3.12 NOISE IMPACTS

This Section analyzes the potential of the Project to generate significant adverse noise impacts from residential use and traffic. The potential of the Project to generate significant short-term adverse noise impacts from construction activity is separately analyzed in Section 3.16. This Section describes existing ambient noise conditions both on-site and off-site; the estimated increase in noise due to on-site conditions; and the potential impacts of noise from post-construction traffic on sensitive noise receptor locations near the Project. Mitigation measures that would reduce potential significant adverse impacts are also discussed.

3.12.1 Existing Conditions

Noise can be defined as loud, undesirable, and unwanted sounds. The noise assessment described in this Section, carried out by Tim Miller Associates, has been designed to evaluate the noise expected to be generated by the Project and whether that noise would generate significant adverse impacts.

Most sounds heard in the environment are not limited to a single frequency, but rather consist of a band of frequencies, each with a different intensity or volume level. The level of a noise is measured and expressed in decibels ("dB"). Since the human ear cannot perceive all pitches or frequencies with equal acuity, these measures are adjusted or weighted to correspond to human hearing. This adjusted unit is known as the A-weighted decibel ("dBA"). The dBA is used to gauge and compare the relative loudness of sounds as perceived by humans. As a baseline reference, Table 3121 provides typical dBA levels for various common sounds.

Table 3121
Relative Loudness of Common Sounds Expressed in Decibels (dBA)

Source	dBA	Subjective Description
Human breathing	5	Very faint
Rustle of leaves in wind	10	Very faint
Average whisper	20	Very faint
Average residence with stereo playing	30	Faint
Soft radio music in apartment	40	Faint
Average office	50	Moderate
Near freeway auto traffic	60	Moderate
Stenographic room	70	Loud
School cafeteria with untreated surfaces	80	Loud
Noisy factory	85	Very Loud
Noisy urban street	90	Very Loud
Auto horn at 10 feet	100	Very Loud
Accelerating motorcycle at few feet away	110	Deafening
Threshold of feeling: hard rock band	120	Deafening
Threshold of pain	130	Deafening
Jet engine at 300 feet	140	Deafening

Source: Based on "The Noise Guidebook," U.S. Department of Housing and Urban Development, March 1985.

Since dBA measures a noise level at a single instant, while ambient noise levels are constantly varying, other measurement are used to describe noise levels over a period of time. The equivalent noise level ("L_{eq}") is the constant, average sound level, that, over a period of time, is generated by a noise source. L_{eq} is used to predict future noise levels by logarithmically adding the contributions from new noise sources to the existing ambient levels, and by relating specific sounds to increased noise levels. L_{eq} is the generally accepted noise measurement criteria for noise assessments. To establish a representative interval, L_{eq} measurements are typically based on a monitoring period of no less than 15 minutes.

A one-decibel change in noise levels is the smallest detectable by the human ear under suitable laboratory conditions. However, under normal conditions, a change in noise levels of two or three decibels is required for the average person to perceive a difference. Tables 3122 and 3123 show community perception of noise level changes and response to increased noise levels, respectively.

Table 3122

Perception of Changes in Noise Levels

Change (dBA)	Average Ability to Perceive Changes in Noise Levels Human Perception of Change
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A dramatic change
40	Difference between a faintly audible sound and a very loud sound

Source: Bolt Baranek and Neuman, Inc. Fundamentals and Abatement of Highway Traffic Noise, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

Table 3123

Community Response to Increases in Noise Levels

Change (dBA)	Response Category	Description of Response
0	None	No observed reaction
5	Little	Sporadic complaints
10	Medium	Widespread complaints
15	Strong	Threats of community action
20	Very strong	Vigorous community action

Source: International Standard Organization, Noise Assessment with Respect to Community Reactions, 150/TC 43. (New York: United Nations, November, 1969)

State and Local Noise Regulations

The following are the noise regulations and standards applicable to the Project:

Village Code: Noise that would be generated by the proposed Project would be subject to Village Code Chapter 73: Noise. According to the Code, the intent of the Village is to: *"establish and impose restrictions upon the creation of excessive, unnecessary or unusually loud noise within the*

limits of the Village of South Blooming Grove in pursuant of and for the purpose of securing and promoting the public health, comfort convenience, safety, welfare. Prosperity and the peace and quiet of the Village of South Blooming Grove and its inhabitants."

An "unreasonable noise," as defined in the Code is: *"Any excessive or unusually loud sound or any sound which either annoys, disturbs, injures or endangers the comfort, repose, health, peace or safety of a reasonable person of normal sensitivities or which causes injury to animal life or damage to property or business."*

Standards provided in the Code for determining whether an unreasonable noise exists include, but are not limited to: volume, intensity, unusual nature, time, and location.

The Code lists specific prohibited acts related to noise, including the use of loudspeakers, business and industrial operations, sound reproduction devices, trucks, and construction (short-term construction noise impacts are analyzed in Section 16.d). The Code sets forth specific sound levels that are restricted at a point on the receiving property nearest the sound source. The restriction for "nighttime hours" (11:00 PM to 8:00 AM) is 75 dBA, and the restriction for "daytime hours" (8:00 AM to 11:00 PM) is 90 dBA.

FHWA Noise Guidelines: The Federal Highway Administration ("FHWA") guidelines recommend exterior design noise levels, which are applicable to federal highway projects adjacent to various land uses that would be exposed to noise generated by the vehicular traffic from the highways. FHWA establishes an exterior design noise threshold of 67 dBA (L_{eq}) for residential areas; however, noises approaching this level are also considered. The definition of "approaching" is 1 dBA below the design noise level. Therefore, FHWA recommends use of noise abatement measures in highway projects adjacent to residential areas where the noise level could exceed 66 dBA (L_{eq}).

NYSDEC Noise Policy: The NYSDEC policy and guidance document "Assessing and Mitigating Noise Impacts" (2000) provides noise impact assessment methods, examines the circumstances under which sounds create significant noise impacts, and identifies noise avoidance and mitigation measures. The policy is primarily provided to "evaluate the potential for adverse impacts of sound generated and emanating to receptors outside of the facility or property," during NYSDEC review of an application for a permit. Though the Project would not be subject to NYSDEC permit review, these noise assessment methods, as best practices, were used in the noise assessment for the proposed Project where appropriate.

"Assessing and Mitigating Noise Impacts" discusses thresholds for significant sound pressure level (or "decibel level-dBA") increases above ambient sound levels. The document does not provide

specific noise thresholds, but rather addresses how increases in noise from a new noise source may impact surrounding land uses and receptors.

U.S. Department of Housing and Urban Development Noise Standards: The United States Department of Housing and Urban Development ("HUD") has adopted environmental noise standards for determining acceptability of federally-assisted projects and mitigation measures to ensure that activities assisted by HUD achieve the goal of attaining a suitable living environment. The proposed Project would not be subject to HUD guidelines. However, these standards represent appropriate goals for any type of development. Table 3124 summarizes HUD site acceptability standards based on external noise levels.

Table 3124

HUD Site Acceptability Standards

Category	Outdoor dBA (Ldn)
Acceptable	Not exceeding 65
Normally Unacceptable	65 to 75
Unacceptable	Above 75

Source: Title 24, Code of Federal Regulations, Part 51.103 (c), Exterior Standards.

The 65 dBA criterion is more restrictive than the criteria used by the FHWA related to the standards or noise or roadway design as noted above.

Existing Ambient Noise Levels

Existing ambient noise levels are described below in the setting and sensitive receptors section.

Setting and Sensitive Receptors

The Project Site is in the vicinity of undeveloped land and single-family residential developments of varying densities. There is limited commercial development located along NYS Route 208 and on Clove Road. For the purposes of this assessment, sensitive receptors are defined as the existing homes in residential developments and single-family homes near the Project Site. No other types of sensitive receptors, such as schools, day care centers, nursing homes, or hospitals, exist in the vicinity of the Project Site. The nearest school is the Round Hill Elementary School, located approximately 1.25 miles north of the Project entrance on NYS Route 208, and the nearest daycare is on Route 94 in the Town, approximately 2.5 miles from the Project Site.

Locations: Five generalized areas with receptor locations are shown in the map in Figure 3121. The receptor areas outlined on the map are identified as follows:

- Area 1 - The Capitol Hill residential development southwest and adjacent to the property;
- Area 2 - The Orchard Lake residential development northwest of the Site;

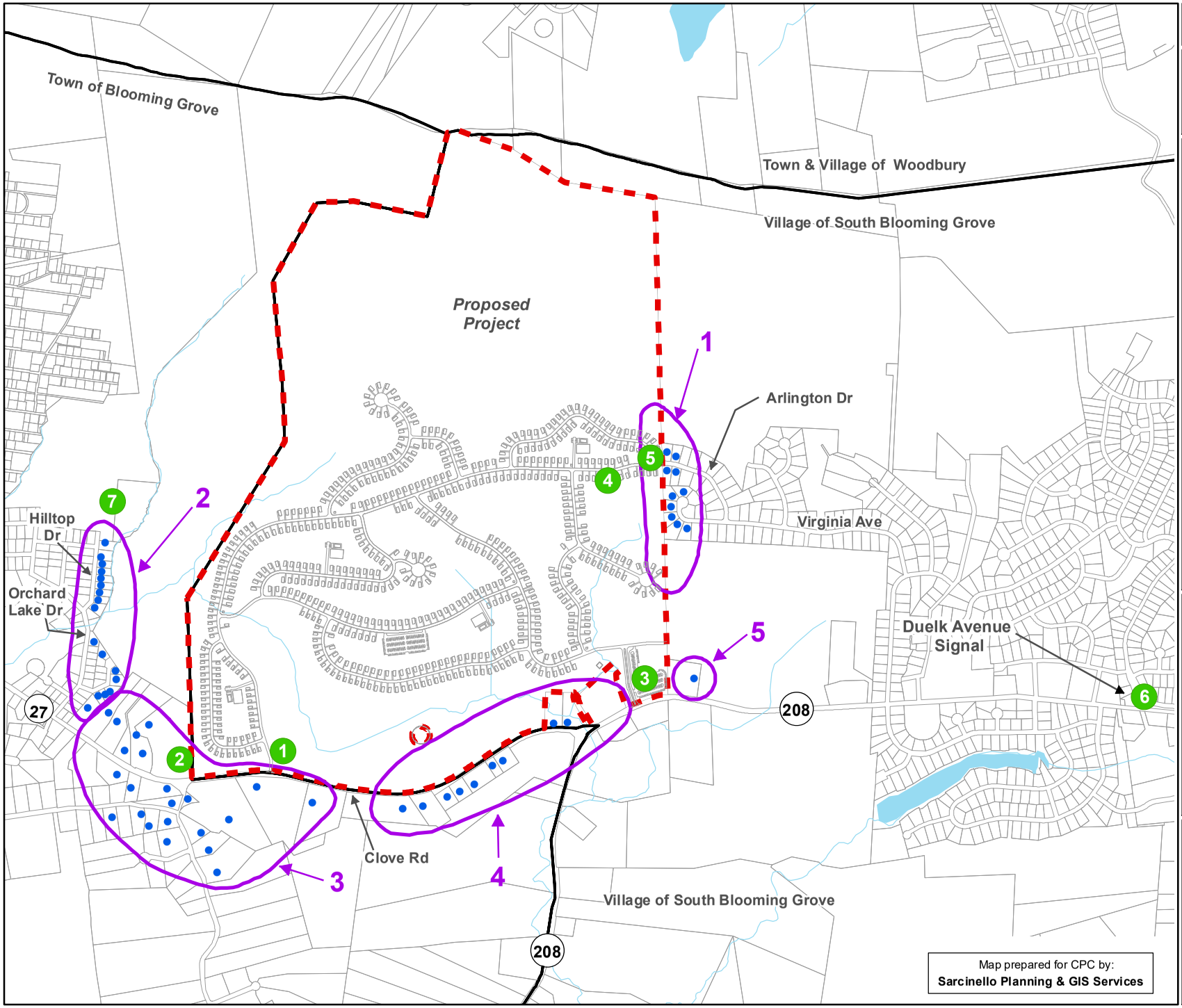

Figure 3121

Noise Monitor/Receptor Locations

Legend

- Project Site
- Noise Receptor Areas
- # Noise Monitors
- House Locations
- Municipal Boundaries

0 1,500
Feet

Data Sources:
Parcels, roads, municipal boundaries: Orange County GIS Division, 06/2016;

CLOVEWOOD

Draft Environmental Impact Statement

Blaggs Clove

Village of South Blooming Grove
Orange County, New York

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November 21, 2017

- Area 3 - Several single-family homes near the northeast entrance to the Project, including homes on Round Hill Road and the south side of Clove Road;
- Area 4 - Single-family homes on the northwest side of Clove Road, across from the property frontage; and
- Area 5 – Single-family homes on NYS Route 208, located west and southwest of the Site. Noise measurements were collected at the signalized intersection at Duelk Road and NYS Route 208.

Noise Measurements: Existing ambient noise levels were measured on October 25, 2016 at seven locations, both on- and off-site. Noise monitoring locations are shown in Figure 3121. The locations were selected to assess existing on- and off-site noise conditions, to permit comparison to future noise estimates and potential noise impacts that would result from the Project. The locations are described as follows:

- Location 1 – Near the northwest entrance to the proposed Project;
- Location 2 – Near the northwest property line, between the proposed entrance and off-site neighbors on Clove Road;
- Location 3- Near the southwest entrance to the proposed Project;
- Location 4 – On-site, between the Project's proposed residential development and existing Capitol Hill development residences;
- Location 5 – On the southwest property line of the Project Site, adjacent to existing Capitol Hill development residences;
- Location 6 – Off-site, near the intersection of NYS Route 208 and Duelk Avenue (this is the closest signalized intersection to the Site); and
- Location 7 – Near existing residences on Hilltop Drive, directly northeast of the property and proposed residences.

Existing noise measurements at the monitoring locations during AM and PM peak traffic hours, are provided in Table 3125.

Table 3125
Ambient Sound Levels (dBA)(L_{eq}) - 25-Oct-16

Location	Noise Level (AM Period)	Noise Level (PM Period)
Location 1	57.2	56.1
Location 2	56.5	56.2
Location 3	60.8	56.3
Location 4	44.6	49.1
Location 5	45.1	57.5
Location 6	65.3	63.4
Location 7	46.2	49.2

Source: Tim Miller Associates, Inc.

Notes: Monitoring locations 1, 2, 3 and 6 were used to evaluate traffic noise and therefore the monitoring period corresponded with peak traffic periods: 7:00 to 9:00 a.m. and 4:30 to 6:30 p.m. Monitoring locations 4, 5 and 7 were used to evaluate ambient conditions interior to the site and to coincide with typical daytime activities, with a monitoring period of: 8:00 to 10:00 a.m. and 3:00 to 5:00 p.m.

Monitoring Locations 1, 2, 3 and 6 were used to evaluate the potential impacts from mobile (traffic) noise sources, while Locations 1, 2, 3, 4, 5 and 7 were used to evaluate potential impacts from stationary noise sources in the Project (see further discussion of impacts below).

As anticipated, the average noise levels measured near NYS Route 208 and Clove Road (Locations 1, 2, 3 and 6) were higher than the noise levels in the interior of the Project Site (Location 4) or at off-site locations in the nearby residential developments (Locations 5 and 7).

The principal source of ambient noise at the Project Site is vehicles traveling along the two major roads in the area. Other noise sources that contribute to the ambient noise levels at the Project Site include: off-site mobile source noise from traffic along Clove Road and NYS Route 208, to the immediate north of the Project Site; and sounds emanating from the Project Site, such as birds and the wind blowing through the on-site trees and vegetation.

3.12.2 Potential Impacts

The Project would generate increased noise levels from existing conditions for residences in the vicinity of the Project Site. These noise sources can be categorized as: "mobile" noise sources related to Project-generated on- and off-site traffic; and "stationary" noise sources resulting from residential activity on the Project Site, including residential HVAC equipment, outdoor activity such as lawn mowing, and the on-site sewage treatment plant.

Due to the size of the property and the Project's layout and design, the majority of development (internal roads and new homes) would be located in the interior of the Project Site. As shown in the Site Plan in Appendix A, open space or parkland consisting of existing vegetation would be preserved along all of the property boundaries. This vegetated buffer would be a minimum of 860 feet along the northwest, southwest, and southeast property borders. In the northeast corner of the development, the buffer would be a minimum of 100 feet. This buffer would provide distance between new residences and nearby residential noise receptors.

Vegetation generally does not provide noise reduction, unless the vegetation is relatively dense and of sufficient depth. According to NYSDEC's "Assessing and Mitigating Noise Impacts" guidance document, dense vegetation that is at least 100 feet in depth would reduce sound levels by 3 to 7 dBA. Given the extensive vegetated buffers that would be provided by the Project, noise at many of the residential receptor locations would be attenuated.

To the average person, a noise level increase of one to two dBA is barely perceptible; an increase of 5 dBA is noticeable; an increase of 10 dBA is a large increase; and an increase of 20 dBA or more is perceived as a dramatic change. Annoyance to people frequently results from increases of 10 dBA or more, depending upon the frequency and duration of the noise events.

The following criteria are used in the noise assessment for the proposed Project to define a "noise impact":

For mobile sources, an increase of 6 dBA or more in the noise level from the "No Build" to "Build" conditions, per the NYSDOT "Environmental Procedures Manual" (1998). This manual was prepared primarily for use in determining changes in noise levels for highway improvements or for use in the creation of highways where there was no highway. As stated in the manual "this application is intended to determine a traffic noise impact and should not be used for the purpose of determining a 'significant' noise impact."

For stationary sources, noise levels that exceed 65 dBA, per HUD guidelines for external noise levels.

Mobile Noise Sources (Traffic)

Noise monitoring locations were selected to coincide with the traffic study intersections and nearby residences that may be most affected by the residential traffic traveling to and from the Project Site.

Monitoring Locations 1 and 2 measure noise levels from traffic on Clove Road in the area of the northern Project entrance, and capture the noise levels experienced by neighbors near Clove Road. Location 3 measures traffic noise on NYS Route 208 and at the proposed southern entrance to the Project Site. Noise from traffic going to and from the Blooming Grove Plaza (a small shopping center) and the Sunoco Service station on the north side of NYS Route 208 are also captured by this location.

Location 6, at NYS Route 208 and Duelk Avenue, measures the noise from the traffic on NYS Route 208, the vehicles exiting or entering Duelk Avenue, and vehicles entering and exiting the Southgate Shopping Plaza and South Blooming Grove Fire Department.

The vehicular noise analysis for the Project employed a logarithmic equation to identify whether there would be potential for significant noise impacts. Due to its ease of use, the New York City Environmental Quality Review ("CEQR") Manual recommends using this as a first-level screening analysis technique for most actions where traffic is the dominant noise source (this equation is used below).

Using the following formula, future traffic noise levels at Locations 2 and 5 can be calculated using measured existing noise levels, existing traffic volumes (No Build), and predicted Build traffic volumes:

F NL = 10 * $\log_{10}$ (F PCE / E PCE) + - E NL
Where:

- F NL = Future Noise Level (both Build and No-Build)
- E NL = Existing Noise Level
- F PCE = Future Passenger Car Equivalent (both Build and No-Build)
- E PCE = Existing Passenger Car Equivalent

Traffic volumes are represented as Passenger Car Equivalent ("PCE") values, since vehicles such as trucks would generate greater noise levels than passenger cars. In accordance with the CEQR Manual, trucks categorized by DOT as Vehicle Class F5 through F8 (two- to four-axle one-unit trucks) were considered a medium-weight truck and assigned a value of 13 PCE. This category would include box trucks typically used for local delivery.

During traffic counts conducted for this impact statement, medium and large trucks were not distinguished. For the purposes of this analysis, trucks were assigned a medium-weight value, since NYS Route 208 and Clove Road are not a major truck route for tractor trailers.

To determine the increase in noise levels related to traffic in the AM Peak, PM Peak, and Saturday Peak traffic hours for the Build Condition at the two locations along Clove Road (Locations 1 and 2) and along NYS Route 208 (Locations 3 and 6), the methodology and equation shown above were used.

The change in noise levels between the No-Build and Build Conditions due to traffic during the weekday Peak AM hours (7:30 am - 8:30 am) and the weekday peak PM hours (5:00 to 6:00 pm) were calculated as less than 2.0 dBa at each of the four study intersections on Clove Road and NYS Route 208. Tables showing the calculations and projected increases in traffic noise are provided in Appendix J.

The estimated increase in traffic noise resulting from project traffic for nearby residents would be 2.0 dBA or less, substantially less than the 6 dBA increase typically requiring abatement for highway projects. Although the Project is not a highway project, the 6 dBA criteria provides a useful measure by which to compare the No-Build and Build Conditions. Based on this assessment, the Project would not have the potential to generate any significant adverse mobile-source (traffic) noise impacts.

Stationary Noise Sources

The Project's residential development would generate noise from noise sources typical of a residential subdivision, and such noise would be consistent with the nearby and neighboring residential property uses. These noise sources may include: heating and cooling equipment such

as air conditioning units; occasional lawn mowers and/or snow blowers; and barking dogs. Individual residential air conditioners are typically not an intrusive noise source. Property maintenance, such as lawn mowing and snow removal, are typically undertaken during daytime hours.

The anticipated residential noise would be dampened by the layout and design of the Project. As further described below, the Project has been designed so that the developed areas would be set back a significant distance from the Project Site's borders and would be located behind extensive vegetated buffers. Therefore, ample distance and vegetative screening would be provided between the proposed Project's new internal roads and homes, and the existing residences within the vicinity of the Site.

The proposed Project would feature a new wastewater treatment plant, to be located in the southwest portion of the Project Site, near the southwest Project entrance and the existing Blooming Grove Shopping Center. The WWTP would be contained in a building, and therefore mechanical equipment would be enclosed, shielding any noise from nearby receptors. Only three existing residences are within 500 feet of the proposed WWTP, and these residences already experience traffic noise from NYS Route 208 that exceeds the noise levels that would be produced by the WWTP.

3.12.3 Mitigation

The Project would not have the potential to generate any significant adverse noise impacts, and therefore no mitigation would be required. Even the slight noise that may be perceived at the few neighboring residential properties located within 50 feet of Clove Road and NYS Route 208, near the proposed Project entrance, would be barely perceptible and would not constitute an adverse impact, as it would be less than 2.0 dBA. Furthermore, the surrounding vegetation would act as a buffer and reduce any minor Project noise. Therefore, no mitigation would be required.