated concentrations and may warrant management procedures applicable to hazardous materials if disturbed by the proposed action.

A series of 19 semi-volatile organic compounds, all polynuclear aromatic hydrocarbons (PAHs), was detected in the four soil samples collected along the proposed chemical feed line alignment. These compounds are ubiquitous in urban soils and often associated with petroleum hydrocarbon fuels (e.g., diesel), coal combustion residues (including cinders and bottom ash), or other complex organic mixtures such as coal tar and asphalt. Concentrations of benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and dibenz(a,h)anthrazene were sufficiently elevated in localized areas to warrant management procedures applicable to hazardous materials if disturbed by the proposed action.

Diesel range TPH were detected in all four samples along the proposed chemical feed line alignment. Diesel range TPH represents the combined concentration of a mixture of organic compounds typically representative of the components found in diesel fuel. In addition, other complex organic materials some of which may be naturally occurring and not associated with petroleum hydrocarbon fuels can also affect the measurement of diesel range TPH. The identification of a series of fuel-related PAHs in all four samples containing diesel range TPH suggests that the soil is probably contaminated with low levels of diesel or fuel oil.

No volatile organic compounds, pesticides, PCBs or gasoline range TPH were detected in any of the soil samples along the proposed chemical feed line alignment between Gate House No. 5 and Gate House No. 7.

Groundwater. Seven monitoring wells surrounding the northern and east walls of the Reservoir's north basin were sampled in 1995 and tested for volatile organics, semi-volatiles organics, and metals. For a map showing sampling locations refer to Appendix E. Five of the seven wells yielded detectable levels of chloroform with the highest concentration of 60 µg/L detected in two of the wells. Trace levels of bromodichloromethane were also detected in the groundwater from these wells at a maximum estimated concentration of 7 µg/L. Selenium was found in the groundwater from one of the wells at a concentration of 6.9 µg/L. No other groundwater contaminants were detected.

Two of the wells originally sampled in 1995 were suitable for resampling in 2003. The other wells were damaged and could not be tested. Samples from the two wells were analyzed for volatile and semi-volatile organic compounds, pesticides, PCBs, and metals. Table 8.2-27e provides a summary of groundwater testing results.

TABLE 8.2-27E. SUMMARY OF GROUNDWATER CONSTITUENTS IN VICINITY OF JEROME PARK RESERVOIR (2003)

Sample	MW-238	MW-283	NYS DOH MCLs
Volatile Organics (µg/L)			
Chloroform	16	7	100*
Semi-volatile Organics (µg/L)	Not Detected	Not Detected	NA
PCBs (µg/L)	Not Detected	Not Detected	NA
Pesticides (µg/L)	Not Detected	Not Detected	NA
Target Analyte List Metals (µg/L)			
Aluminum	1290	3040	NA
Antimony	<2.0	<2.0	6
Arsenic	<4.5	<4.5	10
Barium	56.5	91.7	2000
Beryllium	<0.90	<0.90	4
Cadmium	<0.80	<0.80	5
Calcium	44300	47600	NA
Chromium	**119**	43.2	100
Cobalt	<2.3	3.9	NA
Copper	6.2	23.6	1300
Iron	**719**	**9480**	300
Lead	4.5	4.9	15
Magnesium	135	8750	NA
Manganese	9.7	166	300
Mercury	<0.20	<0.20	2
Nickel	51.1	24.2	NA
Potassium	6010	8480	NA
Selenium	2.2	<1.3	50
Silver	<3.7	<3.7	100
Sodium	29500	32300	NA
Thallium	<4.2	<4.2	2
Vanadium	45.4	25.2	NA
Zinc	54.9	88.8	5000

Notes: *Total trihalomethanes including chloroform, NA = not applicable, BOLD = exceeds criteria

The volatile organic compound, chloroform, was detected in both wells sampled with the highest concentration of 16 µg/L. Chloroform is a chlorinated solvent and also a by-product of drinking water disinfection using chlorine. Its continued presence may be indicative of chlorinated solvents that may have been released to the environment from one or more sources in the vicinity of Jerome Park Reservoir that may be migrating (i.e., dispersing) with the groundwater flow, or influenced by disinfected drinking water. No other organic compounds were detected in the groundwater.

Various metals were detected in the two groundwater samples. In general, none of the metals are sufficiently concentrated in the groundwater to warrant significant concern except for chromium which was detected at a concentration of 119 ug/l, and iron detected at a concentration of 9,480 ug/l. The variability in metals concentrations in the groundwater may be related to the fill materials surrounding the Reservoir.

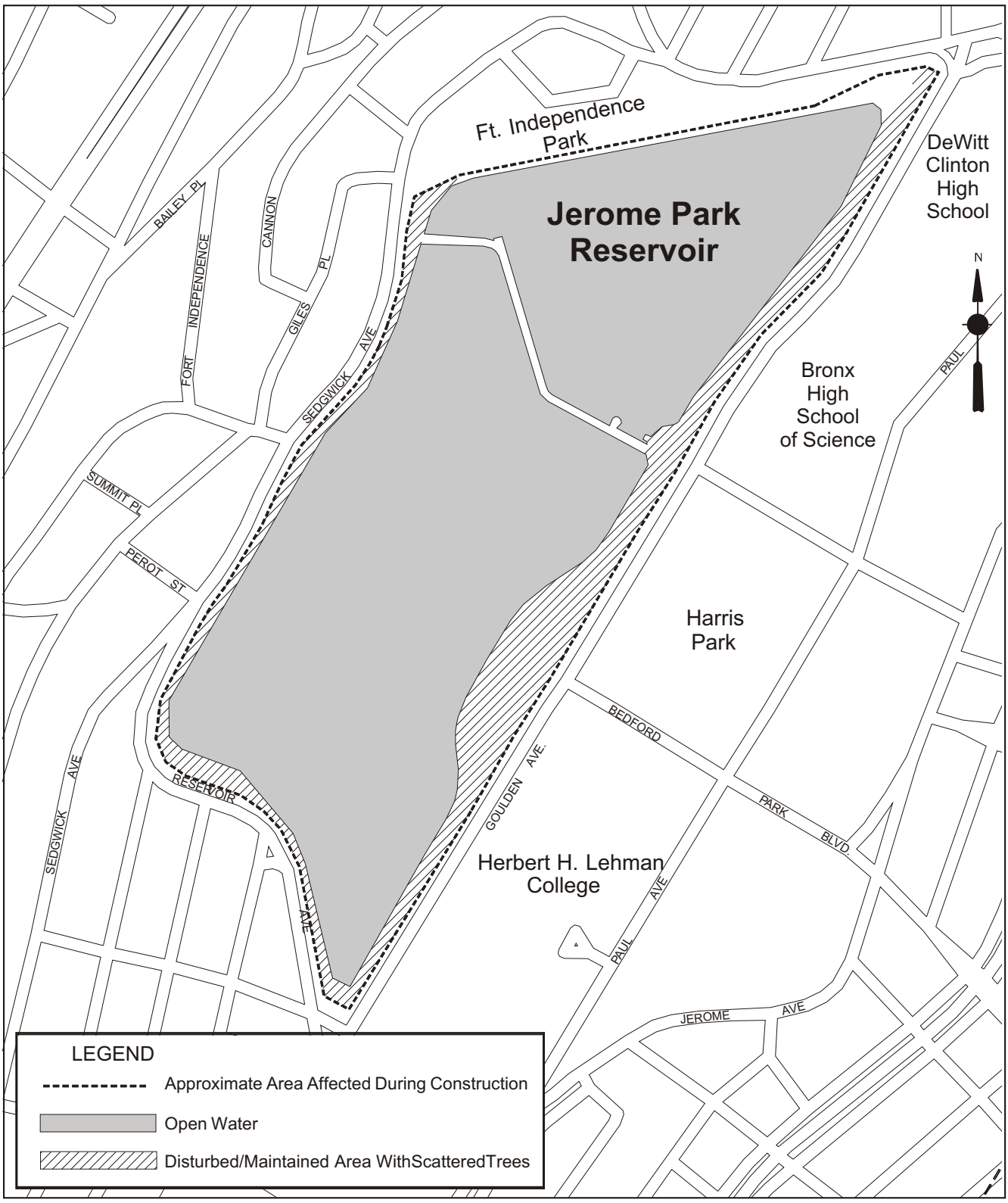
8.2.2.1.13. Natural Resources

The Reservoir site is bounded roughly by the perimeter road that surrounds the existing edges of the Reservoir (Figure 8.2-23). Fill material, natural soil and bedrock are the strata that have been identified at the Reservoir site from past subsurface investigations.

Vegetation. The Jerome Park Reservoir property consists of the water Reservoir surrounded by two sets of perimeter fences that separate the Reservoir from the surrounding streets. Dominant plant species present in the narrow strip of vegetation along portions of the Reservoir perimeter are summarized in Table 8.2-28. Disturbed areas with maintained vegetation surround the majority of the Reservoir. Mowed grass and herbs are present between the two perimeter chain link fences. Widely scattered species of vines such as bittersweet (*Celastrus orbiculatus),* Virginia creeper (*Parthenocissus quinquefolia),* poison ivy (*Toxicodendron radicans),* and grape (*Vitis* sp.) are also present in the disturbed areas around the Reservoir. Due to the disturbed nature of the site, the natural functions of the upland vegetation are minimal.

Wetlands, Waterways, and Floodplains. The on-site wetland investigation conducted in November 1993 determined that no wetlands or waterways were located on Jerome Park Reservoir site. Jerome Park Reservoir does not fall under the jurisdiction of either state or federal wetland or watercourse regulations. A request for a determination of the extent of jurisdictional waters of the United States (including wetlands) on the property of Jerome Park Reservoir was submitted to the U.S. Army Corps of Engineers (USACE) on Jan. 20, 1993. In a letter dated January 28, 1994 (Appendix F), the USACE concurred that "*the Reservoir does not meet the definition of waters of the U.S., and that construction of a treatment plant at this Reservoir will not require a Department of the Army permit*." Jerome Park Reservoir is not indicated as a State jurisdictional wetland on the New York State Department of Environmental Conservation (NYSDEC), Freshwater Wetlands Map Yonkers Quadrangle, 1973. Therefore, the Reservoir has not been identified by the NYSDEC as a State jurisdictional wetland.

The water of Jerome Park Reservoir is classified by the State as Class AA. Class AA waters are best suited for drinking water supply, primary contact recreation (such as swimming), secondary contact recreation (boating), fishing, and fish propagation. However, Part 608 of Title 6 of the Environmental Conservation regulations does not protect non-navigable bodies of water greater than 10 acres in size [608.1(h) and (m)]. The New York State definition of *navigable waters* includes "*lakes, rivers, streams and other bodies of water in the State which are navigable in fact or upon which vessels with a capacity of one or more persons can be operated*" (Section 608.4, Title 6 of New York Environmental Conservation Law). The Reservoir is not a lake, river, or



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60 0 60

SCALE IN FEET

Jerome Park Reservoir
Existing Natural Resources

Croton Water Treatment Plant

Figure 8.2-23

TABLE 8.2-28. DOMINANT VEGETATION AT JEROME PARK RESERVOIR

Vegetative Community	Stratum	Common Name	Species
Disturbed/ Maintained Area	Trees	Tree-of-heaven	*Alianthus altissima*
		Sugar maple	*Acer saccharum*
		Honey locust	*Gleditsia triacanthos*
		Tuliptree	*Liriodendron tulipifera*
		Crabapple	*Malus* sp.
		White mulberry	*Morus alba*
		Eastern sycamore	*Plantanus occidentalis*
		Black cherry	*Prunus serotina*
		Chokecherry	*Prunus virginiana*
		Pin oak	*Quercus palustris*
		Northern red oak	*Quercus rubra*
		Black locust	*Robinea pseudoacacia*
		Black willow	*Salix nigra*
	Shrubs	Staghorn sumac	*Rhus typhina*
	Vines	Bittersweet	*Celastrus orbiculatus*
		Virginia creeper	*Parthenocissus quinquefolia*
		Poison ivy	*Toxicodendron radicans*
		Grape	*Vitis* sp.
	Herbaceous	Knotweed	*Polygonum* sp.
		Knapweed	*Centaurea* sp.
		Quack grass	*Agropyron repens*
		Common ragweed	*Ambrosia artemisiifolia*
		Mustard family	Cruciferae
		Crab grass	*Digitaria sanguinalis*
		Fleabane	*Erigeron* sp.
		Holly	*Ilex* sp.
		English plantain	*Plantago lanceolata*
		Bluegrass	*Poa pratensis*
		Potentilla	*Potentilla simplex*
		Yellow foxtail	*Setaria glauca*
		Goldenrod	*Solidago* sp.
		Common dandelion	*Taraxacum officinale*
		Red clover	*Trifolium pratense*
		Common mullein	*Verbascum thapsus*

Source:
Plant species listed are those observed during site walkovers performed on November 30, 1993, and May 17-19, 1994, and October 14-15, 1997. This list represents a floristic inventory of the common species on the site.

stream as defined in *Classification of Wetlands and Deepwater Habitats of the United States*[57] since it is an artificial, drinking water holding and distribution facility. Furthermore, the Reservoir is not navigable in any way, since vessels with a capacity of one or more persons cannot be operated upon it because access is prohibited. Therefore, the Reservoir does not fall under NYSDEC regulations.

No floodplains are located on-site. The property is located entirely within an area of minimal flooding (Zone C), as indicated on the Federal Emergency Management Administration Flood Insurance Rate Map.

The City maintains a combined sewer system within the study area. This system collects stormwater runoff from the Gate Houses roof drains and roadways around Jerome Park Reservoir and directs the flow to NYCDEP's Wards Island Water Pollution Control Plant (WPCP). The Wards Island WPCP treats the flow and discharges the treated water to the East River. Excess stormwater overflow in the collection system is generally discharged to the Hudson River, Harlem River, and East River untreated.

The Jerome Park Reservoir is a drinking-water balancing Reservoir for the Croton Water Supply System. The Jerome Park Reservoir is protected from the stormwater runoff by the surrounding high wall levee. The Reservoir is treated and potable after chlorination.

The groundwater conditions were not analyzed at this location because no disturbance to groundwater is anticipated during construction and operation years.

Fish and Benthic Invertebrates. There were no aquatic inventories conducted within Jerome Park Reservoir. Past studies by the NYCDEP report that there have been rare occasions when chironomid larvae (midges) enter the distribution system due to a buildup of sediment and low chlorine levels in the Reservoir. This is a rare problem and not a normal part of the habitat at this site. The Reservoir is actively managed through chlorination to deter fish and benthic macroinvertebrate communities.

Amphibians and Reptiles. No reptile or amphibian (herpetile) surveys were conducted at Jerome Park Reservoir because there is a lack of suitable habitat to support herpetile communities.

Birds. The Jerome Park Reservoir is not managed for bird habitat. An ongoing bird abatement program discourages birds from using the Reservoir. However, a list of birds seen during the survey days and those expected to visit urbanized areas, such as those surrounding Jerome Park Reservoir, is provided in Table 8.2-29.

[57] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, U.S. Department of the Interior, Office of Biological Services. Washington, D.C. FWS/Obs-79-31.

TABLE 8.2-29. AVIFAUNA POTENTIALLY OCCURRING IN THE VICINITY OF JEROME PARK RESERVOIR

Common Name	Scientific Name	Migratory (Y/N)
Green Heron	*Butorides virescens*	N
Double-crested Cormorant	*Phalacrocorax auritus*	N
Canada Goose	*Branta canadensis*	N
Mute Swan	*Cygnus olor*	N
American Black Duck	*Anas rubripes*	N
Wood Duck	*Aix sponsa*	N
Gadwall	*Anas strepera*	N
Mallard	*Anas platyrhynchos*	N
Ruddy Duck	*Oxyura jamaicensis*	N
Hooded Merganser	*Lophodytes cucullatus*	N
Cooper's Hawk	*Accipiter cooperii*	N
Red-tailed Hawk	*Buteo jamaicensis*	N
Ring-necked Pheasant	*Phasianus colchicus*	N
Killdeer	*Charadrius vociferus*	N
Spotted Sandpiper	*Actitis macularia*	N
Ring-billed Gull	*Larus delawarensis*	N
Herring Gull	*Larus argentatus*	N
Great Black-backed Gull	*Larus marinus*	N
Rock Dove	*Columba livia*	N
Mourning Dove	*Zenaida macroura*	N
Eastern Screech-Owl	*Otus asio*	N
Great Horned Owl	*Bubo virginianus*	N
Chimney Swift	*Chaetura pelagica*	N
Red-bellied Woodpecker	*Melanerpes carolinus*	N
Downy Woodpecker	*Picoides pubescens*	N
Hairy Woodpecker	*Picoides villosus*	N
Belted Kingfisher	*Ceryle alcyon*	N
Northern Flicker	*Colaptes auratus*	N
Eastern Wood-Pewee	*Contopus virens*	N
Willow Flycatcher	*Empidonax traillii*	N
Great Crested Flycatcher	*Myiarchus crinitus*	N
Eastern Kingbird	*Tyrannus tyrannus*	N
Warbling Vireo	*Vireo gilvus*	N
Red-eyed Vireo	*Vireo olivaceus*	N
Blue Jay	*Cyanocitta cristata*	N
American Crow	*Corvus brachyrhynchos*	N
Tree Swallow	*Tachycineta bicolor*	N

TABLE 8.2-29. AVIFAUNA POTENTIALLY OCCURRING IN THE VICINITY OF JEROME PARK RESERVOIR

Common Name	Scientific Name	Migratory (Y/N)
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	N
Bank Swallow	*Riparia riparia*	N
Barn Swallow	*Hirundo rustica*	N
Cliff Swallow	*Petrochelidon pyrrhonota*	N
Black-capped Chickadee	*Poecile atricapillus*	N
Tufted Titmouse	*Baeolophus bicolor*	N
White-breasted Nuthatch	*Sitta carolinensis*	N
Carolina Wren	*Thryothorus ludovicianus*	N
House Wren	*Troglodytes aedon*	N
Wood Thrush	*Hylocichla mustelina*	N
American Robin	*Turdus migratorius*	N
Gray Catbird	*Dumetella carolinensis*	N
Northern Mockingbird	*Mimus polyglottos*	N
Brown Thrasher	*Toxostoma rufum*	N
European Starling	*Sturnus vulgaris*	N
Cedar Waxwing	*Bombycilla cedrorum*	N
Yellow Warbler	*Dendroica petechia*	N
Common Yellowthroat	*Geothlypis trichas*	N
Eastern Towhee	*Pipilo erythrophthalmus*	N
Chipping Sparrow	*Spizella passerina*	N
Song Sparrow	*Melospiza melodia*	N
Northern Cardinal	*Cardinalis cardinalis*	N
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	N
Red-winged Blackbird	*Agelaius phoeniceus*	N
Indigo Bunting	*Passerina cyanea*	N
Common Grackle	*Quiscalus quiscula*	N
Brown-headed Cowbird	*Molothrus ater*	N
Orchard Oriole	*Icterus spurius*	N
Baltimore Oriole	*Icterus galbula*	N
House Finch	*Carpodacus mexicanus*	N
American Goldfinch	*Carduelis tristis*	N
House Sparrow	*Passer domesticus*	N

Source: Based on the ecological surveys conducted within Jerome Park study area on November 30, 1993, May 17-19, 1994, March 23, 1998, April 29, 1998, and June 5, 1998. The New York State Department of Environmental Conservation, New York Breeding Bird Atlas Program was also consulted.

Mammals. All areas of Jerome Park Reservoir were subjected to a walk-over during ecological surveys conducted in November 1993 and May 1994 to develop a qualitative mammal

list (see Section 4.14, Data Collection and Impact Methodologies, Natural Resources). Table 8.2-30 lists mammal species potentially occurring in the vicinity of the site. This list was developed based on field observations of mammals or their sign, the ecology of each site, several sources that provided distribution maps and/or habitat preference descriptions, and the field experiences and best professional judgment of project ecologists visiting the site.

During the November 30, 1993 natural resources investigation, only one mammal, the gray squirrel *(Sciurus carolinensis pennsylvanicus)* was observed. During the May 1994 investigation, only two species of mammals were observed: the gray squirrel and the Norway rat (*Rattus norvegicus*). These species are typical of urban environments. A gray squirrel nest was observed during the November 1993 investigation. No animal tracks were observed. Potential habitat for small rodents, rabbits and raccoons includes dense herbaceous vegetation behind the Demonstration Water Treatment Plant (WTP), the dense woody vegetation located north of Gate House No. 5, and along the north fence line. However, no sign of these species was found during the on-site surveys. The chain link fences and the entirely urban surroundings prohibit larger mammals from entering the Reservoir area.

TABLE 8.2-30. MAMMAL SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF THE JEROME PARK SITE

Common Name	Scientific Name
Virginia opossum	*Didelphis virginiana*
Eastern mole	*Scalopus aquaticus*
Bats	Family Vespertilionidae (evening bats)
Eastern cottontail	*Sylvilagus floridanus*
Rodents	
Gray squirrel	*Sciurus carolinensis*
House mouse	*Mus musculus*
Norway rat	*Rattus norvegicus*
Raccoon	*Procyon lotor*
Striped skunk	*Mephitis mephitis*

Sources: Based on ecological surveys conducted on November 30, 1993 and May 17-19, 1994 and the following sources:

Illinois State Museum. 1998. FAUNMAP - An Electronic Database Documenting the Late Quaternary Distribution of Mammal Species in the United States. http://www.museum.state.il.us/research/faunmap/aboutfaunmap.html

Jones, J.K., Jr. and E.C. Birney. 1988. Handbook of Mammals of the North-Central States. University of Minnesota Press. Minneapolis, MO.

Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. American Wildlife and Plants, A Guide to Wildlife Food Habits. Dover Publications, Inc. NY.

Murie, O.J. 1974. A Field Guide to Animal Tracks, The Peterson Field Series. Houghton Mifflin Company. Boston, Mass.

Whitaker, J.O. 1980. The Audubon Society Field Guide to North American Mammals. Alfred A. Knopf. White Plains, NY.

Wilson, D.E., and D.M. Reeder (eds). 1993. Mammal Species of the World. Smithsonian Institution Press. Washington, D.C.

Rare, Threatened, and Endangered Species. According to the NYSDEC Natural Heritage Program, six State-listed plant species are reported to have historically occurred within one-half mile of Jerome Park Reservoir. However, the most recent sightings of these plants occurred in 1900 or earlier and Jerome Park Reservoir construction was completed in 1906, which effectively eliminated any preexisting vegetation. Therefore, these historically sighted rare plants are not considered to constitute part of the existing natural resources at Jerome Park Reservoir. NYSDEC Natural Heritage records indicate no known occurrences of protected animal species or significant natural communities.

8.2.2.1.14. Infrastructure and Energy

Water Supply. Existing facilities around the Reservoir do not use potable water from the Croton System. The existing facilities are served by the Catskill/Delaware distribution system through Shaft No. 3 of the City Tunnel No. 1. Catskill/Delaware water from Shaft No. 3 is pressure-regulated before entering a 12-inch diameter water main that runs the length of Goulden Avenue and West 205th Street.

The 23 employees at Jerome Park Reservoir facilities consume an estimated 25 gallons of water per day (gpd) per person during peak consumption (Table 8.2-31). Four facilities currently consume water: the Croton Demonstration WTP, the Mosholu Pumping Station/Gate House No. 7, the Jerome Pumping Station, and Gate House No. 5.

The average water use for the five employees, who work one eight-hour shift at the Demonstration WTP at Jerome Park Reservoir is about 125 gpd, five days per week. The operation of Mosholu Pumping Station/Gate House No. 7, Demonstration WTP, and Jerome Pumping Station determines the number of shifts needed to cover their operation. During peak water consumption three shifts per day are necessary.

TABLE 8.2-31. PEAK WATER CONSUMPTION AT JEROME PARK RESERVOIR FACILITIES

Facility [1]	Number of Employees	Water Consumed (gallons per day)
Croton Demonstration WTP [1]	5	125
Mosholu Pumping Station /Gate House No. 7[(2)]	6	150
Jerome Pumping Station[(2)]	6	150
Gate House No. 5[(3)]	6	150
Total	23	575

Notes:
1. Gate Hose Nos. 2,3, and 6 are not staffed. Demonstration WTP is inoperative and slated for removal.
2. Both Mosholu Pumping Station/ Gate House No. 7 and Jerome Pumping Station are operated on a periodic basis. During peak consumption 3 shifts per day are required.
3. Gate House No. 5 is in operation 24 hours a day/ 7 days a week.

When the Mosholu Pumping Station is operated the facility would run 24-hours per day, seven days per week. Therefore, two employees per shifts, totaling 6 employees per day would consume approximately 150 gpd. The consumption of water, during peak operation period by six employees per day, for the Jerome Pumping Station is estimated to be 150 gpd. The Demonstration WTP is inoperative but houses staff space for NYCDEP staff with other responsibilities. The five employees generally consume approximately 125 gpd. Gate House No. 5 is staffed 24 hours per day, seven days per week, and 365 days a year with six employees working in a 24-hour period. Therefore, the estimated peak drinking water demand for Jerome Park Reservoir facilities averages 575 gpd.

Sanitary Sewage. Jerome Park Reservoir is located within the service area of the Wards Island (WPCP). The Wards Island WPCPs State Pollutant Discharge Elimination System (SPDES) permit limit for dry-weather flow is 250 mgd. The annual average dry-weather for the plant for the year 2000 and 2001 were 184 mgd and 195 mgd, respectively. The Ward Islands drainage area consists of sanitary, storm, and combined sewer. During dry weather the combined sewer function as a sanitary sewer, bringing sewage flows to Ward Island WPCP. During wet weather, large volumes of rainfall runoff (10 to 50 times the dry-weather flow) enter the combined system through storm drains and catch basins on the streets and mix with the sanitary sewage being sent to the WPCP. To avoid overflowing the Water Island WPCP, regulators are built into the combined sewer system to route the excess flow to receiving waters. The Ward Island WPCP drainage area flows are controlled by 76 regulators, which route overflow to the East River, the Harlem River, and the Bronx Kills.

The Jerome Park facilities currently generate 575 gpd, for a total of 3,775 gallons per week, of sanitary sewage, which is assumed to be equivalent to the amount of water consumed.

Stormwater System. New York City maintains a combined storm water and sewer system at Jerome Park Reservoir complex and surrounding communities. Stormwater flows are directed to Wards Island WPCP.

Energy Demand. Consolidated Edison Company of New York (Con Edison) delivers electricity supplied by NYPA to Jerome Park Reservoir facilities. The annual amount consumed by the existing facilities at Jerome Park Reservoir is estimated to be 844,556 kilowatt hour (kWh) in year 2001.[58]

The Demonstration WTP and Gate House No. 5 are serviced by electrical cables that run along the west side of Goulden Avenue. While the Demonstration WTP pilot equipment is not being operated at this time, the facility is used as administrative offices and for equipment storage. It consumes an estimated 290,400 KWH of energy for lighting, heating and ventilation. Gate House No. 5 contains offices for NYCDEP staff and is continuously staffed. Gate House No. 5 consumes an estimated of 194,240 KWH in year 2001. The Mosholu Pumping Station/Gate House No. 7 is serviced by electrical conduits that run along Jerome Avenue. During fiscal year 2001, the Mosholu Pumping Station/Gate House No. 7 consumed an estimated 86,616 KWH. The Jerome Pumping Station is serviced by electrical feeders located on Jerome Avenue. The

[58] Account History Report for Account No. 826003, Bureau of Water Supply and Sewer Operation, September 2002

Jerome Pumping Station uses approximately 242,700 KWH in 2001. Gate House No. 6 is an un-staffed Gate House, distributing water to the Low Level service area in the Bronx by gravity. The amount of energy consumed by Gate House No. 6 was estimated at 30,600 KWH in 2001.

Gas Demand. Con Edison supplies natural gas to the Boroughs of Manhattan, the Bronx, portions of Queens and Westchester County. Natural gas is commonly used for heating and non-heating purposes in residential, commercial, and industrial areas. A six-inch diameter main runs along West 205th Street to the corner of Goulden Avenue. A six-inch diameter gas main runs along Sedgwick Avenue to Goulden Avenue, where a four-inch diameter service main connects to Gate House No. 7. The only facility at Jerome Park Reservoir complex that uses natural gas is Gate House No. 7; the gas is used to operate a cooking stove.

8.2.2.1.15. Electric and Magnetic Fields (EMF)/ Extremely Low Frequency (ELF)

Currently an electrical supply is fed to the Reservoir site from an overhead feeder that extends from Jerome Avenue. Electricity at the Reservoir site is used to operating general lighting and controls and generates negligible levels of electric and magnetic fields. Therefore, no further analysis is necessary.

8.2.2.1.16. Solid Waste

The New York State Solid Waste Management Act of 1988 (updated in 1999-2000)[59] and the NYSDEC Regulations (New York Codes, Rules and Regulations, NYCRR, Part 360-15)[60] establish a hierarchy of waste management techniques to minimize reliance on landfills by maximizing waste prevention and recycling. In fact, the State established a target goal of reducing waste by eight to ten percent, and having 40 percent of waste being recycled by 1997.[61] NYSDEC also maintains a comprehensive register of all permitted solid waste landfills within the State of New York. According to the Active Solid Waste Facility Register,[62] there are no waste disposal facilities within the study area.

The City manages its solid waste in compliance with the *New York City Local Solid Waste Management Plan*.[63] The Solid Waste Management Plan establishes a hierarchy for waste management, with waste prevention being the first priority followed by reuse and recycling, including composting and export by barge or rail out of the City. The 2001 modifications accounted for the premature closure of Fresh Kills Landfill in April 2001, nine months prior to

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[59] New York State Department of Environmental Conservation. 2000. New York State Solid Waste Management Plan: 1999-2000 Update. http://www.dec.state.ny.us/website/dshm/prgmngnt/2kupdte.pdf

[60] New York State Department of Environmental Conservation. November 24, 1999. Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York
6 NYCRR. http://www.dec.state.ny.us/website/regs/360v.htm.

[61] New York State Department of Environmental Conservation. 2002. http://www.dec.state.ny.us/website/dshm/sldwaste/index.htm

[62] New York State Department of Environmental Conservation. 2002. DEC Environnemental Navigator: http://www.dec.state.ny.us/website/imsmaps/decnav/viewer.htm?Title=DEC%20 Environmental%20Navigator

[63] New York City Department of Sanitation. 2001. Modified February 27, 2001, *New York City Local Solid Waste Management Plan*.

the State-mandated closure date of January 1, 2002. Implementation of this proposal includes long-term export (via barge or rail) of non-recyclable solid waste collected by the New York City Department of Sanitation, previously disposed of at the Fresh Kills Landfill. The Solid Waste Management Plan facilitates the New York City Department of Sanitation's (NYCDOS) efforts to comply with the City's mandatory recycling law, Local Law 19 of 1989, which requires source separation of specific recyclables. However, due to budgeting restrictions, this procedure has been recently modified.[64] Under the new procedure the recycling of all glass, plastic and beverage containers was suspended, with paper and metal still being recycled, until a more efficient methodology has been established.

Since 1881, the NYCDOS serves 59 districts within the City. NYCDOS consists of approximately 10,000 employees; 2,000 collection trucks; 450 street sweepers; 350 salt/sand spreaders; and approximately 3,000 various other support vehicles the NYCDOS collects over 13,000 tons of residential and institutional refuse and recyclables a day. The City's businesses, whose waste is collected by private carting companies, generate another 13,000 tons of refuse each day.

Reservoir Site. Four Jerome Park Reservoir facilities are staffed and generate solid waste. These facilities include the Croton Demonstration WTP, Mosholu Pumping Station/Gate House No. 7, Jerome Pumping Station, and Gate House No. 5. In total, 23 individuals are employed at the facilities each generating 13 lbs/week (based on a 40-hour work week) of solid waste (299 lbs/week). The 13lbs/week generation rate, a CEQR standard generation rate for office employees, has been used in this analysis as a standard generation rate for work environments.[65] All staffed facilities at the Reservoir are staffed 24 hours a day/ seven days a week.[66] For the employees working two days per week on the weekends (Saturday and Sunday) the standard 13 lbs/week/employee was modified to 5.2 lbs/week/employee (corresponding to generation during two fifths of the work week). No staff is maintained at Gate Houses No. 2, 3, and 6 therefore, no solid waste is generated at these facilities.

Study Area. The surrounding study area includes open space, educational institutions and commercial/retail. The educational institutions include the Bronx High School of Science, Walton High School, De Witt Clinton High School, and Herbert H. Lehman College. The CEQR manual identifies that approximately: 1-2lbs/week is generated per school student; 13 lbs/week per faculty or staff; commercial/business generate 13 lbs/week per employee and residential properties generate approximately 41 lbs/week.

All municipal solid waste generated by residential, institutional, and commercial/business properties are collected by the NYCDOS.

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[64] New York City Department of Sanitation. Effective October 18, 2002, Notice of Adoption of Final Rules Governing Department Collection of Designated Recyclable Material From Residential Buildings, City Agencies and Institutions.

[65] City Environmental Quality Review, CEQR Technical Manual, Chapter 3M.

[66] Mosholu Pumping Station and Jerome Pumping Station are operational on an as needed basis.

8.2.2.2. Future Without the Project

The Future Without the Project considers the future through the various construction peak years (2010) and project completion years (2011). As discussed in the Introduction and Project Descriptions for each of the three water treatment plant sites (Eastview Site, Section 5.1; Mosholu Site, Section 6.1; Harlem River Site, Section 7.1) the peak years vary depending on the selection of the preferred site and the amount of work required to the NCA for conveying the Croton Water Supply System. The pressurization of the NCA that is associated with the construction of the water treatment plant at the Eastview Site (scheduled for 2011-2014) would constitute the worst-case scenario in terms of potential future impacts at Jerome Park Reservoir.

However, the future baseline conditions in these years would be very similar to those in 2010 and 2011. The work for the other site alternatives would take place before 2010. In order to simplify the presentation of the analyses and bearing in mind that the future conditions would be similar throughout the construction periods for the different alternatives, 2010 was selected as the analytical year for construction and 2011 for the operation year for all the project scenarios.

8.2.2.2.1. Jerome Park Reservoir Site

In the Future Without the Project, the Reservoir site would remain largely unchanged from the existing conditions. The existing buildings would remain and their current operation patterns would continue. Independent of the proposed project, the NYCDEP has plans to conduct general maintenance and repair on the 115-year old NCA and its access locations. Necessary repairs to cracks and leaks would be conducted following an inspection of the NCA. In addition, new security measures including doors, windows, roof and camera and lighting would be installed. These improvements would assist to protect the public utility and ensure its operation well into the future. This work would take place between the years of 2004 – 2006. The Jerome Park Reservoir and associated structures are currently listed on the National Register of Historic Places and attention will be made to ensure that new installation are consistent with the design patterns of the structures and special care is made to protect the historical structures.

8.2.2.2.2. Study Area

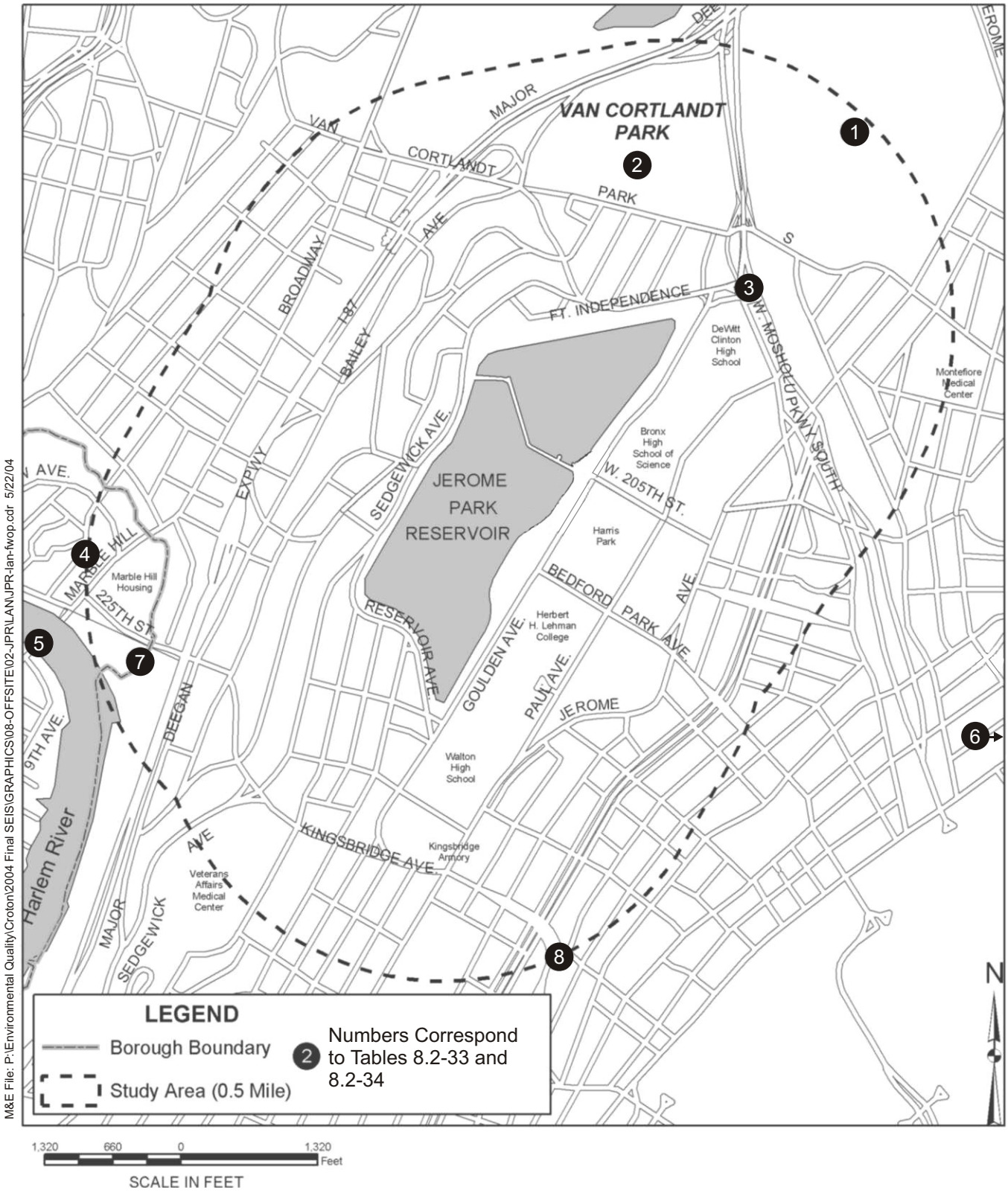
In the Future Without the project, there are numerous projects and proposals in the study area. Some of the projects are proposed and already under construction or are generally in the permitting phase with a targeted implementation schedule (Figure 8.2-24, Table 8.2-32, and Table 8.2-33). Others are proposed and have been generally discussed in various plans, but no definitive action or implementation schedules have been set. These latter projects are discussed more generally at the end of this section. Projects that are currently under construction or have proposed dates of implementation were further separated into two categories for the purpose of this analysis. These categories consist of 1) projects of a relatively moderate size that typically occur throughout the City and are considered in other analyses of this Final SEIS as part of the overall background growth in the study area and 2) projects of a larger magnitude that may contribute to significant land use, traffic, or air quality impacts. Projects are generally placed in the first category if they fall under existing zoning conditions or are “as of right” developments.

Those in the second category may require a zoning change or other change in land use designation.

Background Growth Projects. Six projects were identified within or near the Jerome Park Reservoir study area for this category (Table 8.2-32 and Figure 8.2-24). These projects range from various upgrades and enhancements in Van Cortlandt Park to the reconstruction of roads and bridges.

Large-Scale Projects. Two relatively large-scale projects were identified within the Jerome Park Reservoir study area (Table 8.2-33 and Figure 8.2-24). The first project is a retail development called the River Plaza. Located at Broadway and West 225th Street in the Bronx, this project involves the introduction of approximately 230,000 square feet of retail space contained in four buildings. This project would result in the conversion of Industrial and Manufacturing area and Transportation and Utility uses south of West 225th Street into Commercial and Retail uses. River Plaza marks the largest retail development to be constructed in the Bronx in ten years. Construction of the complex began in December 2002, and the project is anticipated to open in the spring of 2004. Multiple businesses would be located at the site including: Target, Marshall's, Foot Locker, Payless Shoes, Lane Bryant, Washington Mutual, Radio Shack, Kids World, and an Applebee's Restaurant. It is anticipated that these businesses would bring 600 new permanent jobs to the Bronx Borough.

The second project is the Bronx Borough Center Library. The new 55,000 to 75,000-square foot Bronx Borough Center Library would be constructed at 310 E. Kingsbridge Road at the site of an office building and adjacent parking lot recently purchased by the New York Public Library from Con Edison. This new branch library would also house a Latino and Puerto Rican cultural center and a 150-person capacity auditorium. Construction is anticipated to begin in 2003 and would involve either 1) rehabilitation/renovation of the existing structure or 2) demolition of the existing structure and construction of a new building. The project area would be designated as an Institutional and Public Facility use.



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Future Without the Project
Jerome Park Reservoir

Croton Water Treatment Plant

Figure 8.2-24

TABLE 8.2-32. FUTURE PLANNED PROJECTS NOT ANTICIPATED TO REQUIRE SUBSTANTIAL ZONING OR OTHER LAND USE MODIFICATIONS WITHIN OR NEAR THE JEROME PARK RESERVOIR STUDY AREA

Map Key No. (Figure 8.2-24)	Project/Proposal Name	Location	Description
1	Mosholu Golf Course improvements	Van Cortlandt Park, Bronx	Potential improvements to golf course; current contract expires 12/31/07; upon re-issuance of contract, capital improvements likely
2	Van Cortlandt Park signage enhancements	From Van Cortlandt Park, Bronx to Manhattan	NYCDPR was awarded $260k for signage and trail marker enhancements; trail guide will be prepared to accompany markers; anticipated completion by 2005
3	Paving and grading	Mosholu Parkway, Bronx	Paving, grading, and associated activities for the Mosholu Parkway; anticipated 2005
4	Reconstruction of Marble Hill Avenue	Marble Hill Avenue between West 228th Street to West 225th Street, Bronx	In process, completion 2003
5	Reconstruction of Broadway Bridge	Broadway Bridge over the Harlem River, Manhattan	Reconstruction activities on the Broadway Bridge; in process, ongoing
6	Sewer construction/ maintenance (combined sewer)	East 204th Street between Webster Avenue and East 205th Street, Bronx	Construction anticipated 2004

Additional projects and proposals were identified within or near Jerome Park study area, but they were not included in the two categories discussed above since the majority of these projects and proposals do not have established action dates. Instead, they are activities proposed in comprehensive plans or other documents and are in need of funding, further development, or decisions. Some of these projects and proposals have the potential to affect the existing land uses. The Aqueduct University Greenway (proposed to run north and south through Van Cortlandt Park) and Grand Concourse Greenway (proposed along the Grand Concourse in the

Bronx) have the potential to result in land use changes along the non-park portions of their routes. These changes would likely consist of potential conversion to Parks and Recreation (Open Space), though these alterations would not be anticipated to occur along their entire routes. Maintenance activities are ongoing at the Kingsbridge Armory. The reutilization of the Armory would potentially introduce new public facilities for the neighboring communities, depending on the final plans. Current proposals include implementation of institutional, commercial, retail, and entertainment uses. At the time of preparation of this report, there was no implementation date for this project.

TABLE 8.2-33. FUTURE LARGE-SCALE PROJECTS RESULTING IN SIGNIFICANT IMPACTS WITHIN THE JEROME PARK RESERVOIR STUDY AREA

Map Key No. (Figure 8.2-24)	Project/Proposal Name	Location	Description
7	River Plaza	West of the Major Deegan Expressway and south of West 225th Street, Bronx	Shopping center (Target, Marshalls, Applebee's, etc.); construction in progress; anticipated completion 2003 to 2004; would result in conversion of some of the Industrial and Manufacturing area and a portion of the Transportation and Utility uses south of West 225th Street into Commercial and Retail Uses
8	55,000- to 75,000-square-foot Bronx Borough Center Library	310 E. Kingsbridge Road (along southeastern perimeter of the study area), Bronx	The new 55,000- to 75,000-square foot Bronx Borough Center Library would be constructed at 310 E. Kingsbridge Road, on the site of an office building and adjacent parking lot recently purchased from Con Edison; the project area would be designated as an Institutional and Public Facility use; construction anticipated to begin in 2003

Although no projects are currently proposed, NYCDCP suggested consideration of development activity associated with Montefiore Medical Center due to a history of frequent activity and development proposals. The Montefiore Medical Center is located in the vicinity of Jerome Avenue and Gun Hill Road. Also, the area of West 230th Street and Broadway (between Broadway and the Major Deegan Expressway) may change from the existing former municipal parking lot to either a firehouse and EMS station or to a commercial use. There is no

implementation date for this proposal. Finally, the Community Board 8 in the Bronx is pursuing a 197-a plan[67] that could alter current land uses surrounding Jerome Park Reservoir. This plan has the potential to reduce permitted residential densities, create a scenic district, and create a more park-like setting around the Reservoir. At the time of preparation of this document, this 197-a plan was a proposal and no implementation date was available. Based on potential developments and anticipated population changes within the study area the potential increased demands on community facilities would be re-evaluated and additional services would be provided where appropriately by the local municipality.

Traffic and Transportation. The Future Without the Project considerations include the year of existing conditions (2002) and the anticipated year of peak construction activity (2010) for the pressurization work. The 2010 Future Without the Project analysis year corresponds with the peak construction traffic year at Jerome Park Reservoir Shaft site for the pressurization work. Existing traffic volumes are anticipated to increase between 2002 and the 2010 Future Without the Project analysis year. To account for potential general traffic increases in the Bronx area, an annual growth rate of 0.5 percent per year was applied to the 2002 Existing Traffic Volumes. Any proposed area developments have been accounted for in the general background traffic growth rate.

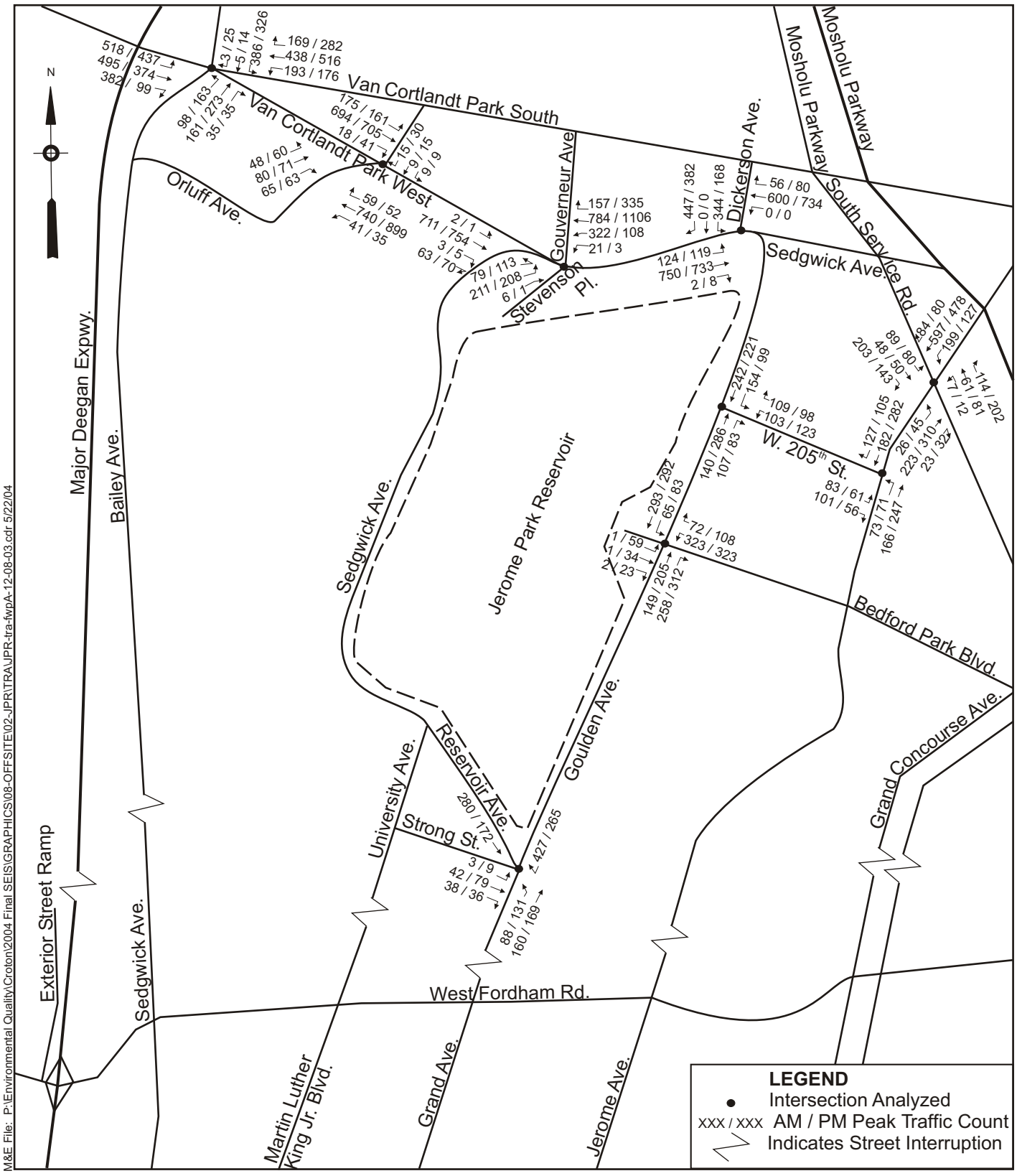
The traffic volumes due to the background growth would cause additional congestion in the project area. Figure 8.2-25 illustrates the 2010 Future Without the Project traffic volumes. Results of the 2010 analysis are presented in Table 8.2-34. In the 2010 Future Without the Project, one intersection would experience overall LOS E conditions for the AM and PM peak hours. In addition, one intersection would experience marginally unacceptable LOS D for the PM peak hour. These intersections are as follows:

1) Van Cortlandt Park at Bailey Avenue
2) Van Cortlandt Park West at Sedgwick Avenue

Under the Future Without the Project 2010 conditions, the Van Cortlandt Park at Bailey Avenue intersection would operate at LOS F in the AM and PM peak hours, reduced from a marginally unacceptable LOS D in the 2002 Existing Conditions.

Under the 2010 Future Without the Project conditions, the Van Cortlandt Park West at Sedgwick Avenue intersection would have increased overall congestion from the 2002 Existing Conditions. The intersection would experience marginally unacceptable LOS D conditions in the PM peak hour, reduced from an acceptable LOS C in the 2002 Existing Conditions. The AM peak hour overall LOS would remain unchanged at a LOS C condition.

[67] Named after a section of the New York City Charter, a 197-a plan provides a framework or "blueprint" for development in a particular geographic area, such as a community district. Under Section 197-a, community boards and other entities may sponsor plans for the "development, growth and improvement" of their communities.



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Not To Scale

Jerome Park Reservoir
2010 Future Without the Project
Traffic Volume - AM / PM Hour

Croton Water Treatment Plant

Figure 8.2-25

TABLE 8.2-34. 2010 FUTURE WITHOUT THE PROJECT TRAFFIC CONDITIONS FOR JEROME PARK RESERVOIR

SIGNALIZED INTERSECTIONS	LANE GROUP	2013 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
Van Cortland Park (S-W) at Bailey Avenue (N-S)	EB – L	1.23	135.7	F	1.22	136.1	F
	EB – TR	0.79	8.7	A	0.40	2.6	A
	WB – LTR	1.21	128.4	F	1.15	99.6	F
	NB – L	0.61	54.4	D	0.65	47.0	D
	NB – TR	1.14	>150	F	1.09	115.5	F
	SB – L	0.89	74.0	E	1.13	>150	F
	SB – LT	0.87	70.0	E	1.15	160.3	F
	Intersection		**85.4**	**F**		**94.7**	**F**
Van Cortland Park West (E-W) at Orloff Avenue (N-S)	EB - LTR	0.90	29.3	C	0.89	28.3	C
	WB - LTR	0.82	28.9	C	0.85	29.9	C
	NB - LTR	0.37	26.6	C	0.38	27.1	C
	SB -LTR	0.07	22.9	C	0.10	23.1	C
	Intersection		**28.7**	**C**		**28.8**	**C**
Van Cortland Park West (E-W) at Sedgwick Avenue (N-S)	EB – LTR	0.56	20.1	C	0.69	26.0	C
	NB – LTR	0.65	21.6	C	1.07	73.8	E
	WB-L	0.47	19.9	B	0.39	15.9	B
	WB-TR	0.92	54.0	D	0.26	14.9	B
	Intersection		**25.6**	**C**		**49.8**	**D**
Sedgwick Avenue (E-W) at Dickerson Avenue	EB - LTR	0.97	45.9	D	0.98	48.7	D
	WB - T	0.44	18.2	B	0.51	19.2	B
	WB - R	0.10	14.9	B	0.14	15.3	B
	SB - L	0.65	30.1	C	0.32	22.6	C
	SB - R	0.92	53.6	D	0.75	35.1	D
	Intersection		**36.9**	**D**		**33.5**	**C**
W. Mosholu Parkway(E-W) at Jerome Avenue (N-S)	EB - LT	0.83	79.8	E	1.07	148.6	F
	EB - R	0.80	65.9	E	0.53	49.2	D
	WB - LTR	0.70	57.9	E	1.03	106.9	F
	NB - LTR	0.16	6.0	A	0.22	6.3	A
	SB - LTR	0.61	15.5	B	0.45	12.7	B
	Intersection		**30.0**	**C**		**42.1**	**D**

TABLE 8.2-34. 2010 FUTURE WITHOUT THE PROJECT TRAFFIC CONDITIONS FOR JEROME PARK RESERVOIR

SIGNALIZED INTERSECTIONS	LANE GROUP	2013 FUTURE WITHOUT THE PROJECT					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
Bedford Park (E-W) at Goulden Avenue	EB - LTR	0.00	9.8	A	0.15	10.8	B
	WB - LR	0.72	21.8	C	0.82	27.9	C
	NB - TR	0.55	15.4	B	0.68	18.4	B
	SB - LT	0.53	15.3	B	0.75	23.7	C
	Intersection		**17.5**	**B**		**22.0**	**C**
205th Street (E-W) at Goulden Avenue	WB – LR	0.33	12.6	B	0.31	12.3	B
	NB - TR	0.40	13.6	B	0.51	14.8	B
	SB - LT	0.74	22.9	C	0.58	17.3	B
	Intersection		**17.6**	**B**		**15.1**	**B**
205th Street (E-W) at Jerome Avenue	EB - L	0.16	26.7	C	0.10	25.9	C
	EB - R	0.20	27.4	C	0.10	26.0	C
	NB - L	0.14	13.2	B	0.13	13.2	B
	NB - T	0.21	13.8	B	0.29	14.8	B
	SB - T	0.21	13.7	B	0.29	14.6	B
	SB - R	0.20	13.7	B	0.14	13.1	B
	Intersection		**17.0**	**B**		**16.0**	**B**
Reservoir/Strong Street (E-W) at Goulden Avenue (N-S)	EB - LR	0.18	31.1	C	0.24	32.0	C
	EB - T	0.83	62.3	E	0.47	44.0	D
	NB - L	0.68	58.1	E	0.59	45.6	D
	NB - T	0.12	20.2	C	0.11	20.1	C
	SB - T	0.32	22.5	C	0.17	20.8	C
	Intersection		**36.6**	**D**		**30.7**	**C**

ABBREVIATIONS:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, E-W: East-West Roadway, N-S: North-South Roadway

V/C Ratio - Volume to Capacity Ratio

SEC/VEH - Seconds per Vehicle

LOS - Level of Service

Noise Analysis.

Mobile Source Noise. Based on the results of the PCE screening analysis as previously discussed, none of the identified noise-sensitive route segments in the vicinity of the site required further analysis. As a result, traffic volumes and related noise levels along the transportation roadways leading to and from the Reservoir site during the Future Without the Project condition were not needed in order to conclude that mobile sources would not contribute significantly to total construction-generated noise levels.

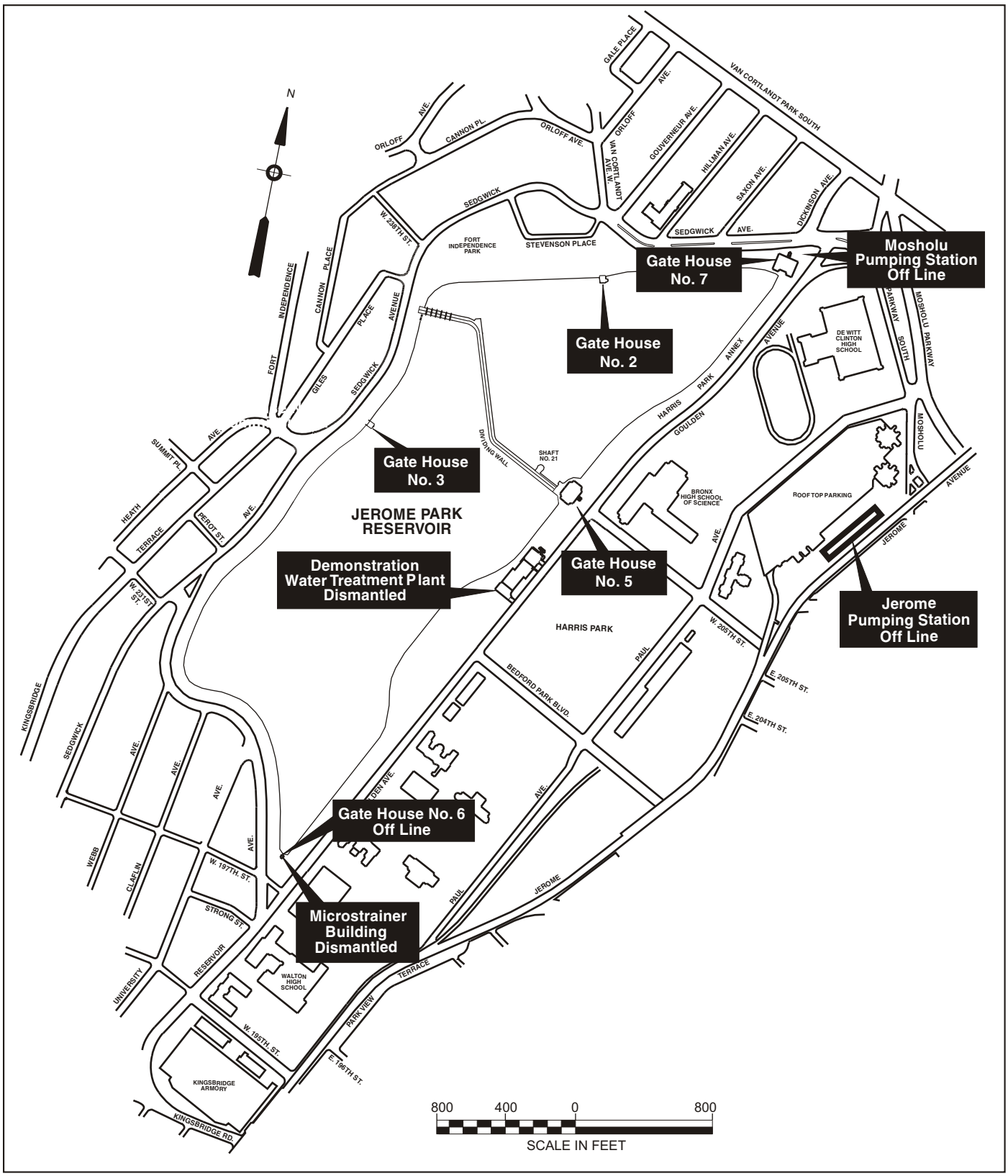
Stationary Source Noise. Future Without the Project noise levels at proximate receptor locations for the construction phase of the proposed work was determined for the peak construction year (2010). A review of future planned developments in the vicinity of the Reservoir site for the year ending 2010 revealed no new stationary noise sources that would significantly increase the existing background noise levels at proximate receptor locations. Therefore, the Future Without the Project noise levels at stationary source receptors located near the Reservoir are not anticipated to change from existing noise levels measured during the noise-monitoring program.

No changes in stationary sources were anticipated for the operation year (2011) in the vicinity of the Reservoir site. Since the Future Without the Project for the stationary source noise was anticipated to remain unchanged no further analysis of the build year was included.

Air Quality. Since the number of project-induced vehicle is small, a detailed mobile source analysis was not conducted for the Reservoir site. There are no regulated stationary sources at Reservoir site. Future air quality impacts from stationary sources without the project would be unchanged. A description of potential air quality impacts during construction is included in Section 8.2.3 below.

8.2.3. Potential Impacts

Jerome Park Reservoir currently operates as a distribution Reservoir for the Croton Water Supply System. Depending on the water treatment plant site and water conveyance alternative selected, various facilities at Jerome Park Reservoir would be modified or taken off-line. Figure 8.2-26 presents a plan showing Jerome Park Reservoir facilities that NYCDEP is committed to dismantle and take off-line irrespective of the proposed project siting decision. Details of the proposed work at the facilities around Jerome Park Reservoir for each of the siting and water conveyance alternatives was described above in Section 8.2.1.



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Not To Scale

Jerome Park Reservoir Facilities to be Dismantled and Taken Off Line

Croton Water Treatment Plant

Figure 8.2-26

8.2.3.1. Project Impacts

The anticipated year of completion of the proposed modifications and new facilities (new shaft chamber and tunnel) is 2011. Therefore, potential project impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2011. If the NCA is pressurized for the potential project at the Eastview Site, some of the work described in Section 8.2.1 would take place in 2011-2015. However, the future baseline conditions in these years would be very similar to those in 2011, so 2011 was utilized in the following analyses and was applied to all the project scenarios.

Under the proposed project, the modifications of existing and new (below-grade) facilities would occur within the area identified as a public water supply complex. The majority of the facility upgrades would be indoors and would not change the views of the site from nearby locations.

Modifications could include the dismantling of the Microstrainer Building. Although the dismantling of this facility and subsequent landscaping would alter the conditions of this location, it would remain part of the public water supply complex and improve the visual character of the property. This building is not historically significant. The proposed modifications to the existing historic structures around the Reservoir are all internal to the structures and are consistent with their historic uses as water supply structures.

The new facilities within the Harris Park Annex would be below-grade; the existing lawn would be reestablished above the completed facilities. Except for times when maintenance or inspection would be required, the land above the new Shaft Chamber and connections would be landscaped and maintained. These changes would not alter the neighborhood character or require any zoning changes.

After the construction of the proposed water treatment plant at any of the sites, the nature of Jerome Park Reservoir would remain similar to the existing conditions. Surrounding land uses are not dependent on the water supply use of the Reservoir. The Jerome Park Reservoir does not support the local economy or provide a defining context for the surrounding land uses, zoning or neighborhood character. These land uses within the study area are characteristic of typical multiuse neighborhoods that contain a variety of urban developments. These include the nearby schools, residences, and commercial districts, and provides for open views that the Reservoir permits. However, the reservoir complex and the surrounding land uses, zoning, and neighborhood character are not interdependent. These surrounding uses have independent natures and represent various land use categories. The Reservoir, in conjunction with the nearby institutional land uses by the nearby schools, helps to define the visual and neighborhood character of the blocks that border the Reservoir. These minor modifications at the Jerome Park Reservoir and the planned continuity to maintain the water supply function and the views that the Reservoir provides leads to a conclusion that no significant adverse impacts would occur from operational changes at Jerome Park Reservoir.

A review pursuant to the Uniform Land Use Review Procedure (ULURP) for the proposed project at Jerome Park Reservoir would not be required. The proposed project would represent

an extension of the existing use and would not substantially expand the capacity of the site. Similarly, and largely for the same reasons, the proposed project would require a zoning change or a zoning override, despite the fact that the existing Reservoir and appurtenant facilities represent a non-conforming use under the New York Zoning Resolution (within the existing R6 residential zone).

Topographic elements and surrounding vegetation would not be altered, and would continue to provide visual screening around portions of the Reservoir. There would not be any loss of open space acres. Upon completion of the proposed project, Jerome Park Reservoir facilities would generally function as they do under the Future Without the Project, with no noticeable changes in the level of activity at the facilities. There are no proposed activities associated with the proposed work that would be anticipated to disrupt or change the existing or future anticipated characteristics of the study area.

The proposed modifications to the existing Jerome Park Reservoir facilities would result in a loss of employment at the site. With Gate House No. 7 (six employees) and the Jerome Pumping Station (six employees) being taken off-line a total of 12 employees would be reassigned by the NYCDEP. Therefore, the relocation of employees currently working at Jerome Park Reservoir facilities to other NYCDEP facilities would not result in a decrease in jobs or in income tax revenue for NYC.

8.2.3.2. Construction Impacts

Work around Jerome Park Reservoir (related to all three water treatment plant sites) would take place seasonally between 2006 and 2011. This work would occur in the summer, fall, and early winter, when the NCA is often shut down due to water quality problems in the raw water. In addition, the decommissioning of Mosholu and Jerome Pumping Stations would occur in 2010 or 2011, after the water treatment plant was in operation. Because of the long duration of the total work around Jerome Park Reservoir, the multiple work sites, and the relatively low intensity of the work at any one time, 2010 was chosen as a typical peak year for the construction impact analyses.

During the peak construction year approximately 21 construction workers and approximately five trucks would work at the sites around Jerome Park Reservoir on any given weekday. The Contractor would likely assign the workers and their equipment, mostly sequentially, to the multiple work sites around the Reservoir. During the proposed modifications at current Jerome Park Reservoir facilities, construction work would increase the level of activity on these sites. Construction activity would consist of internal rehabilitation of the existing gate houses and minimal ground disturbance near Gate House No. 5; within Harris Park Annex. In order to secure the site and provide public safety during construction, a temporary chain-link fence would surround the below-grade construction area during the eight-year construction period.

8.2.3.2.1. Land Use, Zoning, Public Policy, Neighborhood Character, and Visual Character

As discussed above under project impacts, Jerome Park Reservoir is central to the neighborhood in which it is surrounded. Jerome Park Reservoir was built, and is maintained, for water supply purposes. This proposed construction activity around Jerome Park Reservoir for the Croton project, although of long duration, is on a scale of typical urban utility work. The presence of construction equipment around the Reservoir would not cause any substantial changes to the visual character. The proposed facility modifications would be consistent with historic activity at this site, and no new zoning actions are required for the proposed upgrades and rehabilitation of the water distribution connections. The proposed construction around this site is consistent with the water supply use and does not constitute a significant adverse impact to the neighborhood character.

8.2.3.2.2. Socioeconomics Analysis

The construction workers would have a median salary of approximately $42,200 (based on the salaries of the types of construction workers that would be on-site) was used to determine examples of income tax benefits to the City. If residing in NYC, a worker would pay approximately $1,400 in per year to the City (Appendix A).

The 21 construction workers would likely add money to the local economy through their visits to area businesses. The RIMS II multipliers for the construction industry indicate that the sectors that would benefit most during construction are retail trade and business services. It is not possible to determine exactly where the workers may conduct business, but it is likely that they would visit gas stations, convenience stores, and restaurants. The costs of construction activities for the proposed modifications and new (below-grade) facilities are included in overall costs for the proposed project. For the complete analysis of indirect effects, refer to the socioeconomic analysis for each of the water treatment plant sites (Eastview Site, Section 5.7; Mosholu Site, Section 6.7; Harlem River Site, Section 7.7).

8.2.3.2.3. Historic Resources

As discussed in the existing conditions, Jerome Park Reservoir and adjacent associated buildings, structures, and sites are now listed on the New York State Register of Historic Places. In 2000 Jerome Park Reservoir was also listed in the National Register of Historic Places. The proposed upgrades to these facilities, work to take facilities off-line, or the proposed sub-grade water supply connection work, would not qualify as having the potential to significantly affect historic structures since none of the proposed work would appreciably affect building facades or the historic context of the Jerome Park Reservoir. Prior to construction, the New York State Office of Parks, Recreation and Historic Preservation and the Secretary of the Interior's Standards for the Treatment of Historic Properties would be consulted to retain the historic character of the structures. This consultation would ensure that the proposed connections would not cause a significant adverse impact to the historic structures. The construction activity would be different for each site alternative. For the Eastview with KCT alternative, the Jerome Park Reservoir would be taken off-line and available only for emergency use. No work would be

required at Jerome Park Reservoir with the exception of the maintenance and security work planned to take place during 2004-2006 as part of a separate project. For the Mosholu and Harlem River Sites, no work would take place in the above grade structures except that the existing chemical dosing facilities at Gate House No. 5 may be replaced with potassium permanganate. There would be connections to the NCA and various distribution system chambers that would all take place below ground.

8.2.3.2.4. Traffic and Transportation

Transportation data and planning assumptions for the construction workers as well as the construction trucks during the 2010 peak construction period were presented previously in Section 4.9 Data Collection and Impact Methodologies, Traffic and Transportation. As described under Existing Conditions (Section 9.9.2.1), there are subway lines and bus routes along major streets in the vicinity of the Jerome Park Reservoir. For the purpose of the traffic analysis, based on numerous past transportation studies in the area, it was assumed that 33.8 percent of 21 construction workers would arrive in private vehicles (8.6 percent of whom would travel by carpool), 54.6 percent would arrive by mass transit, and 11.6 percent by other means. Table 8.2-35 shows the anticipated 2010 peak year construction resources based on conceptual engineering design. Table 8.2-36 shows the resulting peak construction generated traffic based on conceptual engineering design. Typically, each construction vehicle is considered to be equivalent to 1.5 passengers for 2-axle trucks and 2.0 passenger cars for 3-axle trucks. For conservative results, however, each construction truck was assumed to be a 3-axle truck or equivalent to 2.0 passenger cars. As described in Section 4.9, Methods of Analysis, Traffic and Transportation, employees would arrive at the site via mass transit, bus, or private vehicles. The modifications and new facilities work would generate approximately 15 transit trips utilizing multiple transit stations. There would be short-term closures less than two months in duration of one lane at a time on Goulden Avenue while construction would take place beneath the street. This would be temporary and would not be a potential significant adverse impact on local traffic.

TABLE 8.2-35. CONSTRUCTION RESOURCE REQUIREMENTS

Potential Construction Impacts	Jerome Park Reservoir
Peak Year	2010
Construction Hours	7:00AM to 6:00 PM
Construction Shifts	1
Construction workers on a peak day	21
Construction vehicles on a peak day	5
Peak time of arrival (workers)	6:00 AM to 7:00 AM
Peak time of departure (workers)	6:00 PM to 7:00 PM
Period of arrivals and departures (trucks)	7:00 AM to 6:00 PM

TABLE 8.2-36. CONSTRUCTION TRIP GENERATION – PRIVATE VEHICLE

	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Auto	5	1	6	1	5	6
Trucks	5	0	5	0	5	5
Total	10	1	11	1	10	11
PCE Total	15	1	16	1	15	16

The small numbers of total project-induced traffic shown above would not significantly impact traffic or adversely affect any intersections. Even if most of the workers were to arrive in private cars, so that 26 cars were to arrive, these low induced traffic volumes do not require a detailed analysis and are screened from further analysis.

Parking. Construction at the shaft site is not anticipated to provide on-site parking facilities for construction vehicles and workers during project construction. All construction vehicles and workers would be required to park on local streets or possibly in a nearby school parking lot, if permitted. Several of the work sites would have sufficient staging areas to allow for parking of all the construction workers' vehicles and construction vehicles even if all 21 workers were to drive separately. Since the number of anticipated construction vehicles is so low, no significant parking impacts are anticipated to occur to the public and private parking facilities in the vicinity of Jerome Park Reservoir.

Safety. Four intersections within this study area experienced a high rate of accidents between May 1998 and April 2001, including:

1. Van Cortlandt Park South at Van Cortlandt Park West and Bailey Avenue
2. Van Cortlandt Park West at Orloff Avenue
3. Bedford Park Boulevard at Goulden Avenue
4. 205th Street at Goulden Avenue

The low traffic volumes resulting from the proposed activity would represent a very small increase in any of the existing volumes at these intersections. It is not expected that any of the studied intersections would experience additional accidents during the duration of the proposed construction at Jerome Park Reservoir as a consequence of this project.

Transit. The construction at Jerome Park Reservoir would generate approximately 8 transit trips utilizing multiple transit stations. This volume of transit trips falls below the threshold where detailed analysis would be necessary. Therefore, no significant transit-related impacts would be anticipated under the potential construction conditions.

Pavement Infrastructure. The proposed work at this site is not anticipated to generate significant construction truck loads.

8.2.3.2.5. Air Quality

Reservoir Site. The construction and rehabilitation work at the Jerome Park Reservoir facility would result in emissions of air pollutants associated with exhaust from construction activity. The construction activities at the Reservoir would involve the use of one crane, one backhoe/loader and supply delivery trucks. In general, diesel-powered equipment and trucks are mainly a concern because of the potential particulate matter that they can emit. Also, a 200 hp electric-powered fan would provide ventilation for workers located below ground. Construction activities are also a potential source of fugitive dust emissions that may have a temporary effect on local air quality. Therefore, the rehabilitation work at the Reservoir site was examined for its potential to create a significant adverse impact from PM10 and PM2.5 and would not be anticipated to have any significant or adverse impacts on the air quality.

Particulate Analysis $PM_{2.5.}$

Mobile Sources. Since there is no defined methodology determining the potential for significant $PM_{2.5}$ impacts from vehicle sources of emissions an interim method has been developed by NYCDEP's Office of Environmental Planning and Assessment (OEPA). OEPA determined a screening procedure could be used if there were less than 21 truck trips per hour, maximum annual $PM_{2.5}$ concentration would be less than 0.05 $\mu g/m^3$. This is below the 0.1 $\mu g/m^3$ de minimis threshold value that determines the potential for significant adverse impacts; and therefore, no further mobile source $PM_{2.5}$ analysis would be required.

8.2.3.2.6. Noise Analysis

The traffic generated by construction activities and the construction equipment tally was not anticipated to change over the course of the construction period. As a result, mobile and stationary source noise levels resulting from construction would not fluctuate substantially over the course of the construction phase. As discussed previously, the year 2010 was selected as the representative construction year.

An electric fan would be placed at the access to Shaft No. 21 (within the Reservoir) and may operate continuously (24 hours a day, seven days a week) for the duration of construction

activities. The fan would discharge through ventilation louvers that would be placed on top of the existing structure. Even though construction would not take place on weekends, analysis of construction impacts from stationary sources included both weekdays and weekends to account for possible continuous use of the fan.

According to CEQR, a project-generated permanent increase of 5 dBA or more over the baseline noise level recorded at a sensitive receptor during the daytime is considered a significant impact if the existing noise level is less than 60 dBA. If the existing noise level is 62 dBA or more, a 3 dBA incremental change constitutes a significant impact. A 3 dBA incremental threshold applies during the nighttime. The City of New York prohibits construction activity from 6PM to 7AM on weekdays.[68]

Mobile Source Noise. Potential impacts from mobile sources during the construction phase were determined for Jerome Park Reservoir. As discussed in existing conditions, on the basis of the PCE screening analysis, it was determined that none of the identified noise-sensitive route segments in the vicinity of the site required further analysis. Therefore, it was concluded that the contribution of mobile source noise to the total construction-generated noise experienced at the sensitive receptors would not be significant.

Stationary Source Noise. Potential noise level increases from construction activities were determined for the proximate receptors. As discussed above, stationary source noise created during the construction phase was quantified using 2010 data. An algorithm (that considered equipment noise levels, usage factors, and distances from source to receptor) was used to calculate the average noise level for a typical hour during peak construction (see Section 4.10, Data Collection and Impact Methodologies, Noise). Noise levels for construction equipment were determined from industry and governmental publications. Usage factors accounted for intermittent utilization, and subsequent noise generation, of construction equipment throughout the course of a normal workday. The horizontal and vertical distances from construction equipment to the receptor being studied were measured in order to calculate the line-of-sight distance used in the algorithm.[69] The noise contribution from construction activity then was added to the 2010 Future Without the Project noise level to arrive at a future construction noise level. Table 8.2-37 presents construction equipment, including associated noise levels and usage factors.[70] Equipment noise levels (at their associated reference distances) and the usage factors are standard values established through noise studies. The usage factors are not anticipated to change because the scope of work will not change significantly over the construction duration.

[68] City of New York. October 2001. CEQR Technical Manual.
[69] City of New York. October 2001. CEQR Technical Manual.
[70] City of New York. October 2001. CEQR Technical Manual

TABLE 8.2-37. NOISE LEVELS AND USAGE FACTORS FOR EQUIPMENT USED AT JEROME PARK RESERVOIR
(Leq, dBA)

Equipment	Equipment Noise Level	Reference Distance (feet)	Usage Factor
Ventilation Fans	59	5	1.0
5-Ton Crane	83	50	0.08
Backhoe	85	50	0.16
Trucks	88	50	0.16

Source: Bolt, Beranek, and Newman, Inc. December 1971. Noise from Construction Equipment and Operations, Buildings Equipment and Home Appliances.

Table 8.2-38 compares noise levels for weekday construction hours for the Future Without the Project (year 2010) to noise levels for year 2010 that include contributions from project construction activities. The Bronx High School of Science, a residence on Sedgwick Avenue south of Fort Independence Park,, Fort Independence Park, and a second residence on Sedgwick Avenue immediately across the Reservoir from Gate House No. 5 (JPR-S1, JPR-S2, JPR-S3, and JPR-S4 respectively) were the proximate monitoring locations closest to the proposed construction site and therefore were focused upon in this construction impacts noise analysis. This comparison was performed to determine whether construction would result in noise increasing to levels that would exceed the 3-5 dBA threshold used to define significance.

This analysis considers the maximum noise levels associated with the proposed construction. In order to respond to comments submitted to the NYCDEP on the Draft SEIS and to further reduce the impacts of the construction on school activities, the noisiest construction activities, including concrete pouring, would be restricted to days when school is not in session. Table 8.2-39 compares noise levels for Sundays and weekdays during quietest non-working hours for the Future Without the Project (year 2010) to noise levels for year 2010 levels including contributions from project construction activities related to the construction of the New Shaft Chamber. This is the noisiest construction activity that would occur at this site and it is near the Bronx High School of Science (JPR-S1).

Table 8.2-40 describes the noise levels that would be experienced at residential receptors as a result of ventilation fan operation at Shaft No. 21 during the pressurization work of the NCA. This fan would operate 24 hours a day during the construction activity so this table focuses on the quietest time of night. Only residential receptors were considered in Table 8.2-40 because the schools and parks would be closed at these times. For weekends and weekdays during non-working hours, the monitoring locations did not show a noise level increase that would exceed the five dBA or more threshold value. This electric fan at Shaft No. 21 would add a very small incremental noise level that would not be perceptible at the nearest residential receptors

Bronx High School of Science (JPR-S1). Noise levels predicted to occur as a result of proposed weekday construction activities at the Bronx H.S. of Science would exceed the 3 - 5 dBA threshold used to define significant noise impacts. The largest incremental change at this receptor (located to the east of Gate House No. 5 on the east side of the Reservoir) over the Future Without the Project level would be 7.6 dBA. The largest incremental change due to

construction on a weekend at this receptor over the Future Without the Project level would be 7.0 dBA when school is not in session. It is unlikely, however, that all of the construction equipment would be operating simultaneously over the course of a construction day (as was assumed for this analysis).

As discussed, construction would not be continuous over this period, but would occur for approximately eight months out of each construction year during seasonal shutdowns. Construction of the New Shaft Chamber would occur during the school year with the concrete pours taking place during the summer months, Saturdays, or holidays to minimize disturbance of the nearby schools while they are in session. Predicted noise levels would exceed the acceptable threshold while construction is ongoing. These noise levels increases would be annoying and a nuisance for this academic institution. Due to the intermittent nature of the construction schedule at this site, these predicted noise level increases would be considered temporary and therefore not significant. However, since the potential noise level increases would affect an academic institution, measures would be implemented to reduce to 5 dBA or less construction-related noise levels experienced at JPR-S1.

An analysis was performed to determine the total distance beyond the school (and further to the east) that noise levels exceeding the 3-5 dBA threshold would extend. This was performed to determine both the maximum distance that the noise levels would extend and to what extent local noise-sensitive receptors would be affected. Noise levels from weekday construction that exceed the 3-5 dBA threshold would extend from the east of the site to a maximum distance of approximately 225 feet to the east of the school (see Figure 8.2-27). Noise levels from weekend construction that exceed the 3-5 dBA threshold would extend from the east of the site to a maximum distance of approximately 215 feet to the east of the school Harris Park Annex and the Bronx High School of Science are the likely to be affected sensitive receptors within the affected area. The park and school are sensitive land uses; noise attenuation measures (such as noise barriers) would be implemented in order to mitigate elevated noise to acceptable levels.

Residences on Sedgwick Avenue (JPR-S2, JPR-S4) and Fort Independence Park (JPR-S3). Noise levels predicted to occur as a result of the proposed project at the residence and the park would not exceed the 3-5 dBA threshold used to define significant noise impacts. No further analysis was performed for these receptors.

TABLE 8.2-38. NOISE LEVELS FROM CONSTRUCTION ACTIVITIES AT RECEPTORS NEAR JEROME PARK RESERVOIR WEEKDAYS CONSTRUCTION HOURS (Leq, dBA)

Proximate Receptor	Monitoring Period	Future Without Project Noise Level (2010)	Predicted Construction Noise Level	Total Noise Level During Construction[1] (2010)	Incremental Change	Exceed Threshold (Yes/No)
JPR-S1	Quietest (1-2 pm)	65.5	69.8	71.2	5.7	Yes
	Noisiest (11am-12pm)	63.0	69.8	70.6	7.6	Yes
JPR-S2	Quietest (1-2 pm)	53.0	46.8	53.9	0.9	No
	Noisiest (11am-12pm)	70.6	46.8	70.6	0.0	No
JPR-S3	Quietest (1-2 pm)	52.9	46.5	53.8	0.9	No
	Noisiest (11am-12pm)	55.8	46.5	56.3	0.5	No

[1]Total Noise Level = logarithmic addition of Future Without Project and Predicted Construction Noise Level

TABLE 8.2-39. NOISE LEVELS FROM NEW SHAFT CONSTRUCTION ACTIVITIES AT RECEPTORS NEAR JEROME PARK RESERVOIR WEEKEND CONSTRUCTION HOURS (Leq, dBA)

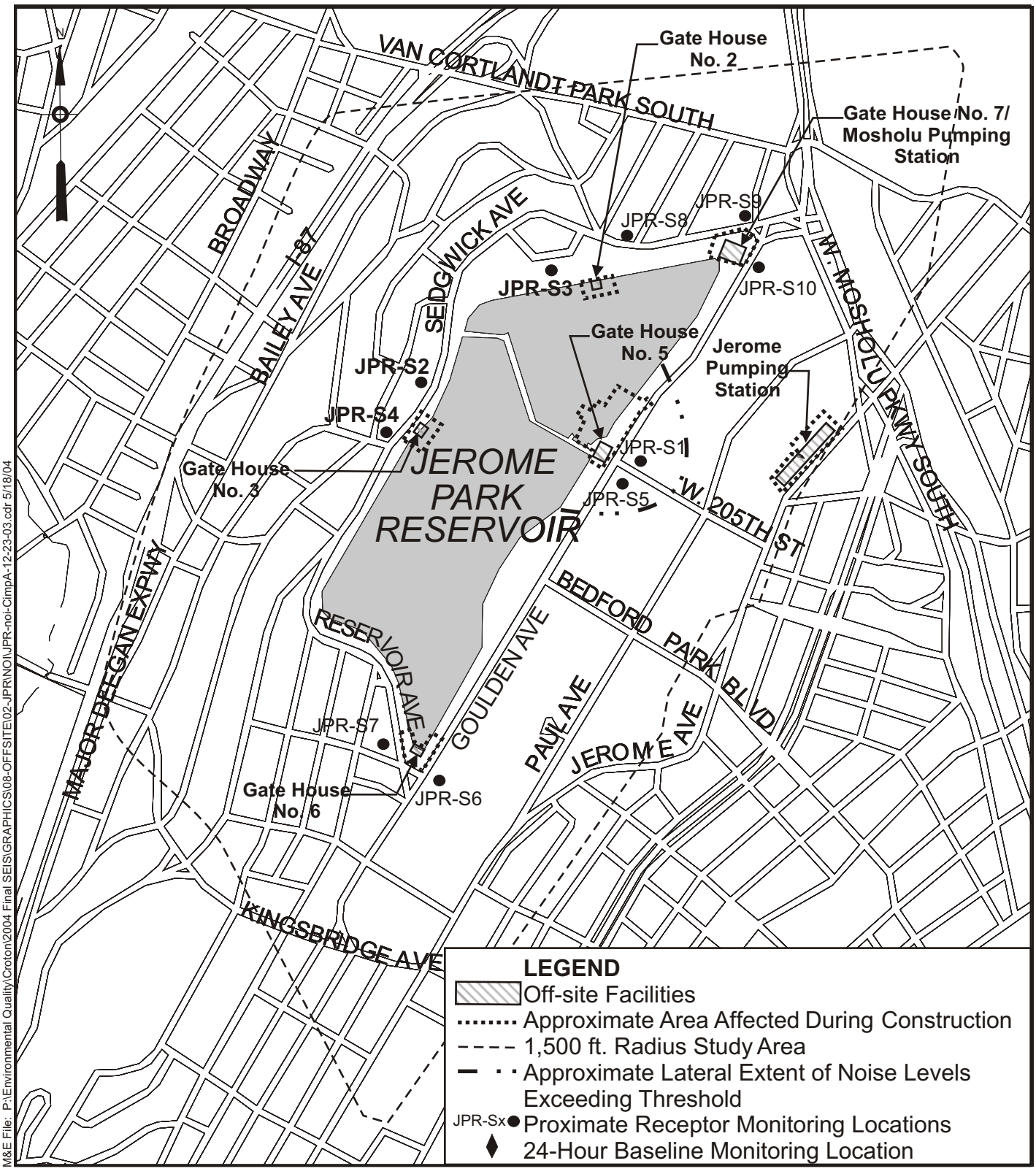
Proximate Receptor	Monitoring Period	Future Without Project Noise Level (2010)	Predicted Construction Noise Level	Total Noise Level During Construction[1] (2010)	Incremental Change	Exceed Threshold (Yes/No)
JPR-S1	Quietest (8-9am)	63.8	69.8	70.8	7.0	Yes
	Noisiest (2-3 pm)	65.4	69.8	71.1	5.7	Yes
JPR-S2	Quietest (8-9am)	62.4	46.8	62.5	0.1	No
	Noisiest (2-3 pm)	63.1	46.8	63.2	0.1	No
JPR-S3	Quietest (8-9am)	58.7	46.5	59.0	0.3	No
	Noisiest (2-3 pm)	59.5	46.5	59.7	0.2	No

[1]Total Noise Level = logarithmic addition of Future Without Project and Predicted Construction Noise Level

TABLE 8.2-40. NOISE LEVELS FROM NCA PRESSURZATION CONSTRUCTION ACTIVITIES AT RESIDENTIAL RECEPTORS NEAR JEROME PARK RESERVOIR SUNDAYS AND NON-WORKING HOURS (Leq, dBA)

Proximate Receptor	Monitoring Period	Future Without Project Noise Level (2010)	Predicted Construction Noise Level	Total Noise Level During Construction[1] (2010)	Incremental Change	Exceed Threshold (Yes/No)
JPR-S2	Sunday Quietest (4-5 am)	51.2	5.9	51.2	0.0	No
	Sunday Noisiest (8-9 pm)	64.4	5.9	64.4	0.0	No
	Weekday (Non-hours) (2-4 am)	53.0	5.9	53.0	0.0	No
JPR-S4	Sunday Quietest (4-5 am)	51.5	5.3	51.5	0.0	No
	Sunday Noisiest (8-9 pm)	65.2	5.3	65.2	0.0	No

[1]Total Noise Level = logarithmic addition of Future Without Project and Predicted Construction Noise Level



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Jerome Park Reservoir Lateral Extent of Noise Levels Exceeding Threshold (Before Mitigation)

Croton Water Treatment Plant

Figure 8.2-27

Combined Mobile and Stationary Source Noise. The Bronx High School of Science could be exposed to the combined effect of both mobile and stationary noise generated by construction activities at the Reservoir. Based on the PCE screen presented in Table 8.2-16, the largest potential incremental change in mobile source noise levels due to construction activities for Goulden Avenue (along which the school is located) would be less than 1.0 dBA. Receptors at this site already would have noise level increases in excess of the CEQR impact threshold used to determine significance due to contributions from stationary source noise. The contribution from mobile sources to the total noise would not appreciably change predicted noise levels.

As discussed previously, the increased noise levels resulting from construction activity would exceed the thresholds established by CEQR for defining significant adverse noise impacts. These increased noise levels would persist for less than eight months out of a year; these increased noise levels therefore would be considered temporary and not significant. However, noise attenuation solutions have been considered due to the sensitive nature of the Bronx High School of Science and the land uses of the surrounding area. A noise attenuating barrier would be constructed that would reduce the construction-generated noise to levels that are less than the 3-5 dBA CEQR impact threshold. The noise barrier would be installed for the duration of construction activities. Section 9.0, Mitigation of Potential Impacts, presents possible mitigation measures that would be implemented.

Vibrations. It is possible that excavation activities for the new shaft chamber at the Reservoir may cause vibrations. Vibrations could occur due to rock drilling and deep rock blasting activities, and from tunnel boring machine (TBMs). There is vibration-sensitive equipment associated with the numerous schools situated along Goulden Avenue located to the east of the Reservoir. There would be no surface drilling or blasting in relation to work at the Reservoir. Rather, rock removal activities would be done underground as the tunnel is cut from the water treatment plant (Mosholu and Harlem River Site alternatives) or the NCA (Eastview Site alternative) toward the New Shaft Chamber. As such, there would not be noise, flyrock, or dust associated with this work. Slow turning tunnel boring machines are very effective at minimizing and managing vibrations, and the NYCDEP's experience with many miles of water tunnel construction indicates that this activity can be conducted beneath residences, businesses, and sensitive uses without any awareness of the work going on below. Vibrations from these activities, however, if not properly, managed have the potential to affect sensitive equipment in the vicinity, therefore vibration monitoring would take place during the tunneling activity.

Tunnel Boring Machines (TBMs). Vibrations from advancing TBMs may affect sensitive electronic equipment. The tunneling subcontractor would develop a vibrations monitoring program during the engineering phase of the project. Prior to any boring activities, the location of the bore path would be reviewed to identify any businesses, hospitals, residences, or other facilities located in the vicinity of the planned boring. Soil conditions, structural conditions of neighboring buildings, and sensitive uses will be identified. Although TBMs have been used on a number of projects within the City of New York and vibration has seldom caused any impacts during these operations, any potential impacts on people or property due to vibration would be addressed for the proposed project. The impact of the vibrations would be reduced to levels permitted by applicable local, state, and federal regulations and codes.

Due to the techniques and plans described above, there would be no significant adverse impacts from the drilling operations required for this proposed project.

8.2.3.2.7. Hazardous Materials

The environmental assessment undertaken confirmed the presence of hazardous materials at Jerome Park Reservoir site and determined that the hazardous materials primarily originated from a combination of on-site and off-site sources. Based on soil and groundwater testing data, environmental contaminants of potential concern found at Jerome Park Reservoir are identified in Table 8.2-41.

TABLE 8.2-41. POTENTIAL ENVIRONMENTAL CONTAMINANTS OF CONCERN AT JEROME PARK RESERVOIR

Media	Contaminant Class	Contaminants of Concern
Soil	Metals	Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Mercury, Nickel, Zinc
	Volatile Organic Compounds	1,1,1-Trichloroethane (trace)
	Semi-volatile Organic Compounds	Polynuclear Aromatic Hydrocarbons (e.g., Benzo(a)anthracene, Chrysene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene)
Groundwater	Volatile Organics	Chloroform, Bromodichloromethane
	Metals	Selenium, Chromium, Iron

The presence of the various polynuclear aromatic hydrocarbons in the soil including anthracene, pyrene, fluoranthene compounds is probably associated with the environmental release of petroleum hydrocarbon fuels (e.g., fuel oil, diesel) or other complex organic mixtures. The trichloroethane detected in the soil may be an indication of the release of a chlorinated solvent. Chlorinated solvents or disinfection by-products may have been released to the environment from one or more sources and may be migrating (i.e., dispersing) with the groundwater.

The presence of these hazardous or contaminated materials at Jerome Park Reservoir may threaten human health or the environment only when exposure to those materials occurs. The scope of construction work planned at Jerome Park Reservoir would include the excavation of soil around existing structures (e.g., gate houses, shafts). In addition, more extensive excavation extending below the groundwater table would be performed to support the construction of tunnels, access shafts, and water control structures (e.g., valves, flow meters).

A site-specific Construction Contamination Management Plan (CCMP) would be prepared for all areas where environmental contaminants may be encountered. The CCMP would identify sampling and analysis procedures that would be implemented to characterize type and extent of

contamination and the requirements for the handling, management, treatment, and disposal of contaminated materials encountered during construction.

For solid materials that would not be reused on-site, testing would be required to determine appropriate off-site disposal options. In addition, testing may also be required for reuse of solid materials on-site either to confirm that contaminants are not present or to demonstrate that selected management techniques are suitable for the contaminant concentration levels present. The testing data for either the on-site or off-site management of contaminated materials would be specifically generated for each lot of material requiring disposition.

The off-site disposal of solid wastes generated as a result of the proposed action would depend on the nature of the construction activity (e.g., quantity of material to be excavated) and the bulk chemical characteristics of the waste materials to be managed. Wastes containing contaminants at concentration levels above applicable action levels, regulatory thresholds, or risk-based limits would require specialized disposal.

Based on testing data, the soil and groundwater in the areas of Jerome Park Reservoir where construction activities are planned contains various contaminants of concern particularly organic compounds. The distribution of these hazardous materials is localized but would require specialized management if encountered during construction activities. The CCMP would include provisions to manage both contaminated soil and groundwater.

As noted above, a hazardous materials assessment would be conducted as part of the proposed Croton project at the following structures: Jerome Pumping Station and Gate House Nos. 2, 3, and 6/Microstrainer Building. If hazardous materials are found within any of the structures, they would be remediated as part of the proposed project, prior to the initiation of any work at these sites.

Hazardous Materials Used During Construction. During the construction activities at Jerome Park Reservoir, the Contractor may introduce a variety of hazardous materials to the site to support the construction activity. The specific types and quantities of hazardous materials stored and used on the construction site will depend on the nature and extent of activities being performed. In general, various hazardous materials would be used to support the operation of vehicles and heavy equipment (e.g., diesel fuel, gasoline, lubricants, glycol) as well as hazardous materials used in the construction process itself (e.g., concrete release agents, adhesives, paints and coatings). Materials Safety Data Sheets (MSDS) for typical construction-related hazardous materials are provided in the Appendix E. The contractor would be required to adhere to a Health and Safety Plan approved by the NYCDEP.

With the implementation of the aforementioned measures, no significant adverse impacts from hazardous materials would occur.

8.2.3.2.8. Water Resources

During construction activities, excavation would take place in the Harris Park Annex, just north of Gate House No. 5, for construction of the shaft chamber and the installation of the flow meters and valve chambers. Excavation materials (i.e., stone and soil) would be stored on-site; best management practices (BMPs) would be implemented to avoid the transportation of these materials into the Reservoir. The design and the implementation of BMPs would be the responsibility of the Contractor and the method of use is normally selected to best suit their construction technique.

Existing pipes, valves chambers, and flow meters in the vicinity of Gate House No. 5 that would be associated with the distribution of treated water would be upgraded under the proposed project. These upgrade activities would utilize the cut and cover technique. Infiltration of groundwater into the excavated areas is anticipated to be minimal due to the shallow depth of excavation, the short duration of the upgrade activities and the chosen construction techniques that was designed to minimize the groundwater infiltration.

Temporary dewatering during construction of the shaft chamber is anticipated. The construction technique, which includes using slurry wall to stabilize the sidewalls, would minimize the amount of dewatering needed. The minimal groundwater and stormwater runoff pumped from the cut and cover operation would be treated by a temporary settling tank prior to discharge to the near-by sewer that is operated and maintained by the NYCDEP. The groundwater in the vicinity of Harris Park Annex is normally supplied by leakage from Jerome Park Reservoir. There would be adequate recharge capacity provided by the level of water inside the Reservoir during the construction; therefore no significant adverse impact is anticipated due to dewatering during the excavation of the shaft camber. A silt fence and a row of hay bales would be installed inside the construction fence to collect the soil and dust from the equipment wash-water and stormwater runoff and to prevent the sediment from leaving the construction staging areas.

8.2.3.2.9. Infrastructure and Energy

The introduction of 21 construction workers would require the availability of utilities to service the employees and the construction-related activities.

Water Supply. During construction, the Contractor would likely select a method of supplying water from alternate sources to best suit their method of working. By using an independent source of water for construction, the potential impact on the study area water supply system would be averted.

Sanitary Sewage. Throughout the construction period, portable rest rooms would be made available for the construction workers. The sanitary sewage would be collected and properly disposed of through a contract with a private hauler. No connection or discharge to the existing sanitary sewer system would be made; therefore, no significant adverse impact is anticipated.

Stormwater System. A silt fence and a row of hay bales would be installed inside the construction fence to prevent the dust and soil anticipated from equipment wash-water (from the staging area) from entering the existing stormwater system. New York City maintains a

combined stormwater and sewer system at Jerome Park Reservoir and surrounding communities. Stormwater runoff would continue to be directed to the existing combined sewer in the same manner as described under the Future Without the Project. No significant adverse impact is anticipated on the existing stormwater drainage system in the study area.

Energy Demand. The proposed construction work at Jerome Park Reservoir would involve installation of ventilation equipment and an office trailer. The ventilation equipment and the office trailer are anticipated to require a temporary 500 to 1,000-kVA service that would be hard wired directly to the existing Con Edison grid, and work operate independently of the existing electrical system. The existing electrical system; therefore would not be altered from the Future Without the Project conditions. Con Edison would be responsible for supplying this temporary power independently to the existing system. Therefore, no significant adverse impact is anticipated on the existing electric utilities in the study area.

Gas Demand. Natural gas would not be utilized during proposed construction. No connection to the existing gas main would be made; therefore, no significant or adverse impact is anticipated.

8.2.3.2.10. Solid Waste

Construction activities would generate worker generated solid waste, excavation solid waste and miscellaneous construction debris. All worker-generated solid waste and miscellaneous construction debris would be removed from the site by a private hauler, and handled by the NYCDOS

During the proposed construction activities the estimated manpower at Jerome Park Reservoir facilities would be 32 individuals, who would each generate 13 lbs/week of solid waste for a cumulative total of 416 lbs/week of solid waste. This number of individuals working at the site consists of the 11 NYCDEP employees (23 existing employees minus 12 employees for Mosholu Pumping Station and the Jerome Pumping Station going off-line) and 21 construction workers. This amount of solid waste would be handled by the existing NYCDOS. Excavation would result from the construction of a new shaft chamber in the Harris Park Annex. Excavation of the new chamber would create approximately 12,000 cubic yards of earth and rock solid waste. This amount of solid waste would be transported off-site by the private hauler and following an investigation of the material content could be reused as fill material off-site.

Additional solid waste would be generated as a byproduct of construction. This material would be highly variable in nature; it would include concrete forms, packaging, scraps of pipe, ductwork, sheetrock, and electrical materials. This amount of waste would be added to the worker-generated waste described above. The Future Without the Project considerations do not anticipate future solid waste generation at Jerome Park Reservoir. However, the quantity of solid waste generated during construction would be negligible compared to the amount handled by the City solid waste disposal system, and would be easily handled by the existing NYC Department of Sanitation. It is anticipated that the solid waste produced by construction workers would not result in a significant adverse impact on local or regional solid waste.

8.2.3.2.11. Public Health

The level of construction activity and the lack of any extensive open cut excavation work preclude risks associated with air quality impacts from excavation at Jerome Park Reservoir work areas. Excavation work would be limited to the new shaft chamber and opening up some existing chambers around Jerome Park Reservoir. This work would not create a health risk because the excavation areas are very small, and only a few pieces of heavy machinery would be involved.

The public has raised health effects related to rodent and pest control. Urban pest control issues largely encompass vermin infestations from local sewers. These infestations are part of a larger public health issue, for rats and the fleas that they carry are frequent vectors of communicable diseases. Additionally, rat attacks on urban homeless populations and vulnerable individuals, such as infants, have been a less frequent but extremely grave public health risk. Typically rats are attracted from their underground lairs to search for food in local apartments and piles of garbage that line the sidewalks in New York[71]. However, they can also be driven out of their underground homes by construction activity.

This problem attracted media attention during the 1990's Central Artery/Tunnel project in Boston, subsequently dubbed "the Big Dig" due to the 15 million cubic yards of earth excavated throughout construction[72]. Fears that excavation of this size would unearth a rodent population of 80,000[73] led to the establishment of the Central Artery Rodent Control Division, whose jurisdiction covers a 70 mile area around the construction site, and the city run Inspectional Services Department (ISD)[74]. These efforts were so successful that Integrated Pest Management (IPM) and word of the "Boston Model" has spread worldwide. In fact, the IPM strategy was able to decrease the number of rat complaints from 1,814 in 1995 to 647 in the year 2000. The IPM methods encompasses a wide range of strategies, from the proper containment and timely clean up of garbage, to the minimization of the low-lying shrubbery rodents are partial to making their homes under.

Pest rodents in urban areas of the northeastern United States include the non-native Norway rat (*Rattus norvegicus*) and house mouse (*Mus musculus*). At times, the native white-footed mouse (*Peromyscus leucopus*) also can be associated with vegetation in urban areas. The Norway rat and house mouse characteristically are referred to as commensal species (i.e., feed from our tables), and both species are well known for their ability to colonize urban infrastructure. Their presence poses a public health concern and suggests a need for improved environmental management (particularly sanitation, refuse storage, and infrastructure repair).

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[71] New York City Department of Health. 2002. Press Release.
http://www.nyc.gov/html/doh/html/public/press00/p1161023.html

[72] Central Artery/Tunnel Project Website. 2002. http://www.bigdig.com/thtml/enviro.htm

[73] South Coast Today. 4/7/02. "Rats! Boston Residents Expect a Rise in Rodent Population this Summer."
http://www.s-t.com/daily/04-07-02/b06sr073.htm

[74] Wright, Chris. 9/18/02. "Rats in Paradise"
http://www.bostonphoenix.com/boston/news_features/top/features/documents/02194425.htm

The Bronx itself had this problem in mid 1990's particularly during housing development construction in vacant lots where the animals had previously been able to live undisturbed[75]. At this time funding for pest prevention had been cut, and the decrease in control allowed for an increase in the rodent population. Once drilling for a project began the animals would be scattered throughout the street, making this underlying infestation increasingly apparent to the public. Subsequently, the Mayors Office redoubled its efforts against vermin in August 1997 with the Comprehensive Rodent Control Initiative[76], including a Health Department campaign begun in 2000 titled "You Feed Them, You Breed Them -- Help New York City Send Rats Packing."[1] These efforts utilize the IPM method, focusing on not only eliminating individual complaints, but also reducing the overall rodent population. In fact, between the mid 1990's and the year 2000 the number of both inspections and exterminations has approximately doubled[77]. The number of complaints logged with PCS in 2001 is currently estimated to be 15-16,000;[78] whereas back in 1995 the number of complaints was 27,000.[79]

In order to reduce the overall rodent population, efforts are being made to extinguish food sources and shelter through education of the community about rat-proofing groceries and possible entranceways into apartments, as well as imposing more stringent requirements on local landlords and storeowners. These requirements, which concentrate much of the effort on dining establishments, are defined a set of guidelines for the inspection and enforcement of waste clean up. Storeowners are required to place their refuse in tightly sealed containers, and defined procedures have been established for issuing warnings and fines if these precautions have not been properly adhered to. Procedures have also been implemented by the Pest Control Services (PCS) for the abatement of rodents in public areas, including the assessment of construction activity to determine adequate methodology for specific cases.[80] Areas also under the jurisdiction of PCS maintenance include sewers, street areas and catch basins, which are periodically treated with rodenticides. In addition to efforts that concentrate on depleting the rodent food supply, the aforementioned Department of Health programs target elimination of crevices that make shelter accessible to rodents. These efforts seek to reduce viable nesting places in local residential buildings by urging local residents to block possible entranceways with wire mesh and enforcing requirements on landlords to maintain building integrity. Additionally, these efforts focus on reduction of the rodent population by hindering their ability to leave pre-established nests to hunt for food, therefore, decreasing the population through lack of nutrition, and also hindering the reproductive capability of those individuals not as easily susceptible to starvation.

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[75] Padgett, Tina. 1995. Rats Rate Bronx No. 1 Place to Live. Columbia University. http://www.columbia.edu/cu/bb/oldstuff/bb0501.24.html

[76] New York City Department of Health Bureau of Pest Control. November 1997. http://www.nyc.gov/html/doh/html/pest/ratwork.html

[77] New York City Department of Health, office of Public Affairs. 2000. http://www.nyc.gov/html/doh/html/public/testi/rats920.html

[78] Information obtained from a phone interview on 9/24/02 with Rick Simon, Director of Operations Department of Health Pest Control Services.

[79] New York City Department of Health and Mental Hygiene-Pest Control Services. 2000. http://www.nyc.gov/html/doh/html/pest/pest1.html

[80] New York City Department of Health and Mental Hygiene-Pest Control Services. 2000. http://www.nyc.gov/html/doh/html/pest/pest1.html

In the Future Without the Project, no introduction or changes to the current management policy is anticipated.

There are three time periods when rodents can cause impacts during a construction operation: 1) if there is a pre-existing population at the planned work site, they may be displaced during initial excavations; 2) rodents can be attracted to work sites from bordering blocks during construction; and 3) rodents can be displaced from work sites as construction is completed and debris and materials are removed. For these reasons, a pest management program would be implemented to resolve rodent activity in the proposed work areas before construction begins and then the program would be maintained for the duration of construction. Prior to implementation, this pest management program would be reviewed and approved by NYCDOHMH.

The pest management program would be implemented using standard specifications and protocols for construction projects, considering the known behavior of pest rodents. See Appendix H for details regarding the Rodent Control and Management Plan. This entails base-line survey (inspection) of the proposed work area and abutting block, prior to construction, to determine the presence and distribution of rodents. The program would then be tailored based on the survey results. The program would include trapping and rodenticide application by a licensed pest management professional (PMP) within and abutting the proposed work area, prior to construction, in order to eliminate any pest rodents found. During construction, the PMP would monitor and inspect the work site weekly for any new rodent activity and site sanitation, and apply control measures as warranted. The PMP would keep records of observations and activities. Site sanitation would include proper use of refuse containers and minimizing unnecessary debris, and construction contracts would specify housekeeping requirements.

The project will maintain coordination with city agencies responsible for rodent control and code enforcement, and also neighborhood representatives, so that any concerns in adjoining blocks can be effectively communicated. The project would work with the City and abutters concerning investigation and resolution of public concerns during construction, and conform to City regulations.

The Jerome Park Reservoir area does not provide the fields; open utility conduits, and other habitats that favor rodent populations. Given current conditions, rodent control and prevention of community impacts is not expected to be difficult. Tunnels to and from the distribution connection would be bored in rock 100 feet and more beneath any buildings. The City's extensive experience with rock tunnels for water supply tunnels has not raised any concerns about causing movements of rodent populations toward human habitations. No significant increase in the emergence of rodent populations is anticipated to arise during construction activities.

8.2.4. Permits and Approvals

The following table lists the discretionary approvals that would be required for the proposed project at Jerome Park Reservoir.

TABLE 8.2-42. APPROVALS AND PERMITS REQUIRED FOR JEROME PARK RESERVOIR

DEPARTMENT	PERMIT TITLE
New York State	
Department of Health	• State Environmental Review Certification for New York Revolving Fund Program (Public Health Law, Sections 1161 and 1162; 21 NYCRR Part 2604)
NYSOPRHP	• State Historic Preservation Office Approval

New York City Approvals. Permits and approvals that would be required for the construction and operation of the proposed Croton project within New York City include permits from the New York City Department of Parks and Recreation for work in the vicinity of Jerome Park Reservoir and Van Cortlandt Park. Approvals from the New York City Landmarks Preservation Commission would be required for work in the vicinity of Jerome Park Reservoir.

The City would secure all applicable approvals necessary. All permits and approvals considered to be potentially required and the rationale for them would be made public.