CHAPTER 17: NOISE

A. INTRODUCTION

This chapter assesses the potential for the Proposed Actions to result in significant adverse noise impacts. The analysis determines both (i) a proposed project's potential effects on sensitive noise receptors, including the effects on the level of noise inside residential, commercial, and institutional facilities (if applicable), and at open spaces; and (ii) the effects of ambient noise levels on new sensitive uses introduced by a proposed project. If significant adverse impacts are identified, CEQR requires such impacts to be mitigated or avoided to the greatest extent practicable.

B. PRINCIPAL CONCLUSIONS

The noise analysis was conducted to determine the level of building attenuation necessary to ensure that interior noise levels of With-Action buildings at the Projected and Potential Development Sites would satisfy applicable interior noise criteria. The Proposed Actions would not result in any predicted exceedances of *CEQR Technical Manual* incremental thresholds at any noise receptor locations. The noise analysis concludes that noise level increases of up to 1.4 dBA would be experienced as a result of increased traffic throughout the Project Area in the With-Action condition, which would not be considered a significant adverse noise impact.

The building attenuation analysis concludes that to meet CEQR interior noise level requirements, up to 43 dBA of building attenuation would be required for With-Action buildings. The requirement for these levels of façade attenuation as well as the requirement for an alternate means of ventilation will be included in an (E) designation for all affected privately-held Projected and Potential Development Sites. Approximately 24 Projected Development Sites and 22 Potential Development Sites are expected to have an (E) designation for noise. The requirement for façade attenuation as well as the requirement for an alternate means of ventilation for City-owned sites will be required through disposition agreements or similar binding mechanisms between the City of New York and the future developer. Therefore, the Proposed Actions would not result in any significant adverse noise impacts related to building attenuation requirements.

C. NOISE STANDARDS AND CRITERIA

The *CEQR Technical Manual* provides attenuation requirements for buildings based on exterior noise levels (see Table 17-1, "Required Attenuation Values to Achieve Acceptable Interior Noise Levels"). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for residential uses and 50 dBA or lower for commercial uses and are determined based on exterior $L_{10(1)}$ noise levels.

Table 17- 1: Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Noise Level with Proposed Actions	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation[A]	(I) 28 dB(A)	(II) 31 dB(A)	(III) 33 dB(A)	(IV) 35 dB(A)	$36 + (L_{10} - 80)$[B] dB(A)

Source: New York City Department of Environmental Protection.
Notes:
[A] The above composite window-wall attenuation values are for residential dwellings. Retail uses would be 5 dB(A) less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.
[B] Required attenuation values increase by 1 dB(A) increments for L_{10} values greater than 80 dB(A).

According to CEQR guidelines, an initial impact screening assessment considers whether a proposed project would (i) generate any mobile or stationary sources of noise; and/or (ii) be located in an area with existing high ambient noise levels. For a mobile source analysis to be triggered, a project must impact vehicular traffic noise, aircraft noise, and/or train noise. Because the Project Area includes areas with high existing ambient noise levels and would generate mobile sources of noise, an initial noise assessment on vehicular and train noise would be warranted. Based on the *CEQR Technical Manual*, an initial noise assessment on vehicular traffic noise is necessary if a proposed project would (i) generate or reroute traffic; or (ii) introduce a new receptor near a heavily trafficked thoroughfare. In order for a detailed analysis on train noise to be warranted the proposed project must (i) be located within 1,500 feet of existing rail activity and have a direct line of sight to that rail facility; or (ii) add rail activity to existing or new rail lines within 1,500 feet and have a direct line of sight to a receptor. Because portions of the Project Area will be within 1,500 feet of the existing rail line and project developments would have a direct line of sight to the rail line, a detailed train noise assessment is warranted.

D. SELECTION OF NOISE RECEPTOR LOCATIONS

Noise survey locations were selected by examining the Project Area and the location of the dominant sources of ambient noise (ex: street traffic, Staten Island Railroad). Existing noise levels were determined at each location by performing field measurements. Measurements along the Staten Island Railroad were taken to conduct the Federal Transit Administration's analysis to determine contributions from the train. The measured noise levels and train noise assessment were used to determine minimum window/wall attenuation requirements to satisfy CEQR interior noise level criteria.

E. EXISTING NOISE LEVELS

Existing noise levels in the Project Area were measured at twenty-two (22) receptor locations as shown below in Table 17-2 (also see Figures 17-1, 17-2, 17-3).

Table 17- 2: Receptor Locations

Noise Receptor Site	Duration	Projected Development Sites	Potential Development Sites	Location
A	24-hour	2	A	SIR between Victory Blvd and Hannah Street
B	24-hour	1, 3, 5, A (SSWD), B1 (SSWD)		SIR at Grant Street
C	24-hour	3, 4, B1 (SSWD)		SIR at Williams Street
1	1-hour	2, 8	A, H, I	Hannah St and Bay St
2	1-hour	1, 5, 11, 12, 14	K, L, M	Grant St and Bay St
3	1-hour	3, 6, 17	B, C, D, E, F, R, S	Wave St and Bay St
4	1-hour	2, 7		Minthorne St between Bay St and Victory Blvd
5	20-minute	9	G, H	Van Duzer St and Hannah St
6	20-minute	9, 10	J	Swan St and Bay St
7	20-minute	10	J, K, L	Van Duzer St and St Julian Pl
8	20-minute	4, 5, 15	N, P	Bay St and Baltic St
9	20-minute	16, 17	O, P, Q	William St and Van Duzer St
10	20-minute	13, 14	N	Clinton St between Van Duzer St and Bay St
11	20-minute	7		Victory Blvd and Bay St
12	20-minute	22		Canal St between Broad St and Water St
13	20-minute	25		Cedar St between Adele Ct and Broad St
14	20-minute	18, 19, 21		Broad St between Quinn St and Wright St
15	20-minute	18, 19, 20, 22, 24, 23, 25	T, U, V, W	Canal St between Broad St and Water St
16	1-hour	1 (Disposition)		Stuyvesant Pl between Hamilton Ave and Wall St
17	20-minute	2 (Disposition)		Victory Blvd and Pike St
18	1-hour	3 (Disposition)		Central Ave at Slosson Terrace
19	20-minute	3 (Disposition)		St Marks Pl between Hyatt St and Victory Blvd



FIGURE 17-1: BAY STREET CORRIDOR AND STAPLETON WATERFRONT PHASE III NOISE MONITORING LOCATIONS
BAY STREET CORRIDOR REZONING AND RELATED ACTIONS

0 250 500 1,000 Feet

N

Affected Lots
Bay Street Corridor Project Area
Projected Development Sites
Stapleton Waterfront Phase III Sites
Potential Development Sites
Monitoring Locations

STATEN ISLAND, NY

Map Reference: Basemap: ESRI; Shapefile: NYC Dept of City Planning, MapPLUTO Data.
Prepared by Langan



FIGURE 17-2: CANAL STREET CORRIDOR NOISE MONITORING LOCATIONS
BAY STREET CORRIDOR REZONING AND RELATED ACTIONS

STATEN ISLAND, NY

Map Reference: Basemap: ESRI; Shapefile: NYC Dept of City Planning, MapPLUTO Data. Prepared by Langan

0 75 150 300 Feet

N

- Canal Street Corridor Project Area
- Projected Development Sites
- Potential Development Sites
- Affected Lots
- Monitoring Locations



FIGURE 17-3 : CITY DISPOSITION SITES
NOISE MONITORING LOCATIONS
BAY STREET CORRIDOR
REZONING AND RELATED ACTIONS

City Disposition Sites
Projected Development Sites
Monitoring Locations

0 400 800 Feet

N

STATEN ISLAND, NY

Map Reference: Basemap: ESRI; Shapefile: NYC Dept of City Planning, MapPLUTO Data. Prepared by Langan

At Receptor Sites A, B, and C, 24-hour continuous noise level measurements were conducted. At Receptor Sites 1 through 4, 16, and18, noise levels were measured for 1-hour periods during three weekday peak periods – AM (7:15AM – 9:15AM), midday (12:00PM – 2:00PM), and PM (4:15PM – 6:15PM), as well as during a Saturday midday peak period – (1:45PM – 3:45PM). At Receptor Sites 5 through 15, 17, and 19 noise levels were measured for 20-minute periods during three weekday peak periods – AM (7:15AM – 9:15AM), midday (12:00PM – 2:00PM), and PM (4:15PM – 6:15PM), as well as during a Saturday midday peak period – (1:45PM – 3:45PM). Measurements were taken on between October 18, 2016 and October 22, 2016.

Measurements were performed using Larson David 831 and LxT sound level meters. The SLMs are a Type 1 instrument according to ANSI Standard S1.4-1983 (R2006). Microphone were mounted at a height of approximately 5 to 8 feet above the ground and was mounted at least approximately 5 feet away from any large reflecting surfaces. The SLM's calibration was field checked before and after readings. Measurements at each location were made on the A-scale (dBA). The data were digitally recording by the SLMs and displayed at the end of the measurement period in units of dB(A). Measured quantities included Leq, L1, L10, L50, L90, and 1/3 octave band levels. A windscreen was used during all sound measurements except for calibration.

The results of the existing noise level measurements are summarized in Figures 17-2 and 17-3 and Table 17-3.

Table 17- 3: Existing Noise Levels (in dBA)

Site	Measurement Location	Day	Time	Leq	L1	L10	L50	L90
A	SIR between Victory Blvd and Hannah Street	Weekday	AM[1]	74.1	87.7	74.1	61.3	53.2
			MD	65.0	77.2	65.0	58.1	53.0
			PM	73.2	85.6	75.5	52.7	49.3
		Saturday	MD	60.2	72.7	61.0	55.2	50.2
B	SIR at Grant Street	Weekday	AM[1]	71.6	76.0	71.6	54.6	51.1
			MD[1]	61.6	72.7	61.6	53.4	49.6
			PM[1]	67.3	81.9	67.3	55.2	49.7
		Saturday	MD[1]	62.6	73.0	62.6	56.6	53.1
C	SIR at Williams Street	Weekday	AM[1]	64.8	79.2	64.8	54.3	49.1
			MD[1]	59.5	71.3	59.5	52.4	48.0
			PM[1]	62.3	74.5	62.3	55.9	51.4
		Saturday	MD	59.8	72.2	60.1	55.5	51.1
1	Hannah St and Bay St	Weekday	AM	70.2	79.1	72.7	68.4	61.8
			MD	71.9	80.7	73.9	68.3	60.3
			PM	69.1	76.9	71.5	67.1	62.1
		Saturday	MD	68.2	76.4	71.3	65.7	59.4
2	Grant St and Bay St	Weekday	AM	69.4	78.6	72.3	65.8	55.1
			MD	69.1	79.7	71.5	64.4	55.9
			PM	70.2	79.8	72.6	66.2	56.5
		Saturday	MD	68.6	77.3	72.0	66.1	57.9

Table 17- 4: Existing Noise Levels (in dBA) (continued)

Site	Measurement Location	Day	Time	Leq	L1	L10	L50	L90
3	Wave St and Bay St	Weekday	AM	71.0	80.0	72.3	66.5	59.0
			MD	71.3	82.8	73.4	65.8	59.5
			PM	69.1	78.9	70.9	65.7	61.1
		Saturday	MD	66.1	73.8	69.4	64.5	56.5
4	Minthorne St between Bay St and Victory Blvd	Weekday	AM	67.1	74.3	70.4	65.6	56.0
			MD[1]	70.8	76.7	70.8	65.0	57.4
			PM	62.5	75.3	64.3	57.7	53.8
		Saturday	MD	57.9	65.3	60.1	56.2	52.7
5	Van Duzer St and Hannah St	Weekday	AM	66.0	77.4	68.4	61.8	55.5
			MD	66.8	77.6	67.9	61.3	56.3
			PM	66.4	77.3	67.4	62.2	57.4
		Saturday	MD	63.9	73.9	65.7	60.6	55.3
6	Swan St and Bay St	Weekday	AM	69.6	78.9	73.0	66.6	57.6
			MD	69.2	79.8	72.2	62.8	55.5
			PM	71.6	81.2	73.1	65.3	57.5
		Saturday	MD	68.1	77.5	71.5	64.5	57.9
7	Van Duzer St and St Julian Pl	Weekday	AM	62.9	72.9	66.6	58.3	51.5
			MD	65.0	77.9	66.3	57.8	50.8
			PM	64.5	74.2	66.7	59.5	53.6
		Saturday	MD	63.9	72.9	67.5	59.9	54.3
8	Bay St and Baltic St	Weekday	AM	69.1	77.6	72.1	66.1	56.3
			MD	70.5	80.5	73.4	67.1	61.2
			PM	69.5	80.0	71.2	65.9	59.2
		Saturday	MD	68.6	76.2	72.8	66.1	58.1
9	William St and Van Duzer St	Weekday	AM	83.6	94.1	84.4	76.1	72.0
			MD	80.5	91.8	82.1	75.4	71.5
			PM	80.7	90.2	82.9	76.1	71.7
		Saturday	MD	71.5	73.6	73.2	71.3	69.1
10	Clinton St between Van Duzer St and Bay St	Weekday	AM	80.2	89.5	81.3	74.6	69.8
			MD	78.6	89.1	81.2	73.3	69.0
			PM	80.6	91.2	83.3	75.3	69.6
		Saturday	MD	79.7	89.8	82.4	75.9	71.7
11	Victory Blvd and Bay St	Weekday	AM	71.1	79.3	73.9	69.1	62.3
			MD[1]	73.9	82.0	73.9	65.3	61.2
			PM	69.3	77.6	72.4	67.3	60.7
		Saturday	MD	71.4	79.1	74.1	68.4	63.2
12	Canal St between Broad St and Water St	Weekday	AM	63.1	72.9	67.6	56.7	49.3
			MD	62.7	72.0	67.2	56.8	50.8
			PM	64.0	73.4	68.2	59.4	51.2
		Saturday	MD	63.7	73.5	67.9	58.3	51.1
13	Cedar St between Adele Ct and Broad St	Weekday	AM	56.9	67.7	58.1	51.8	48.8
			MD	56.5	66.8	57.2	52.1	49.4
			PM[1]	61.5	70.1	61.5	53.1	49.6
		Saturday	MD[1]	60.5	67.9	60.5	53.6	50.1
14	Broad St between Quinn St and Wright St	Weekday	AM	60.1	70.5	63.9	54.1	50.0
			MD	63.5	74.9	65.0	53.9	48.5
			PM	61.7	72.2	64.1	55.9	50.7
		Saturday	MD	61.6	71.3	64.9	58.4	50.9
15	Canal St between Broad St and Water St	Weekday	AM	65.9	75.1	70.1	59.0	49.7
			MD	65.1	74.8	69.2	60.1	50.6
			PM	66.6	75.3	70.3	62.1	51.7

Table 17- 4: Existing Noise Levels (in dBA) (continued)

Site	Measurement Location	Day	Time	Leq	L1	L10	L50	L90
		Saturday	MD	66.5	75.1	71.0	62.1	52.5
16	Stuyvesant Pl between Hamilton Ave and Wall St	Weekday	AM	78.6	87.6	82.1	75.4	74.0
			MD	81.3	92.0	83.1	75.5	73.6
			PM	79.5	90.9	80.9	74.8	73.0
		Saturday	MD	65.8	74.1	70.1	60.1	54.5
17	Victory Blvd and Pike St	Weekday	AM	72.3	80.3	76.2	69.2	57.1
			MD[1]	78.5	82.4	78.5	66.7	52.7
			PM	69.9	77.9	73.6	67.4	57.0
		Saturday	MD	59.3	68.6	62.4	55.9	53.1
18	Central Ave at Slosson Terrace	Weekday	AM	62.0	72.2	64.4	58.6	55.4
			MD	62.3	70.3	62.4	57.1	54.0
			PM	61.2	70.0	64.2	58.7	55.5
		Saturday	MD	61.6	71.8	63.8	58.6	55.4
19	St Marks Pl between Hyatt St and Victory Blvd	Weekday	AM	63.0	73.4	66.5	55.6	52.0
			MD	59.5	69.3	62.7	54.4	50.2
			PM	61.4	69.9	65.3	57.7	52.7
		Saturday	MD	63.1	72.1	66.9	58.0	55.4

Note:
[1] Due to site-specific circumstances at these locations and time periods, the L10 values are conservatively based on Leq values.

At Sites A, B, and C, rail noise from Staten Island Railroad train was the dominant noise source. Vehicular traffic from along Front Street also contributed to the measured noise levels. At Site 10, activity at the adjacent auto body shop contributed to elevated noise levels. At Site 16, siren noise from the nearby police station contributed to elevated noise levels. At all other sites, vehicular traffic was the dominant noise source. Measured levels range from moderately low (Site 13) to high (Sites 9, 10 and 16) and reflect the level of vehicular activity on the adjacent roadways, as well as rail activity from the SIRR. In terms of the CEQR criteria, in accordance with *CEQR Technical Manual* guidelines, the existing noise levels at Sites 9, 10 and 16 are in the "clearly unacceptable" category, existing noise levels at Sites A, B, 1, 2, 3, 4, 8, 11, 15, and 17 are in the "marginally unacceptable" category, existing noise levels at Sites 5, 7, 12, and 19 are in the "marginally acceptable" category, and existing noise levels at Sites C, 13, 14, and 18 are in the "acceptable" category.

To account for activity from the SIRR train an FTA analysis was performed for Sites A and B; additionally, an L_{DN} was calculated for Sites A, B, and C. Based on the measured values, the calculated LDN for Sites A, B, and C were 73 dB(A), 70 dB(A) and 66 dB(A), respectively.

The FTA analysis of the SIRR resulted in an L_{DN} of 62 dB(A) at Sites A, B, and C , which are lower than calculated L_{DN} values based on the measured noise levels.

For Site A, the highest measured 1-hour L_{10} value is 75.5 dB(A). Since the highest measured L_{10} value is greater than the L_{DN} value, the L_{10} descriptor is used at Site A to determine building attenuation values at Site A. For Site B, the highest measured 1-hour L_{10} value is 71.6 dB(A). Since the highest measured L_{10} value is greater than the L_{DN} value, the L_{10} descriptor is used at Site B to determine building attenuation values at Site B. For Site C, the highest measured 1-hour L_{10} value is 64.8 dB(A).

Since the highest measured L_{10} value is greater than the L_{DN} value, the L_{10} descriptor is used at Site C to determine building attenuation values at Site C.

F. NOISE PREDICTION METHODOLOGY

GENERAL METHODOLOGY

Future noise levels were calculated using a proportional modeling technique, which was used as a screening tool to estimate changes in noise levels. The proportional modeling technique is an analysis methodology recommended for analysis purposes in the CEQR Technical Manual. The noise analysis examined the weekday AM, midday (MD), and PM, and Saturday midday (MD) peak hours. The selected time periods are when development facilitated by the Proposed Actions would be expected to produce the maximum traffic generation (based on the traffic studies presented in Chapter 14, "Transportation") and therefore result in the maximum potential for significant noise level increases. The methodologies used for the noise analyses are described below.

PROPORTIONAL MODELING

Proportional modeling was used to determine locations with the potential for having significant noise impacts. Proportional modeling is one of the techniques recommended in the CEQR Technical Manual for mobile source analysis. Using this technique, the prediction of future noise levels where traffic is the dominant noise source is based on a calculation using measured existing noise levels and predicted changes in traffic volumes to determine No-Action and With-Action noise levels. Vehicular traffic volumes are converted into Passenger Car Equivalent (PCE) values, for which one medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars.

Future noise levels are calculated using the following equation:

$$F\ NL - E\ NL = 10 * \log10\ (F\ PCE / E\ PCE)$$

where:

F NL = Future Noise Level
E NL = Existing Noise Level
F PCE = Future PCEs
E PCE = Existing PCEs

Sound levels are measured in decibels and therefore increase logarithmically with sound source strength. In this case, the sound source is traffic volumes measured in PCEs. For example, assume that traffic is the dominant noise source at a particular location. If the existing traffic volume on a street is 100 PCE and if the future traffic volume were increased by 50 PCE to a total of 150 PCE, the

noise level would increase by 1.8 dBA. Similarly, if the future traffic were increased by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

G. FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

Using the methodologies previously described, No-Action noise levels for the 2030 analysis year were calculated at the 22 receptor locations in the Project Area (Sites A, B, C, and 1 to 19). The projected No-Action values are shown in Table 17-4.

Table 17-4: 2030 No-Action Condition Noise Levels (in dBA)

Site	Measurement Location	Day	Time	Existing Leq	No-Action Leq	Leq Change	No-Action L10
A	SIR between Victory Blvd and Hannah Street	Weekday	AM[1]	74.1	76.4	2.3	76.4
			MD	65.0	67.7	2.7	67.7
			PM	73.2	76.2	3.0	78.5
		Saturday	MD	60.2	63.5	3.3	64.4
B	SIR at Grant Street	Weekday	AM[1]	71.6	74.2	2.6	74.2
			MD[1]	61.6	64.7	3.1	64.7
			PM[1]	67.3	70.8	3.5	70.8
		Saturday	MD[1]	62.6	66.4	3.8	66.4
C	SIR at Williams Street	Weekday	AM[1]	64.8	67.3	2.5	67.3
			MD[1]	59.5	62.6	3.1	62.6
			PM[1]	62.3	65.9	3.6	65.9
		Saturday	MD	59.8	64.0	4.2	64.3
1	Hannah St and Bay St	Weekday	AM	70.2	71.5	1.3	74.0
			MD	71.9	74.6	2.7	76.6
			PM	69.1	71.8	2.7	74.3
		Saturday	MD	68.2	71.5	3.3	74.6
2	Grant St and Bay St	Weekday	AM	69.4	70.4	1.0	73.3
			MD	69.1	72.4	3.3	74.7
			PM	70.2	73.4	3.2	75.8
		Saturday	MD	68.6	72.3	3.7	75.8
3	Wave St and Bay St	Weekday	AM	71.0	72.1	1.1	73.3
			MD	71.3	74.3	3.0	76.5
			PM	69.1	72.0	2.9	73.8
		Saturday	MD	66.1	69.6	3.5	72.9
4	Minthorne St between Bay St and Victory Blvd	Weekday	AM	67.1	71.2	4.1	74.5
			MD[1]	70.8	74.6	3.8	74.6
			PM	62.5	66.2	3.7	68.0
		Saturday	MD	57.9	62.0	4.1	64.2
5	Van Duzer St and Hannah St	Weekday	AM	66.0	67.2	1.2	69.6
			MD	66.8	67.4	0.6	68.5
			PM	66.4	67.1	0.7	68.1
		Saturday	MD	63.9	64.4	0.5	66.2

Table 17-4: 2030 No-Action Condition Noise Levels (in dBA) (continued)

Site	Measurement Location	Day	Time	Existing Leq	No-Action Leq	Leq Change	No-Action L10
6	Swan St and Bay St	Weekday	AM	69.6	70.5	0.9	73.9
			MD	69.2	72.0	2.8	75.0
			PM	71.6	74.4	2.8	75.9
		Saturday	MD	68.1	71.5	3.4	74.9
7	Van Duzer St and St Julian Pl	Weekday	AM	62.9	63.4	0.5	67.2
			MD	65.0	66.0	1.0	67.3
			PM	64.5	65.2	0.7	67.4
		Saturday	MD	63.9	64.7	0.8	68.3
8	Bay St and Baltic St	Weekday	AM	69.1	70.1	1.0	73.1
			MD	70.5	73.7	3.2	76.6
			PM	69.5	72.6	3.1	74.3
		Saturday	MD	68.6	72.3	3.7	76.5
9	William St and Van Duzer St	Weekday	AM	83.6	84.1	0.5	84.9
			MD	80.5	81.5	1.0	83.1
			PM	80.7	81.5	0.8	83.7
		Saturday	MD	71.5	64.2	-7.3	65.9
10	Clinton St between Van Duzer St and Bay St	Weekday	AM	80.2	80.7	0.5	81.8
			MD	78.6	79.3	0.7	81.9
			PM	80.6	81.3	0.7	84.0
		Saturday	MD	79.7	80.3	0.6	83.1
11	Victory Blvd and Bay St	Weekday	AM	71.1	72.3	1.2	75.1
			MD[1]	73.9	77.4	3.5	77.4
			PM	69.3	72.4	3.1	75.6
		Saturday	MD	71.4	75.6	4.2	78.3
12	Canal St between Broad St and Water St	Weekday	AM	63.1	63.7	0.6	68.2
			MD	62.7	63.5	0.8	68.1
			PM	64.0	64.7	0.7	69.0
		Saturday	MD	63.7	64.4	0.7	68.6
13	Cedar St between Adele Ct and Broad St	Weekday	AM	56.9	59.5	2.6	60.7
			MD	56.5	58.7	2.2	59.4
			PM[1]	61.5	61.9	0.4	61.9
		Saturday	MD[1]	60.5	60.9	0.4	60.9
14	Broad St between Quinn St and Wright St	Weekday	AM	60.1	61.2	1.1	64.9
			MD	63.5	65.1	1.6	66.6
			PM	61.7	63.2	1.5	65.6
		Saturday	MD	61.6	62.7	1.1	66.1
15	Canal St between Broad St and Water St	Weekday	AM	65.9	66.5	0.6	70.7
			MD	65.1	66.0	0.9	70.1
			PM	66.6	67.3	0.7	71.1
		Saturday	MD	66.5	66.9	0.4	71.4
16	Stuyvesant Pl between Hamilton Ave and Wall St	Weekday	AM	78.6	80.6	2.0	84.2
			MD	81.3	84.3	3.0	86.2
			PM	79.5	83.3	3.8	84.7
		Saturday	MD	65.8	67.9	2.1	72.2

Table 17-4: 2030 No-Action Condition Noise Levels (in dBA) (continued)

Site	Measurement Location	Day	Time	Existing Leq	No-Action Leq	Leq Change	No-Action L10
17	Victory Blvd and Pike St	Weekday	AM	72.3	73.1	0.8	77.0
			MD[1]	78.5	80.8	2.3	80.8
			PM	69.9	71.9	2.0	75.6
		Saturday	MD	59.3	62.2	2.9	65.3
18	Central Ave at Slosson Terrace	Weekday	AM	62.0	62.1	0.1	64.5
			MD	62.3	62.0	-0.3	62.1
			PM	61.2	61.4	0.2	64.4
		Saturday	MD	61.6	55.2	-6.4	57.3
19	St Marks Pl between Hyatt St and Victory Blvd	Weekday	AM	63.0	63.5	0.5	67.0
			MD	59.5	60.0	0.5	63.3
			PM	61.4	61.9	0.5	65.8
		Saturday	MD	63.1	63.6	0.5	67.4

Note:
[1] Due to site-specific circumstances at these locations and time periods, the L10 values are conservatively based on Leq values.

In 2030, the maximum increase in L_{eq} noise levels for the No-Action condition would be 4.2 dBA at Site C. Noise levels at receptor sites 9, 10 and 16 are categorized as "clearly unacceptable," noise levels at receptor sites A, B, 1, 2, 3, 4, 6, 8, 11, 15, and 17 are categorized as "marginally unacceptable," noise levels at receptor sites 5, 7, 12, 14, and 19 are categorized as "marginally acceptable," and noise levels at receptor sites C, 13, and 18 are categorized as "acceptable."

H. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

Using the methodologies previously described, With-Action noise levels were calculated at the 22 receptor locations for the 2030 analysis year. The projected With-Action noise levels are shown in Table 17-5. In 2030, the maximum increase in L_{eq} noise levels for the With-Action condition compared to the No-Action condition for all receptor sites would be 1.4 dBA. Changes of this magnitude would be imperceptible and would not be considered a significant noise impact based on the *CEQR Technical Manual* impact criteria. In terms of CEQR noise exposure guidelines, noise levels at receptor sites 10 and 16 are categorized as "clearly unacceptable," noise levels at receptor sites A, B, 1, 2, 3, 4, 6, 8, 11, 15, and 17 are categorized as "marginally unacceptable," noise levels at receptor sites C, 5, 7, 12, 14, 18, and 19 are categorized as "marginally acceptable," and noise levels at receptor site 13 are categorized as "acceptable."

Table 17-5: 2030 With-Action Condition Noise Levels (in DBA)

Site	Measurement Location	Day	Time	No-Action Leq	With-Action Leq	Leq Change	With-Action L10
A	SIR between Victory Blvd and Hannah Street	Weekday	AM[1]	76.4	76.8	0.4	76.8
			MD	67.7	68.2	0.5	68.2
			PM	76.2	76.7	0.5	79.0
		Saturday	MD	63.5	63.9	0.4	64.8

Table 17-5: 2030 With-Action Condition Noise Levels (in DBA) (continued)

Site	Measurement Location	Day	Time	No-Action Leq	With-Action Leq	Leq Change	With-Action L10
B	SIR at Grant Street	Weekday	AM[1]	74.2	74.6	0.4	74.6
			MD[1]	64.7	65.2	0.5	65.2
			PM[1]	70.8	71.3	0.5	71.3
		Saturday	MD[1]	66.4	66.8	0.4	66.8
C	SIR at Williams Street	Weekday	AM[1]	67.3	67.9	0.6	67.9
			MD[1]	62.6	63.2	0.6	63.2
			PM[1]	65.9	66.6	0.7	66.6
		Saturday	MD	64.0	64.5	0.5	64.8
1	Hannah St and Bay St	Weekday	AM	71.5	71.9	0.4	74.4
			MD	74.6	74.9	0.3	76.9
			PM	71.8	72.2	0.4	74.7
		Saturday	MD	71.5	71.8	0.3	74.9
2	Grant St and Bay St	Weekday	AM	70.4	70.7	0.3	73.6
			MD	72.4	72.6	0.2	74.9
			PM	73.4	73.7	0.3	76.1
		Saturday	MD	72.3	72.5	0.2	76.0
3	Wave St and Bay St	Weekday	AM	72.1	72.6	0.5	73.8
			MD	74.3	74.6	0.3	76.8
			PM	72.0	72.5	0.5	74.3
		Saturday	MD	69.6	69.9	0.3	73.2
4	Minthorne St between Bay St and Victory Blvd	Weekday	AM	71.2	72.1	0.9	75.4
			MD[1]	74.6	75.8	1.2	75.8
			PM	66.2	67.2	1.0	69.0
		Saturday	MD	62.0	62.5	0.5	64.7
5	Van Duzer St and Hannah St	Weekday	AM	67.2	67.3	0.1	69.7
			MD	67.4	67.7	0.3	68.8
			PM	67.1	67.5	0.4	68.5
		Saturday	MD	64.4	64.6	0.2	66.4
6	Swan St and Bay St	Weekday	AM	70.5	70.8	0.3	74.2
			MD	72.0	72.2	0.2	75.2
			PM	74.4	74.7	0.3	76.2
		Saturday	MD	71.5	71.7	0.2	75.1
7	Van Duzer St and St Julian Pl	Weekday	AM	63.4	63.5	0.1	67.3
			MD	66.0	66.1	0.1	67.4
			PM	65.2	65.3	0.1	67.5
		Saturday	MD	64.7	64.8	0.1	68.4
8	Bay St and Baltic St	Weekday	AM	70.1	70.5	0.4	73.5
			MD	73.7	73.9	0.2	76.8
			PM	72.6	73.0	0.4	74.7
		Saturday	MD	72.3	72.6	0.3	76.8
9	William St and Van Duzer St	Weekday	AM	84.1	84.3	0.2	85.1
			MD	81.5	81.6	0.1	83.2
			PM	81.5	82.0	0.5	84.2

Table 17-5: 2030 With-Action Condition Noise Levels (in DBA) (continued)

Site	Measurement Location	Day	Time	No-Action Leq	With-Action Leq	Leq Change	With-Action L10
		Saturday	MD	64.2	64.4	0.2	66.1
10	Clinton St between Van Duzer St and Bay St	Weekday	AM	80.7	81.1	0.4	82.2
			MD	79.3	79.4	0.1	82.0
			PM	81.3	81.6	0.3	84.3
		Saturday	MD	80.3	80.6	0.3	83.4
11	Victory Blvd and Bay St	Weekday	AM	72.3	72.6	0.3	75.4
			MD[1]	77.4	77.7	0.3	77.7
			PM	72.4	72.7	0.3	75.9
		Saturday	MD	75.6	75.8	0.2	78.5
12	Canal St between Broad St and Water St	Weekday	AM	63.7	63.8	0.1	68.3
			MD	63.5	63.5	0.0	68.1
			PM	64.7	64.8	0.1	69.1
		Saturday	MD	64.4	64.4	0.0	68.6
13	Cedar St between Adele Ct and Broad St	Weekday	AM	59.5	59.5	0.0	60.7
			MD	58.7	58.7	0.0	59.4
			PM[1]	61.9	61.9	0.0	61.9
		Saturday	MD[1]	60.9	60.9	0.0	60.9
14	Broad St between Quinn St and Wright St	Weekday	AM	61.2	62.0	0.8	65.7
			MD	65.1	65.6	0.5	67.1
			PM	63.2	64.3	1.1	66.7
		Saturday	MD	62.7	63.3	0.6	66.7
15	Canal St between Broad St and Water St	Weekday	AM	66.5	66.6	0.1	70.8
			MD	66.0	66.0	0.0	70.1
			PM	67.3	67.4	0.1	71.2
		Saturday	MD	66.9	66.9	0.0	71.4
16	Stuyvesant Pl between Hamilton Ave and Wall St	Weekday	AM	80.6	80.8	0.2	84.4
			MD	84.3	84.4	0.1	86.3
			PM	83.3	83.3	0.0	84.7
		Saturday	MD	67.9	67.9	0.0	72.2
17	Victory Blvd and Pike St	Weekday	AM	73.1	73.4	0.3	77.3
			MD[1]	80.8	81.0	0.2	81.0
			PM	71.9	72.2	0.3	75.9
		Saturday	MD	62.2	62.4	0.2	65.5
18	Central Ave at Slosson Terrace	Weekday	AM	62.1	62.8	0.7	65.2
			MD	62.0	63.4	1.4	63.5
			PM	61.4	62.6	1.2	65.6
		Saturday	MD	55.2	55.8	0.6	57.9
19	St Marks Pl between Hyatt St and Victory Blvd	Weekday	AM	63.5	63.5	0.0	67.0
			MD	60.0	60.1	0.1	63.4
			PM	61.9	62.0	0.1	65.9
		Saturday	MD	63.6	63.7	0.1	67.5

Note:
[1] Due to site-specific circumstances at these locations and time periods, the L10 values are conservatively based on Leq values.

I. ASSESSMENT

ATTENUATION REQUIREMENTS

As shown in Table 17-1, the *CEQR Technical Manual* has set noise attenuation requirements for building facades, based on exterior L10(1) noise levels. These recommended noise attenuation values are designed to maintain interior noise levels of 45 dB(A) or lower for residential, hotel, etc. uses and 50 dB(A) for commercial uses.

Table 17-6 lists the required building attenuation values for each of the Projected and Potential Development sites to meet *CEQR Technical Manual* requirements for internal noise levels. The With-Action L_{10} noise levels were calculated using the existing noise measurements and the traffic noise analysis.

The attenuation of a composite structure is a function of the attenuation provided by each of its component parts and how much of the area is made up of each part. Normally, a building façade consists of a wall, glazing, and any vents or louvers associated with the building mechanical systems in various ratios of area. The designs for the Projected and Potential Development Sites With-Action buildings would include acoustically rated windows and an alternate means of ventilation (i.e., air conditioning) that does not degrade the acoustical performance of the façade. The buildings, including these elements, would be designed to provide a composite Outdoor-Indoor Transmission Class (OITC) rating greater than or equal to the attenuation requirements listed in Table 17-6, along with an alternative means of ventilation in all habitable rooms of the residential units. By designing the Projected and Potential Development Sites With-Action buildings to provide a composite OITC rating greater than or equal to the attenuation requirements listed in Table 17-6 the future With-Action buildings would be expected to provide sufficient attenuation to achieve the CEQR interior noise level guideline of 45 dB(A) or lower for residential uses and 50 dB(A) or lower for commercial uses.

Table 17- 6: CEQR Building Attenuation Analysis Summary

Receptor #	Location	Maximum L_{10}	Attenuation Requirement	Projected Development Sites	Potential Development Sites
A	SIR between Victory Blvd and Hannah Street	79.0	35	2	A
B[2]	SIR at Grant Street	74.6	31	1, 3, 5, A (SSWD), B1 (SSWD)	-
C	SIR at Williams Street	67.9	NA[1]	3, 4, B1 (SSWD)	-
1	Hannah St and Bay St	76.9	33	2, 8	A, H, I
2	Grant St and Bay St	76.1	33	1, 5, 11, 12, 14	K, L, M
3	Wave St and Bay St	76.8	33	3, 6, 17	B, C, D, E, F, R, S
4	Minthorne St between Bay St and Victory Blvd	75.8	31	2, 7	-
5	Van Duzer St and Hannah St	69.7	NA[1]	9	G, H
6	Swan St and Bay St	76.2	33	9, 10	J
7	Van Duzer St and St Julian Pl	68.4	NA[1]	10	J, K, L
8	Bay St and Baltic St	76.8	33	4, 5, 15	N, P
9	William St and Van Duzer St	85.1	42	16, 17	O, P, Q
10	Clinton St between Van Duzer St and Bay St	84.3	41	13, 14	N
11	Victory Blvd and Bay St	78.5	35	7	-
12	Canal St between Broad St and Water St	69.1	NA[1]	22	-
13	Cedar St between Adele Ct and Broad St	61.9	NA[1]	25	-
14	Broad St between Quinn St and Wright St	67.1	NA[1]	18, 19, 21	-
15	Canal St between Broad St and Water St	71.4	28	18, 19, 20, 22, 24, 23, 25	T, U, V, W
16	Stuyvesant Pl between Hamilton Ave and Wall St	86.3	43	1 (Disposition)	-
17[2]	Victory Blvd and Pike St	81.0	37	2 (Disposition)	-
18	Central Ave at Slosson Terrace	65.6	NA[1]	3 (Disposition)	-
19	St Marks Pl between Hyatt St and Victory Blvd	67.5	NA[1]	3 (Disposition)	-

Notes:
[1] Maximum L10 is below 70 dB(A). The *CEQR Technical Manual* does not contain guidance for noise levels that are less than 70 dB(A).
[2] Due to site-specific circumstances at these locations, the required attenuation values are conservatively based on Leq values.

To implement the attenuation requirements shown in Appendix I, an (E) designation for noise would be applied to all privately held Projected and Potential Development Sites specifying the appropriate amount of window/wall attenuation. The requirement for façade attenuation as well as the requirement for an alternate means of ventilation for City-owned sites will be required through disposition agreements or similar binding mechanisms between the City of New York and the future developer. The text of the Noise (E) designation for window/wall attenuation of 40 dBA or less would be as follows:

> To ensure an acceptable interior noise environment, the building façade(s) or future development must provide minimum composite building façade attenuation as shown in Appendix I of the *Bay Street Corridor Environmental Impact Statement* in order to maintain an interior L_{10} noise level not greater than 45 dBA for residential and community facility uses or not greater than 50 dBA for commercial uses. To maintain a closed-window condition in these areas, an alternate means of ventilation that brings outside air into the building without degrading the acoustical performance of the building façade(s) must also be provided.

The text of the Noise (E) designation for window/wall attenuation greater than 40 dBA would be as follows:

> To ensure an acceptable interior noise environment, the building façade(s) or future development must provide minimum composite building façade attenuation as shown in Appendix I of the *Bay Street Corridor Environmental Impact Statement* in order to maintain an interior L_{10} noise level not greater than 45 dBA for residential and community facility uses or not greater than 50 dBA for commercial uses. To achieve up to 43 dBA of building attenuation, special design features that go beyond the normal double-glazed windows are necessary and may include using specifically designed windows (i.e., windows with small sizes, windows with air gaps, windows with thicker glazing, etc.), and additional building attenuation. To maintain a closed-window condition in these areas, an alternate means of ventilation that brings outside air into the building without degrading the acoustical performance of the building façade(s) must also be provided.

With this (E) designation or other comparable mechanism in place at these sites, interior noise levels would meet *CEQR Technical Manual* guidance and no significant adverse noise impacts related to noise are expected, and no further analysis is warranted.

MECHANICAL SYSTEMS

The design of and specification for building mechanical systems at the Projected and Potential Development Sites, such as heating, ventilation, and air conditioning (HVAC) systems, would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code and the New York City Department of Buildings Mechanical Code) to avoid producing levels that would result in any significant adverse noise impact related to mechanical equipment.