FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE CROTON WATER TREATMENT PLANT

9. MITIGATION OF POTENTIAL IMPACTS

9.4. OFF-SITE FACILITIES

9.4.1. Introduction

Avoidance of potential environmental impacts would be an integral part of construction plans at the various off-site facilities associated with all water treatment plant site alternatives. For example, noise barriers and dust suppression techniques would be incorporated into construction plans to eliminate nuisances to the extent practical and feasible. Stormwater management during construction would be provided to prevent the release of particulate material into nearby water bodies. Without the incorporation of these and other design features, additional significant impacts could have occurred.

This section details mitigation measures that have been developed to address the potential significant impacts that could not simply be avoided. No significant adverse impacts were identified in the following impacts categories and are therefore not considered in this section: Land Use, Zoning, Open Space, Visual Character, Community Facilities, Neighborhood Character, Socioeconomic Analysis, Growth Inducement, Air Quality, Hazardous Materials, Natural Resources, Water Resources, Historic and Archaeological Resources, Infrastructure and Energy, EMF/ELF, Solid Waste, and Public Health. Significant impacts as a result of proposed project activities at the off-site facilities were identified and discussed in Section 8, Off Site Facilities.

9.4.2. NCA Shaft No. 9

9.4.2.1. Noise Attenuation

Construction activities would lead to a temporary increase in noise levels that exceed the 3-5 dBA acceptable noise increase threshold as established under CEQR. The noise level increases could last for the duration of the proposed construction (2011 until 2015). The need for measures to attenuate potential construction-generated noise impacts at the sensitive receptor (Rockefeller State Park Preserve) near the Shaft Site was studied. Following completion of construction at the Shaft Site, activities would return to those presented in the existing conditions. Therefore, no significant mobile or stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. The receptor would experience a temporary adverse impact as a result of construction activities. Predicted project-induced noise levels for the peak construction-noise year (2013) were compared to the predicted future baseline noise levels for 2013.

Between the Draft and Final SEIS, NYCDEP has further evaluated the potential need for attenuation measures; NCA Shaft No. 9 Site conditions are discussed in Section 8.1.2. It is anticipated that the predicted noise levels would impact a limited number of Rockefeller State Park Preserve (Park) users due to the remote nature of the portion of the park located closest to NCA Shaft No. 9. In addition, during the construction period, noise generated from the Shaft Site would be relatively intermittent and is not anticipated to render the entire park area unfit for

recreational use. Due to the remote location of NCA Shaft No. 9, the limited number of Park users anticipated to be in the vicinity of the Shaft Site, and the relatively intermittent nature of the construction noise, it was determined that the noise impacts at this Shaft Site would not be significantly adverse and therefore, no attenuation is necessary. Temporary adverse impacts from construction related noise would remain unattenuated at this Shaft Site.

9.4.3. NCA Shaft No. 14

9.4.3.1. Traffic Mitigation

The need for potential traffic improvements for the proposed plant at the NCA Shaft No. 14 Site was reviewed under Section 8.1.3, NCA Shaft No. 14, Potential Impacts. The potential traffic improvements for the water treatment plant site are described as follows:

Saw Mill River Road is the primary access route to the NCA Shaft No. 14 site. The traffic analysis of the Construction Year conditions indicated that capacity deficiencies would be anticipated at three intersections. No intersections are anticipated to have potential significant adverse impacts affected by operational traffic in the Future With the Project conditions. In order to maximize capacity of these intersections, and to mitigate the potential impacts of the construction traffic and the Future with the Project traffic, the following mitigations measures are recommended to be part of the project at the NCA Shaft No. 14 Site. Each of these intersection mitigation plans would be based upon the potential construction impacts that would occur during peak construction periods.

It should be noted that the following proposed mitigation plans contemplate the re-apportioning of the "green light time" for critical approaches at different intersections in the study area. This measure is intended to improve the overall intersection LOS and delay in certain intersection. These plans would improve the LOS and reduce delays back to the Future Without the Project conditions. However, in some cases these improvements might actually worsen other approaches to the same intersection i.e., increases delay or worsen LOS, but overall would improve the intersection or balance the anticipated delay.

1. *Saw Mill River Rd. (Rte. 9A) at Ashford Avenue:* Optimize signal timing and adjust phasing scheme. This intersection would still operate at LOS F in the AM and LOS E in the PM peak hours, but with reduced delays.

2. *Ashford Avenue at Saw Mill River Parkway NB Ramps:* Optimize signal timing. This intersection would operate at LOS C in the AM peak hours and LOS B in the PM peak hours.

3. *Ashford Avenue at Saw Mill River Parkway SB Off Ramps:* Optimize signal timing. This intersection would operate at LOS E in the AM peak hours and LOS D in the PM peak hours, but with reduced delays.

The potential traffic improvements primarily call for optimizing signal timings. Since the construction volumes peaks are anticipated to arrive before and after the AM and PM peak hours

respectively, the optimum signal timings utilized are approximate. It is routine for counts to be performed at these locations after construction begins to provide actual traffic patterns to support the request for the modification of the signal timings. The potential traffic improvements would be developed in accordance with NYSDOT design guidelines for approval. In addition, the potential mitigation designs would undergo review by the NYSDOT and/or other roadway jurisdictional bodies prior to being implemented. If these signal optimization plans to reduce the predicted increases in delay at the intersections in the study area are not adopted, these potential significant adverse traffic impacts would remain unmitigated. The potential significant adverse impacts from the proposed construction-related activity would be short-term and mainly related to peak construction periods.

Table 9.4-1 shows the comparison of LOS results for these intersections for the Future Without the Project, the Construction Year, and the same year with the mitigation measures.

TABLE 9.4-1. 2013 TRAFFIC CONDITIONS WITH PROPOSED MITIGATION MEASURES AT NCA SHAFT NO. 14

SIGNALIZED INTERSECTIONS	LANE GROUP	FUTURE WITHOUT THE PROJECT						POTENTIAL CONSTRUCTION IMPACTS						PROPOSED MITIGATION MEASURES					
		WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
Saw Mill River Rd (Rt 9A) at Ashford Avenue	EB – L	1.22	>150	F	0.98	85.6	F	1.29	>150	F	0.99	87.3	F	1.29	>150	F	1.02	91.0	F
	EB – T	0.69	48.3	D	0.74	54.4	D	0.69	48.3	D	0.72	54.4	D	0.61	42.0	D	0.66	43.4	D
	EB – R	0.38	20.3	C	0.42	28.3	C	0.38	20.3	C	0.42	28.3	C	0.50	32.9	C	0.48	30.8	C
	WB – L	0.35	47.2	D	0.32	43.2	D	0.35	47.2	D	0.32	43.2	D	0.41	51.9	D	0.38	42.9	D
	WB – T	1.03	116.0	F	1.16	>150	F	1.03	116.0	F	1.16	>150	F	1.03	116.0	F	1.16	146.4	F
	WB – R	0.17	26.5	C	0.10	24.0	C	0.17	26.5	C	0.10	24.0	C	0.24	38.6	D	0.13	28.0	C
	NB – L	0.69	53.9	D	0.77	61.4	E	0.69	53.9	D	0.77	61.4	E	1.07	125.9	F	1.29	>150	F
	NB – T	1.14	147.3	F	1.14	>150	F	1.30	>150	F	1.16	>150	F	0.91	69.0	E	0.81	54.7	D
	NB – R	0.08	22.0	C	0.28	46.4	D	0.08	22.0	C	0.28	46.4	D	0.08	20.9	C	0.13	19.0	B
	SB – L	0.16	43.4	D	0.08	40.3	D	0.16	43.4	D	0.08	40.3	D	0.31	31.9	C	0.13	26.8	C
	SB – T	1.06	122.7	F	0.98	94.6	F	1.07	126.4	F	1.12	137.1	F	0.72	50.1	D	0.95	74.8	E
	SB – R	0.96	90.3	F	0.91	75.4	E	0.97	92.6	F	1.01	100.4	F	0.34	11.7	B	0.44	15.8	B
	Intersection		**98.1**	**F**		**87.4**	**F**		**114.7**	**F**		**96.7**	**F**		**87.3**	**F**		**76.8**	**E**
Ashford Ave at Saw Mill River Parkway NB Ramps	EB – TR	0.80	19.8	B	0.59	14.5	B	0.81	19.9	B	0.59	14.5	B	0.85	18.5	B	0.59	14.5	B
	WB – LT	0.91	31.5	C	0.66	16.5	B	0.92	32.6	C	0.78	20.6	B	0.94	31.5	C	0.78	20.6	B
	NB – LR	0.82	39.5	D	0.67	31.7	C	0.88	45.7	D	0.67	31.8	C	0.92	44.2	D	0.67	31.8	C
	Intersection		**26.7**	**C**		**18.1**	**B**		**28.4**	**C**		**19.7**	**B**		**27.0**	**C**		**19.7**	**B**
Ashford Ave at Saw Mill River Parkway SB Off Ramps	EB – L	1.12	141.5	F	1.06	110.6	F	1.12	141.5	F	1.08	115.1	F	1.10	137.2	F	1.01	94.9	F
	EB – T	0.62	18.0	B	0.50	16.0	B	0.63	18.1	B	0.50	16.0	B	0.63	19.9	B	0.49	16.9	B
	WB – TR	1.23	135.0	F	1.01	54.2	D	1.23	135.0	F	1.02	55.9	E	1.23	137.5	F	1.00	52.7	D
	SB – LR	1.04	71.8	E	0.94	49.1	D	1.04	71.8	E	0.94	49.1	D	1.01	65.6	E	0.94	51.5	D
	Intersection		**78.6**	**E**		**43.8**	**D**		**78.5**	**E**		**44.8**	**D**		**78.4**	**E**		**43.2**	**D**

ABBREVIATION:
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

9.4.3.2. Noise Mitigation

Construction activities would lead to an increase in temporary noise levels that exceed the 3-5 dBA acceptable noise increase threshold as established under *CEQR*. Each of the receptors listed in Table 9.4-2 would be affected by the noise increases. The noise level increases could last for the duration of the proposed construction (2011 until 2015). Potential measures to mitigate predicted construction-generated noise impacts at the sensitive receptors in the vicinity of NCA Shaft No. 14 were studied. Following completion of construction at the Shaft Site, activities would return to those presented in the existing conditions. Therefore, no significant mobile or stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. The receptors would, however, experience a temporary significant impact as a result of construction activities. Predicted project-induced noise levels for the peak construction-noise year (2013) were compared to the predicted future baseline noise levels for 2013. Attenuation measures were identified and the noise levels at the sensitive receptors following implementation of mitigation were estimated. Due to the sensitive and quiet nature of land uses (the Village Library and private residences) located adjacent and near to NCA Shaft No. 14, noise attenuation measures would be appropriate at this location for the duration of the construction project.

9.4.3.2.1. Mobile Source Noise

No noise contributions are anticipated from mobile sources as a result of operation or construction at the Shaft Site. The results of the operation and construction impacts analysis are presented in Section 8.1.3, Off-Site Facilities. Mitigation measures were not required along noise sensitive route segments.

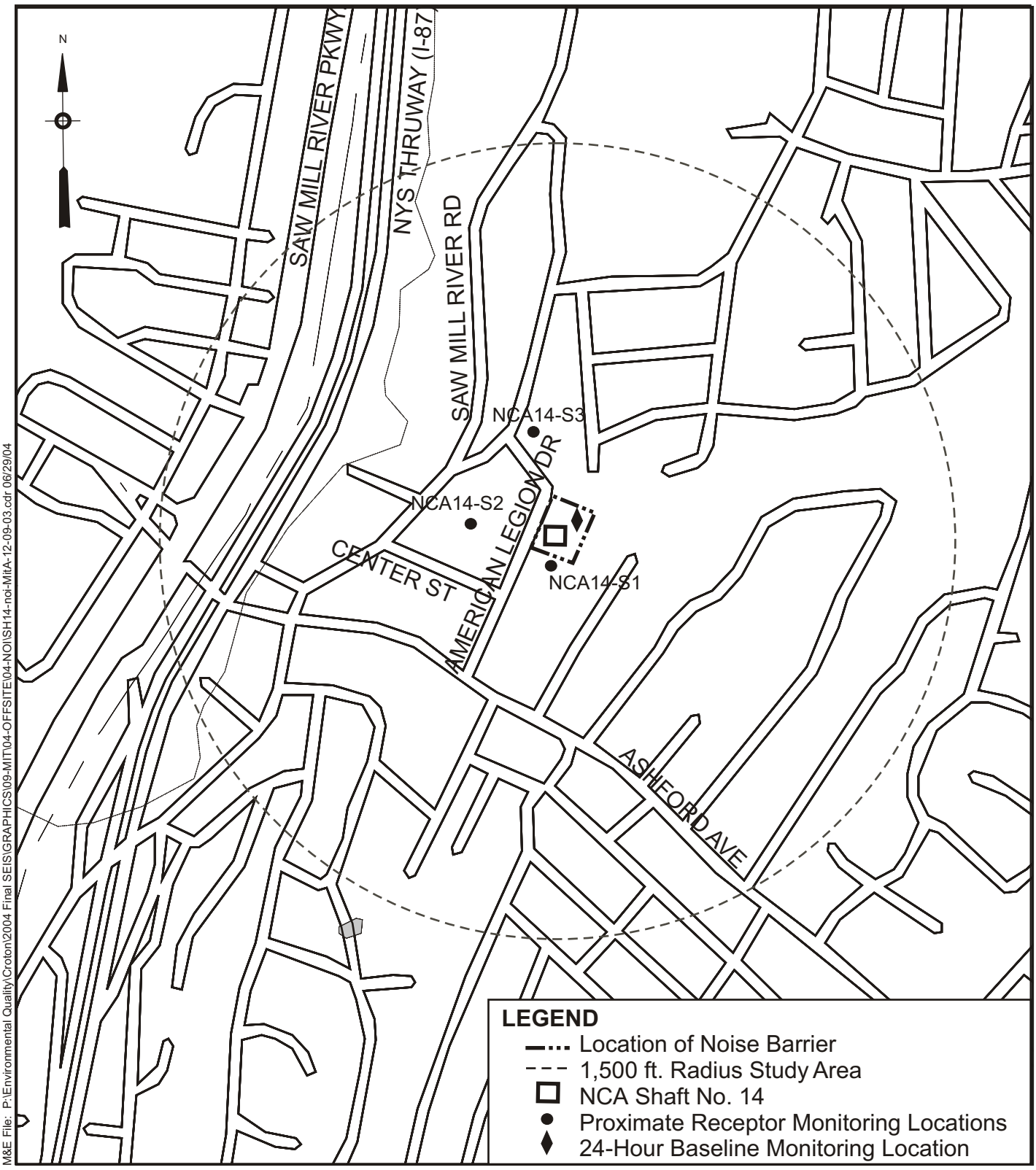
9.4.3.2.2. Stationary Source Noise

Mitigation measures required for stationary noise impacts at the sensitive receptors were analyzed. Table 9.4-2 presents information regarding the sensitive receptors near the Shaft Site. Figure 9.4-1 shows the location of the receptor in relation to the proposed construction site.

TABLE 9.4-2. DESCRIPTION OF STATIONARY SOURCE SENSITIVE RECEPTORS NEAR NCA SHAFT NO. 14

Receptor Name	Description of Receptor
NCA14-S1	Ardsley Public Library
NCA14-S2	Public Park
NCA14-S3	Private residence on American Legion Drive

No significant stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. Construction activities would produce a significant noise impact requiring mitigation. Impacts were anticipated only during weekday construction hours (7:00 AM – 6:00 PM).



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SCALE IN FEET

New Croton Aqueduct Shaft No. 14
Stationary Noise Source
Potential Noise Barrier Configuration

Croton Water Treatment Plant

Figure 9.4-1

The equipment usage and the number of personnel working at the Shaft Site would not fluctuate substantially over the duration of the construction schedule. As a result, noise levels at the site are not anticipated to vary and any noise-mitigation requirements would be constant for the entirety of the construction schedule. The equipment most responsible for the increased noise levels would be the concrete pump and idling delivery trucks.

Noise attenuation systems that could mitigate the noise impacts from construction activities at the sensitive receptors were identified. Noise barriers could be installed at fixed locations along the periphery of the boundary of the construction site. In addition, portable noise barriers could be placed around the crane and the concrete pump in order to attenuate noise coming specifically from those pieces of equipment. Two barrier types working in conjunction would satisfy the attenuation requirements.

The portable barriers could be used to enclose the crane and concrete pump. The curtain could be moved as needed. The curtain would be capable of approximately 11 dBA of sound transmission loss (i.e. attenuation) for each piece of equipment to which it is applied. A full 11-dBA reduction would not be observed in the total noise levels experienced at the receptors because there are other pieces of construction equipment on site that also would be generating noise. The overall noise reduction experienced at receptors due to the application of these types of barriers would be approximately 4 dBA.

In addition to the portable barriers, fixed barriers could be placed around the boundary of the construction site (see Figure 9.4-1). The barriers could act as an acoustical curtain enclosure, effectively shielding each of the sensitive receptors from the remaining noise emanating from the construction site. A barrier approximately 20 feet in height would be able to minimize the noise reaching sensitive receptors due to sound absorption and diffraction (i.e. bending of the sound waves over the top of the barrier).

The exact amount of sound transmission loss from a barrier is a function of its height, thickness, material of construction, and precise location with respect to the noise source and noise sensitive receptor. This type of noise barrier is typically capable of approximately 13 dBA of sound transmission loss. The greatest incremental change in noise levels would be 20.4 dBA at NCA14-S1 during the quietest hour (1:00 through 2:00 PM on weekdays). The portable and fixed noise barriers working in conjunction could reduce the construction noise by approximately 17 dBA. Thus, a 3.4 dBA noise increase would be experienced following mitigation. When the baseline noise levels are less than 60 dBA (as is the case for this scenario), a 3.4-dBA incremental change in noise levels does not constitute a significant impact. The fixed and portable noise barriers, therefore, could be sufficient to attenuate the potential noise impacts resulting from construction activities.

Table 9.4-3 shows the anticipated noise levels at the impacted sensitive receptors with and without mitigation measures. With the noise barriers in place, construction-related noise would be attenuated to noise levels that within the acceptable 3-5 dBA threshold. The noise barrier placed at the construction site boundaries would not result in noise levels at the sensitive receptors less than the future baseline noise levels. If these attenuation measures are not incorporated, the adverse construction noise related impacts would remain.

TABLE 9.4-3. NOISE LEVELS AT SENSITIVE RECEPTORS BEFORE AND AFTER MITIGATION MEASURES AT NCA SHAFT NO. 14

Proximate Receptor	Monitoring Period	Future Without the Project Noise Level (2013)	Total Noise During Construction Without Mitigation (2013)	Incremental Change in Noise Level Without Mitigation	Attenuation Due to Noise Barrier	Incremental Change With Mitigation	Total Noise Levels During Construction With Mitigation (2013)
NCA14-S1	1-2 PM	54.6	75.0	**20.4**	17	3.4	58.0
	12-1 PM	54.7	75.0	**20.3**	17	3.3	58.0
NCA14-S2	1-2 PM	57.4	68.8	**11.4**	17	0	57.4
	12-1 PM	60.3	69.1	**8.8**	17	0	60.3
NCA14-S3	1-2 PM	63.4	67.6	**4.2**	17	0	63.4
	12-1 PM	63.2	67.6	**4.4**	17	0	63.2

9.4.4. NCA Shaft No. 18

9.4.4.1. Traffic Mitigation

The need for potential traffic improvements for the proposed plant at the NCA Shaft No. 18 site was reviewed under Section 8.1.4, NCA Shaft No. 18, Potential Impacts. The potential traffic improvements for the water treatment plant site are described as follows:

The main access routes to the Shaft Site are along Yonkers Avenue and Broadway (Route 9A). The traffic analysis of the Construction Year conditions indicated that capacity deficiencies would be anticipated at two intersections along this road. No intersections are anticipated to have potential significant adverse impacts affected by operational traffic in the Future With the Project conditions. In order to maximize capacity of these intersections, and to mitigate the potential impacts of the construction traffic and the Future with the Project traffic, the following mitigations measures are recommended to be part of the project at NCA Shaft No. 18. Each of these intersection mitigation plans would be based upon the potential construction impacts that would occur during peak construction period.

It should be noted that the following proposed mitigation plans contemplate the re-apportioning of the "green light time" for critical approaches at different intersections in the study area. This measure is intended to improve the overall intersection LOS and delay in certain intersection. These plans would improve the LOS and reduce delays back to the Future Without the Project conditions. However, in some cases these improvements might actually worsen other approaches to the same intersection i.e., increases delay or worsen LOS, but overall would improve the intersection or balance the anticipated delay.

4. *Yonkers Avenue and Midland/Cook Avenue:* Optimize signal timing. This intersection would still operate at LOS C in the AM peak hour and PM peak hours.

5. *Nepperhan Avenue and Broadway (Route 9A):* Optimize signal timing. This intersection would operate at LOS D in the AM and PM peak hours, but with reduced delays.

The potential traffic improvements primarily call for optimizing signal timings. Since the construction volumes peaks are anticipated to arrive before and after the AM and PM peak hours respectively, the optimum signal timings utilized are approximate. It is routine for counts to be performed at these locations after construction begins to provide actual traffic patterns to support the request for the modification of the signal timings. The potential traffic improvements would be developed in accordance with NYSDOT design guidelines for approval. In addition, the potential mitigation designs would undergo review by the NYSDOT and/or other roadway jurisdictional bodies prior to being implemented. If these signal optimization plans to reduce the predicted increases in delay at the intersections in the study area are not adopted, these potential significant adverse traffic impacts would remain unmitigated. The potential significant adverse impacts from the proposed construction-related activity would be short-term and mainly related to peak construction periods.

Table 9.4-4 shows the comparison of LOS results for these intersections for the Future Without the Project, the Construction Year, and the same year with the mitigation measures.

TABLE 9.4-4. 2013 TRAFFIC CONDITIONS WITH PROPOSED MITIGATION MEASURES AT NCA SHAFT NO. 18

SIGNALIZED INTERSECTIONS	LANE GROUP	FUTURE WITHOUT THE PROJECT						POTENTIAL CONSTRUCTION IMPACTS						PROPOSED MITIGATION MEASURES					
		WEEKDAY AM PEAK			WEEKDAY PM PEAK			WEEKDAY AM PEAK			WEEKDAY PM PEAK			WEEKDAY AM PEAK			WEEKDAY PM PEAK		
		V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS	V/C RATIO	DELAY (SEC/ VEH)	LOS
Yonkers Ave. at Midland Ave. (and Cook Ave.)	WB – L	0.60	39.0	D	0.31	32.3	C	0.61	39.4	D	0.50	36.2	D	0.67	30.8	C	0.56	26.8	C
	WB – LR	0.00	28.1	C	0.00	28.1	C	0.00	28.1	C	0.00	28.1	C	0.00	19.0	B	0.00	18.4	B
	WB – R	0.86	57.9	E	0.81	52.2	D	0.87	58.9	E	0.89	61.1	E	0.95	61.0	E	0.99	71.3	E
	NB – T	0.58	22.1	C	0.56	21.6	C	0.58	22.1	C	0.56	21.6	C	0.78	24.4	C	0.67	18.6	B
	NB – R	0.20	17.3	B	0.25	17.9	B	0.20	17.3	B	0.25	17.9	B	0.27	16.9	B	0.30	14.7	B
	SB – L	0.76	60.3	E	0.94	82.8	F	1.21	>150	F	0.97	89.3	F	0.91	56.2	E	0.93	64.4	E
	SB – T	0.67	12.5	B	0.65	12.0	B	0.67	12.5	B	0.65	12.0	B	0.71	10.6	B	0.69	9.7	A
	Intersection		**24.7**	**C**		**25.1**	**C**		**35.2**	**D**		**27.3**	**C**		**24.9**	**C**		**23.8**	**C**
Nepperhan Ave. at Broadway (Rt. 9A)	EB – L	0.29	20.7	C	0.32	20.6	C	0.29	20.7	C	0.32	20.6	C	0.34	26.0	C	0.24	17.1	B
	EB – TR	0.74	27.3	C	0.78	28.5	C	0.74	27.3	C	0.78	28.5	C	0.84	34.3	C	0.93	36.0	C
	WB – L	1.43	>150	F	1.02	85.8	F	1.44	>150	F	1.05	92.4	F	1.11	105.4	F	0.97	62.6	E
	WB – T	0.64	21.5	C	0.60	20.7	C	0.64	21.5	C	0.60	20.7	C	0.57	17.1	B	0.77	24.3	C
	WB – R	0.19	15.7	B	0.23	16.2	B	0.19	15.7	B	0.23	16.3	B	0.16	12.7	B	0.30	17.5	B
	NB – LTR	0.74	32.1	C	1.04	80.5	F	0.76	33.2	C	1.04	81.7	F	0.84	42.4	D	0.96	49.5	D
	SB – LTR	0.29	22.5	C	0.85	47.0	D	0.30	22.6	C	0.85	47.5	D	0.35	25.2	C	0.73	25.9	C
	Intersection		**62.0**	**E**		**41.5**	**D**		**62.8**	**E**		**42.6**	**D**		**40.9**	**D**		**35.7**	**D**

ABBREVIATION:
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

9.4.4.2. Noise Mitigation

Construction activities at NCA Shaft No. 18 would lead to an increase in noise levels that exceed the 3-5 dBA acceptable noise increase threshold as established under CEQR. The noise level increases could last for the duration of the proposed construction (2010 until 2015). Potential measures to mitigate predicted construction-generated noise impacts at the sensitive receptors in the vicinity of NCA Shaft No. 18 were studied. Following completion of construction at the Shaft Site, activities would return to those presented in the existing conditions. Therefore, no significant mobile or stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. The receptors would, however, experience a significant impact as a result of construction activities. Predicted project-induced noise levels for the peak construction-noise year (2013) were compared to the predicted future baseline noise levels for 2013. Attenuation measures were identified and the noise levels at the sensitive receptors following implementation of mitigation were estimated. In addition, because private residences are located within close proximity to NCA Shaft No. 18, noise attenuation measures would be appropriate at this location for the duration of the construction project.

9.4.4.2.1. Mobile Source Noise

No noise contributions are anticipated from mobile sources as a result of operation or construction at the Shaft Site. The results of the operation and construction impacts analysis are presented in Section 8.1.4. Attenuation measures were not required along noise sensitive route segments.

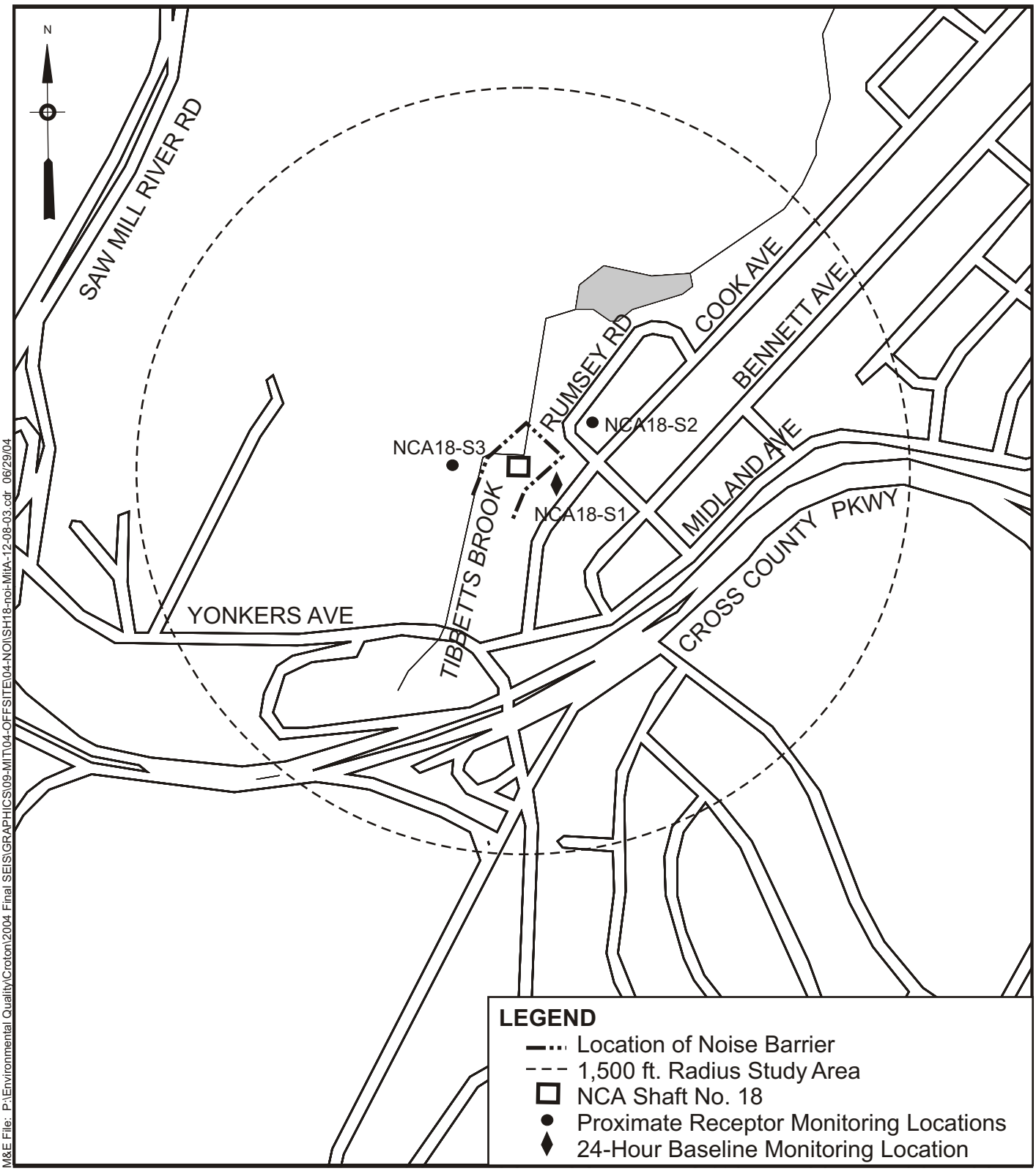
9.4.4.2.2. Stationary Source Noise

Attenuation measures required for stationary noise impacts at the sensitive receptors were analyzed. Table 9.4-5 presents information regarding the sensitive receptors near the Shaft Site. Figure 9.4-2 shows the location of the receptor in relation to the proposed construction site.

TABLE 9.4-5. DESCRIPTION OF STATIONARY SOURCE SENSITIVE RECEPTORS NEAR NCA SHAFT NO. 18

Receptor Name	Description of Receptor
NCA18-S1	Private residence on Cook Street
NCA18-S2	Private residence on Summerfield Street
NCA18-S3	Dunwoodie Public Golf Course

No significant stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. Construction activities, however, would produce significant noise impacts requiring mitigation. Impacts were anticipated only during weekday construction hours (7:00 AM – 6:00 PM).



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Note: NCA18-S1 monitoring location same as baseline monitoring location.

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SCALE IN FEET

New Croton Aqueduct Shaft No. 18
Stationary Noise Source
Potential Noise Barrier Configuration

Croton Water Treatment Plant

Figure 9.4-2

The equipment usage and the number of personnel working at the Shaft Site would not fluctuate substantially over the duration of the construction period. As a result, noise levels at the site are not anticipated to vary and any noise attenuation requirements would be constant for the entirety of the project.

Noise attenuation systems that could mitigate the noise impacts from construction activities at the sensitive receptors were identified. Noise barriers could be installed at fixed locations along the boundary of the construction site. In addition, portable noise barriers could be placed around the crane and the concrete pump in order to attenuate noise coming specifically from those pieces of equipment. Two barrier types working in conjunction could satisfy the attenuation requirements.

The portable barriers could be used to enclose the crane and concrete pump. The curtain could be moved as needed. The curtain is capable of approximately 11 dBA of sound transmission loss (i.e. attenuation) for each piece of equipment to which it is applied. A full 11-dBA reduction would not be observed in the total noise levels experienced at the receptors because there are other pieces of construction equipment on site that also would be generating noise. The overall noise reduction experienced at receptors due to the application of these types of barriers would be approximately 4 dBA.

In addition to the portable barriers, fixed barriers could be placed around the boundary of the construction site (see Figure 9.4-2). The barriers could act as an acoustical curtain enclosure, effectively shielding each of the sensitive receptors from the remaining noise emanating from the construction site. A barrier approximately 20 feet in height could minimize the noise reaching sensitive receptors due to absorption and diffraction (i.e. bending of the sound waves over the top of the barrier).

The exact amount of transmission loss from a barrier is a function of its height, thickness, material of construction, and precise location with respect to the noise source and noise sensitive receptor. This type of noise barrier is typically capable of at least 13 dBA of sound transmission loss (The greatest predicted incremental change in noise levels would be 19.6 dBA during the quietest construction hour (12:00 through 1:00 PM on weekdays). The portable and fixed noise barriers working in conjunction could reduce the construction noise by approximately 17 dBA. This would result in a maximum of a 2.6 dBA increase over future baseline levels noise levels at the receptor due to construction activities following mitigation. A 2.6-dBA incremental change in noise levels does not constitute an unacceptable increase in noise levels. The fixed and portable noise barriers, therefore, could be sufficient to attenuate the potential noise impacts resulting from construction activities. Table 9.4-6 shows the anticipated noise levels at the impacted sensitive receptors with and without the attenuation measures. If these attenuation measures are not incorporated, the significant adverse construction noise related impacts would remain unattenuated.

TABLE 9.4-6. NOISE LEVELS AT SENSITIVE RECEPTORS BEFORE AND AFTER MITIGATION MEASURES AT NCA SHAFT NO. 18

Proximate Receptor	Monitoring Period	Future Without the Project Noise Level (2013)	Total Noise During Construction Without Mitigation (2013)	Incremental Change in Noise Level Without Mitigation	Attenuation Due to Noise Barrier	Incremental Change With Mitigation	Total Noise Levels During Construction With Mitigation (2013)
NCA18-S1	12-1 PM	53.1	72.7	19.6	17	2.6	55.7
	9-10 AM	55.3	72.8	17.5	17	0.5	55.8
NCA18-S2	12-1 PM	50.2	68.2	18.0	17	1.0	51.2
	9-10 AM	51.3	68.2	16.9	17	0	51.3
NCA18-S3	12-1PM	51.0	61.1	10.1	17	0	51.0
	9-10 AM	55.1	61.8	6.7	17	0	55.1

9.4.5. Gate House No. 1

9.4.5.1. Noise Attenuation

Construction activities at Gate House No. 1 would lead to an increase in noise levels that exceed the 3-5 dBA acceptable noise increase threshold as established under CEQR. The noise level increases could last for the duration of the proposed construction (2010 until 2015). Potential measures to attenuate predicted construction-generated noise impacts at the sensitive receptor in the vicinity of Gate House No. 1 were studied. Following completion of construction at the Shaft Site, activities would return to those presented in the existing conditions. Therefore, no significant mobile or stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. The receptor would experience a significant impact as a result of construction activities. Predicted project-induced noise levels for the peak construction-noise year (2013) were compared to the predicted future baseline noise levels for 2013. Attenuation measures were identified and the noise level at the sensitive receptor following implementation of attenuation was estimated.

Between the Draft and Final SEIS, NYCDEP has further evaluated the findings of the noise analysis and Gate House No. 1 site conditions, as discussed in Section 8.1.4. The predicted noise levels would impact a limited number of Park users due to the remote nature of the site during the four-year construction period. In addition, during the construction period, noise generated from the site would be relatively intermittent and is not anticipated to render the entire park area unfit for recreational use. Due to the remote location of the Gate House No. 1 Site, its existing disturbed nature and noisy character, the limited number of park users anticipated to be in the vicinity of the site and the relatively intermittent nature of the construction noise, it was determined that the noise impacts at this site would not be significantly adverse and therefore, that no attenuation is necessary. Adverse impacts from construction related noise would remain unattenuated at this site.

9.4.6. Jerome Park Reservoir

9.4.6.1. Noise Mitigation

Construction-generated noise level increases that exceed the acceptable 3-5 dBA noise increase threshold as established by CEQR would be experienced at noise sensitive receptors in the vicinity of the Jerome Park Reservoir. The receptor that may be affected would be the Bronx High School of Science, which is located directly across from the reservoir at the intersection of Goulden Avenue and West 205th Street. These noise level increases would be temporary in nature, creating impacts above the threshold that is considered adverse for a duration of less than a year, and therefore would not constitute a significant impact. Nevertheless, NYCDEP has identified measures to minimize potential adverse impacts on the school in response to public comments and in effort to the make the proposed project less intrusive to surrounding land uses at this location. These include restricting the noisiest construction activity to weekends and holidays and implementing noise attenuation mechanisms around the construction activities at

the Jerome Park Reservoir Site. Noise walls would be constructed around the New Shaft Chamber work site, the closest work site to the Bronx High School of Science.

Following completion of construction at the reservoir, activities would return to those presented in the existing conditions. Therefore, no significant mobile or stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. Predicted project-induced noise levels for the peak construction-noise year (2010) were compared to the predicted future baseline noise levels for 2010. Attenuation measures were identified and the noise levels at the sensitive receptors following implementation of attenuation were estimated.

9.4.6.1.1. Mobile Source Noise

No noise contributions are anticipated from mobile sources as a result of operation or construction at the Shaft Site. The results of the operation and construction impacts analysis are presented in Section 8.2. Attenuation measures were not required along noise sensitive route segments.

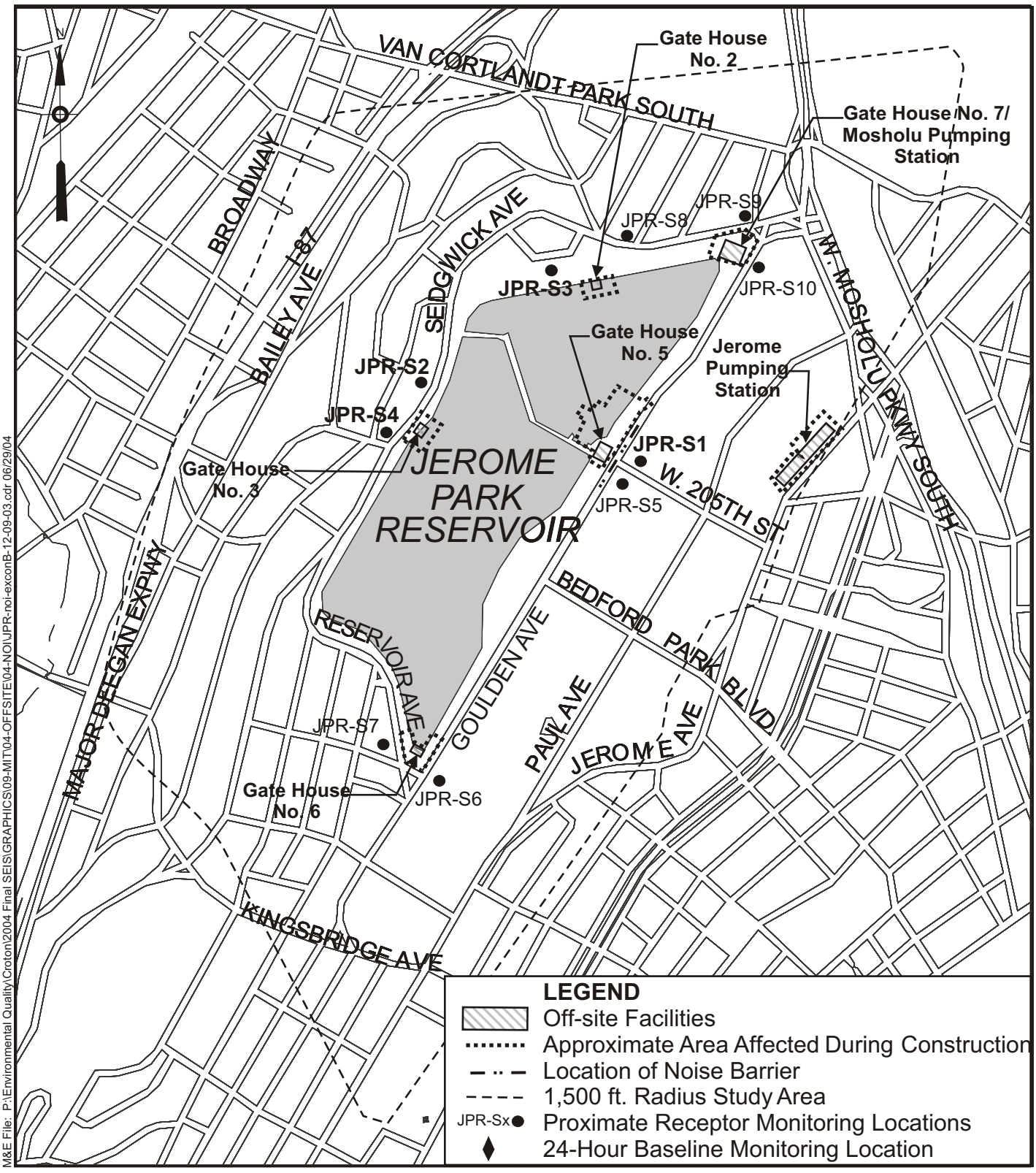
9.4.6.1.2. Stationary Source Noise

Attenuation measures required for stationary noise impacts at the sensitive receptors were analyzed. Figure 9.4-3 shows the location of the receptors in relation to the proposed construction site. Table 9.4-7 presents information regarding the sensitive receptors.

TABLE 9.4-7. DESCRIPTION OF STATIONARY SOURCE SENSITIVE RECEPTORS NEAR JEROME PARK RESERVOIR

Receptor Name	Description of Receptor
JPR-S1	Bronx High School of Science
JPR-S2	Private residence on Sedgwick Avenue
JPR-S3	Fort Independence Park

No significant stationary noise impacts were anticipated as a result of future normal operations at the Shaft Site. Construction activities would produce increases in noise levels that exceed the CEQR threshold. Impacts were anticipated only during weekday construction hours (7:00 AM – 6:00 PM).



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Jerome Park Reservoir Stationary Noise Source Potential Noise Barrier Configuration

Croton Water Treatment Plant

Figure 9.4-3

The equipment usage and the number of personnel working at the Shaft Site would not fluctuate substantially over the duration of the construction schedule. As a result, noise levels at the site are not anticipated to vary and any noise-mitigation requirements would be constant for the entirety of the construction schedule.

Noise attenuation systems that could attenuate the noise due to construction activities at the sensitive receptor were identified. Noise barriers facing the potentially impacted receptor could be installed at fixed locations along the eastern boundary of the construction site. Noise barriers placed in a fixed location could satisfy the attenuation requirements and should not restrict the movement of on-site workers and equipment during construction.

The exact amount of sound transmission loss from a barrier is a function of its height, thickness, material of construction, and precise location with respect to the noise source and noise-sensitive receptor. The barriers could extend along the length of the east boundary (see Figure 9.4-3). The barriers would act as an acoustical curtain enclosure, effectively shielding receptor JPR-S1 from noise emanating from construction equipment. A barrier approximately 20 feet in height would minimize the noise reaching sensitive receptors due to diffraction (i.e. bending of the sound waves over the top of the barrier). This type of noise barrier is capable of a minimum of approximately 13 dBA of sound transmission loss

The greatest predicted incremental change in noise levels would be 7.6 dBA during the quietest hour (11:00 AM through 12:00 PM on weekdays). The noise barrier would be capable of attenuating 13 dBA of noise; therefore, it would be sufficient to attenuate the potential noise impacts resulting from construction activities. These mitigation measures also would be capable of fully attenuating noise from proposed construction activities on weekends.

Table 9.4-8 shows the anticipated noise levels at the impacted sensitive receptor with and without mitigation measures. With the noise barriers in place, construction-related noise would be attenuated, and the noise levels at the receptor would be the same as that anticipated for the Future Without the Project for 2010. The noise barrier placed at the construction site boundaries would reduce noise level increases below the 3-5 dBA increase that is considered a significant adverse impact. If these attenuation measures are not incorporated, the significant adverse construction noise related impacts would remain unmitigated.

TABLE 9.4-8. NOISE LEVELS AT SENSITIVE RECEPTORS BEFORE AND AFTER MITIGATION MEASURES AT JEROME PARK RESERVOIR

Proximate Receptor	Monitoring Period	Future Without the Project Noise Level (2010)	Total Noise During Construction Without Mitigation (2010)	Incremental Change in Noise Level Without Mitigation	Attenuation Due to Noise Barrier	Incremental Change With Mitigation	Total Noise Levels During Construction With Mitigation (2010)
JPR-S1	1-2 PM	65.5	71.2	5.7	13	0	65.5
	11AM-12PM	63.0	70.6	7.6	13	0	63.0
JPR-S2	1-2 PM	53.0	53.9	0.9	13	0	53.0
	11AM-12PM	70.6	70.6	0	13	0	70.6
JPR-S3	1-2 PM	52.9	53.8	0.9	13	0	52.9
	11AM-12PM	55.8	56.3	0.5	13	0	55.8