

### **3.10 Noise**

#### **3.10.1 Introduction**

The Union Place site is approximately 287+ acres of predominantly undeveloped land along the highly commercialized US Route 6 corridor. Existing land use in the project area is mixed, including a broad array of existing uses such as commercial development of varying scales, office and service uses, industrial, institutional, educational, low to high density residential, agricultural, open space, utility, government and transportation uses. Sensitive receptors to the site are primarily residential with the closest located along US Route 6 to the north and south of the northeastern portion of the property. These sensitive receptors are described and potential impacts are evaluated in Section 3.10.2.

The proposed development of the site includes retail, office and residential uses while preserving open space. The majority of the commercial buildings will be located towards the south-central portion of the property, approximately 300 feet away from the existing residential development to the west across Baldwin Place Road. These proposed uses are generally consistent with the existing land uses noted above in the vicinity of the property along the US Route 6 corridor. As such, the Proposed Action is not expected to result in significant adverse impacts to these uses. Potential noise related impacts to the adjacent residential areas are addressed in Section 3.10.2 of this chapter.

The greatest source of existing ambient noise detected at the site was from vehicles traveling along the local streets. Noise sources that contribute to the ambient noise levels at the project site are dominated by off-site mobile source noise from traffic along local streets in the area such as Baldwin Place Road and US Route 6 and noise from existing residential and commercial uses surrounding the parcel.

Noise can be defined as undesirable or unwanted sound. Even though noise is somewhat subjective, it affects the full range of human activities and must be considered in local and regional planning. Most of the sounds heard in the environment are not composed of a single frequency, but are a band of frequencies, each with a different intensity or 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, or dBA. The dBA is useful for gauging and comparing the subjective loudness of sounds. Table 3.10-1 provides typical dBA levels for various common sounds.

Since dBA describes a noise level at just one instant while ambient noise levels are constantly varying, other ratings are used to describe noise levels, especially over extended periods. The equivalent noise level, or  $L_{eq}$ , is the constant, average sound level, which, over a period of time, contains the same amount of sound energy as the varying levels of the noise.  $L_{eq}$  is used in the prediction of future noise levels, by logarithmically adding the contributions from new noise sources to the existing ambient levels, and in relating specific sounds to increased noise levels.  $L_{eq}$  is a 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.

<b>Table 3.10-1</b> <b>Relative Loudness of Common Sounds</b> Expressed in Decibels (dBA)		
<b>Source</b>	<b>dBA</b>	<b>Subjective Description</b>
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.		

It should be noted that 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 notice a difference. Tables 3.10-2 and 3.10-3 show community perception of noise level changes and response to increased noise levels respectively.

<b>Table 3.10-2</b> <b>Perception of Changes in Noise Levels</b>	
<b>Change (dBA)</b>	<b>Average Ability to Perceive Changes in Noise Levels</b> <b>Human Perception of Change</b>
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.	

<b>Table 3.10-3 Community Response to Increases in Noise Levels</b>		
<b>Estimated Community Response</b>		
<b>Change (dBA)</b>	<b>Category</b>	<b>Description</b>
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
<small>Source: International Standard Organization, <u>Noise Assessment with Respect to Community Reactions</u>, 150/TC 43. (New York: United Nations, November 1969.)</small>		

Applicable Noise Criteria

*FHWA Noise Guidelines*

The (Federal Highway Administration) FHWA guidelines recommend exterior design noise levels applicable to Federal highway projects adjacent to various land uses exposed to noise generated by vehicular traffic from highways. The 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, the FHWA recommends use of noise abatement measures in highway projects adjacent to residential areas where the noise level could exceed 66 dBA ( $L_{eq}$ ).

*NYS DOT Noise Standards*

The NYS DOT Environmental Procedures Manual (August 1998) establishes noise impact criteria for use in its design of highway and non-highway projects. Noise impacts for highway projects are a refinement of the FHWA noise criteria that utilize a two prong approach to determine impacts: Criteria 1) if future noise levels are projected to approach 1 dBA of the National Abatement Criteria (NAC); and Criteria 2) if there is a substantial increase over existing noise levels. The NAC establishes absolute noise thresholds for various land use categories. The NAC threshold that would apply to the project site area (Category C) is 72 dBA (see 23 CFR Part 772).

Category C is described by FHWA as "Developed lands, properties, or activities not included in Categories A or B". Category A is described as "Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose" while Category B is described as "Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. The proposed use and current zoning of the Union Place property fits within Category C, such that the lands are suitable for multiple uses including commercial and residential development. The NYS DOT would consider mitigation of noise impacts if the ambient noise levels exceed 72 dBA ( $L_{eq}$ ) in a Category C area (Criteria #1), or if an increase of 6 dBA occurs over existing noise levels (Criteria #2).

*Department of Housing and Urban Development (HUD) Noise Standards*

HUD has adopted environmental noise standards for determining acceptability of federally-assisted projects and mitigation measures to ensure that activities assisted by HUD would achieve the goal of attaining a suitable living environment. Table 3.10-4 summarizes HUD site acceptability standards based on external noise levels.

<b>Table 3.10-4 HUD Site Acceptability Standards</b>	
	<b>Outdoor dBA (L<sub>dn</sub>)</b>
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 standards for noise for roadway design as noted above.

*Town of Carmel Local Noise Ordinance*

The Town of Carmel Noise Control Law is provided as Chapter 104 Article II, Noise, of the Town of Carmel Code. This regulation sets the maximum allowable noise measurements for residential-zoned areas at 65 dBA during the hours of 8:00 AM to 6:00 PM or 55 dBA during the hours of 6:00 PM to 8:00 AM. This regulation also sets the maximum allowable noise measurements for commercial/retail-zoned areas at 65 dBA.

Specific prohibitions. The following acts are in violation of the Noise Control Article:

- sound-reproduction devices;
- sound-signal devices, except when required by the Vehicle and Traffic Law of the State of New York;
- emergency-warning devices, except to give notice as a warning of an emergency;
- burglar alarms, unless such alarm is capable of automatically terminating its operations within 15 minutes after the alarm has been activated;
- animals, unless under control as to no cause unnecessary noise across a residential real property boundary;
- squealing tires,
- exhausts, when causing unnecessary noise;
- domestic power tools and equipment including but not limited to saws, sanders, drills, grinders, lawn and garden tools, mowers, tractors, leaf blowers or gathers during the hours of 10:00 pm to 8:00 am; and;
- modification to noise-control devices.

The following are sound-level standards of the code:

- Refuse-collecting equipment. One can not operate a piece refuse-collecting equipment which exceeds a sound level of 80 dBAs at a distance of 10 feet from the area where the collection is occurring;
- Recreational vehicles are not permitted to be operated on private property of another individual or on any public property including Town or school owned land;
- Air conditioning and air handling devices. In residential-zoned areas the continuous running of such devices can not exceed 55 dBAs across the property line;
- Air Compressors are limited in use unless the muffler is certified by the manufacture that is provides a dynamic insertion loss of not less than 20 dbA's of sound;
- Paving breakers are limited to the use of paving breakers manufactured prior to December 31, 1974 and dynamic insertion loss of the muffler being certified by the manufacturer;
- Places of public entertainment can not be operated, such as but limited to restaurants, bars, cafe's, discotheque or dance halls, exceeding the sound level of 95 dbA's for more than 30 seconds;
- Street and parking lot sweeping equipment. Can not be operated between the hours of 11:00 pm and 7:00 am, if the sound level exceeds 45 dbA's.

Section 104 of the Town of Carmel zoning law also restricts the time periods when construction operations may occur in order to control short-term noise impacts to surrounding properties. Construction activities are permitted:

- "Residential-zoned districts. During the hours of 8:00 a.m. to 6:00 p.m., noise levels from a construction site shall not exceed an L<sub>10</sub> of 70 db(A)'s when measured at a distance of 400 feet from the construction site; during the hours of 6:00 p.m. to 8:00 a.m., noise levels shall not exceed an L<sub>10</sub> of 55 db(A)'s when measured at a distance of 400 feet from the construction site.
- Commercial retail-zoned districts. During normal business hours, noise levels shall not exceed an L<sub>10</sub> of 75 db(A)'s when measured at a distance of 400 feet from the construction site".

Exceptions of the Noise Control Article include the operation of the Town of Carmel Highway Department vehicles and equipment during the performance of official duties.

### **3.10.2 Existing Conditions**

#### Land Use and Sensitive Receptors

Existing land use in the project area is mixed, including commercial, residential, and transportation uses. There are residential developments abutting the project site on the east and to the north. Further to the east, across US Route 6 from the site, and to the west across Baldwin Place Road are several other residential developments. Commercial use is located primarily east and south of the property along US Route 6.

Sensitive noise receptors are facilities and uses that are sensitive to noise energy and decibel levels. Land uses that are typically considered to be sensitive to noise include residences, schools, hospitals, churches, cemeteries, libraries, nature preserves and certain types of outdoor recreation areas.

The nearest sensitive receptors are single-family residences located along US Route 6 to the north and south of the project, a multi-family neighborhood south of the property known as "Society Hill", a senior community located along US Route 6 south and east of the project site, and residences to the west of the property across Baldwin Place Road. The closest residences are located adjacent to the project parcel to the south of the northeastern portion of the property, and to the north of the northeastern portion of the property. The closest residential properties are approximately 50 to 100 feet from the proposed residential development on the site and approximately 300 feet from the commercial development on the property, across Baldwin Place Road. These areas are shown on Figure 3.10-1, Noise Monitoring Locations and Sensitive Receptor Map and described below.

- A. The single family residential neighborhood located to the north of the northeastern portion of the property houses approximately sixty residences. This neighborhood stretches north from the northern project boundary and then to the west to Baldwin Place Road. Of the approximately sixty homes in this neighborhood three residences are directly adjacent to the project site at distances of roughly 50 to 100 feet with their rear yards between the property line and the residences.
- B. There are two sensitive receptors to the south of the northeastern portion of the property and to the east of the main portion of the property. One is a single family residential neighborhood with approximately eight homes. Access to this neighborhood is from Mi-Anna Drive off of US Route 6. Of the homes in the neighborhood one is abuts the Union Places property. This home is approximately 50 to 100 feet from the property boundary with the side yard separating the site's property line and the house.
- C. The second neighborhood south of the northeastern portion of the property is a multi-family development known as Society Hill. This neighborhood has approximately twenty multi-family buildings. This neighborhood is accessed over Jonathan Drive off of US Route 6. Of the twenty buildings, six are adjacent to the Union Place property. These buildings are approximately 75 to 225 feet from the sites property boundary with backyards between the property line and the buildings.
- D. An age restricted community lies to the east of the project site. This development contains a community center building and two residential buildings with access directly to US Route 6. Both of the residential buildings are adjacent to the Union Place parcel. These buildings are approximately 50 feet from the site's boundary with side and backyards located between.
- E. To the southwest of the project site are single family residential neighborhoods along Kennard Drive and Maple Drive with more than 20 homes. None of the homes abut the Union Place property since Baldwin Place Road separates these neighborhoods from the proposed development. Approximately 75 feet separates the closest of these homes and the western property boundary of the project site.
- F. Northwest of the Union Place property are single family residential neighborhoods along Myrtle Drive and Rustic Drive. These neighborhoods have more than 20 homes none of which abut the Union Place property since Baldwin Place Road separates these

neighborhoods from the proposed development. The homes closest to the project site are located approximately 75 to 150 feet from its northwestern property line.

- G. There is a single family residence north of and directly adjacent to the Union Place property boundary. This residence is located approximately 100 feet from the project site boundary.

#### Existing Ambient Noise Levels

Existing ambient sound levels were recorded by Tim Miller Associates, Inc. on Monday, October 27, 2008, between the hours of 9:15 am and 1:00 pm. The data was collected at four (4) locations on the property and six (6) corresponding locations off the Property within residential areas along local streets. Monitoring locations were determined based on the scoping requirements, "Current ambient noise levels in vicinity of project site in residential areas as detected on local streets". The sound monitoring locations are shown in Figure 3.10-1, Monitoring Locations, and are as follows:

- Off-site Point NL-1: Williamsburg Road (Townhomes off of Stillwater Road);
- On-site Point NL-1A: On-site location adjacent to Point 1;
- Off-site Point 2: Muscoot Road South;
- On-site Point NL-2A: On-site adjacent Point 2;
- Off-site Point NL-3: Corner of E. Ct. and Maple Drive;
- On-site Point NL-3A: On-site adjacent to Point 3;
- Off-site Point NL-4: Jonathan Drive;
- On-site Point 4A: On-site adjacent to Point 4;
- Off-site Point NL-5: Senior Development East of the property;
- Off-site Point NL-6: MI-Anna Drive.

Sound levels were recorded for a 15 minute period at each monitoring location. These sound levels are measured in  $L_{eq}$ , as defined above. The  $L_{eq(.25)}$  levels (15 minutes equals 0.25 of an hour, thus  $L_{eq(.25)}$ ), using the "A" weighted scale (dBA), are provided in Table 3.10-5.

<b>Table 3.10-5 Ambient Sound Levels (dBA)(L<sub>eq(.25)</sub>)</b>		
<b>Location</b>	<b>Noise Level October 27, 2008 (Monday)</b>	<b>Time Noise Measurements were Collected (Military)</b>
Off-site Point NL- 1: Williamsburg Road (Townhomes off of Stillwater Road)	53.9	0915-0930
On-site Point NL-1A: On-site location adjacent to Point NL-1	56.2	0915-0930
Off-site Point NL-2: Muscoot Road South	53.4	0955-1010
On-site Point NL-2A: On-site adjacent to Point NL-2	50.9	0955-1010
Off-site Point NL-3: Corner of E Ct. and Maple Drive	62.2	1020-1035
On-site Point NL-3A: On-site adjacent to Point NL-3	53.9	1020-1035
Off-site Point NL-4: Jonathan Drive	56.1	1100-1115
On-site Point NL-4A: On-site adjacent to Point NL-4	39.8	1100-1115
Off-site Point NL-5: Senior Development East of the property	53.4	1145-1200
Off-site Point NL-6: MI-Anna Drive	55.1	1240-1255
Source: Tim Miller Associates, Monday October 27, 2008		

As indicated in Table 3.10-5, existing sound levels are highest at Point NL-3. Noise at this Maple Drive location is off the proposed project site and is influenced by traffic and residential noise. The remaining noise locations were relatively similar and influenced by either traffic along local streets or residential noise. The noise measure at location NL-4A is lower than measurements collected at the other locations. This is due to the undeveloped nature of the surrounding property.

In summary, existing noise levels at the Union Place site were observed to be influenced primarily by surrounding land uses. The greatest source of ambient noise detected at the site was from vehicles traveling along the local streets. Noise sources that contribute to the ambient noise levels at the project site are as follows:

- Off-site mobile source noise from traffic along local streets in the area such as Baldwin Place Road and US Route 6;
- Residential noise;
- Currently, the property is primarily undeveloped so no specific on-site noise is created with the exception of the noise from Mahopac Farm and the residents on the south end and the seasonal use of farm equipment used to maintain, plant and harvest the agricultural field.

### 3.10.3 Potential Impacts

It is anticipated that future noise levels at and in the vicinity of the project site without the Union Place project would be similar to current conditions. Minor increases in noise levels would be expected due to continued local growth and development and increases in traffic volumes on US Route 6.

To the average person, a noise level increase of one to two dBA is barely perceptible; an increase of 5 dBA is definitely 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 would be used to define a noise impact:

- During the construction period the noise can not exceed 70 dBA 400 feet beyond the construction site (the property line) within residential zoned areas, per the Town of Carmel Noise Code.
- For mobile sources, an increase of 6 dBA or more in the noise level from the No Build to Build conditions as 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, however, it can be applied to SEQRA projects. 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 55 dBA, as per the Town of Carmel Noise Code for residential areas. This code was used instead of the 65 dBA per the HUD standards and the 75 dBA for the Town of Carmel Noise Code for commercial areas because it was the most stringent of the three.

#### Short Term Noise Impacts During Construction

Local daytime ambient noise levels would increase both on and off the project site during clearing and grading of the site and construction of the proposed roadways, utility lines, buildings and parking lots. Construction activities and the operation of construction equipment are an expected consequence of any new residential, commercial or industrial project, and cannot be avoided. Thus, some change in the noise levels would be expected. It is important to note that noise changes as a result of construction activities are an intermittent, short term impact, dependent on the construction activity and the proximity to the local receptors, and would cease upon completion of the construction phase of the project. The following table, Table 3-10.6 Construction Noise Levels, shows representative maximum sound levels for diesel powered equipment and activities at a range of receptor distances.

<b>Table 3.10-6 Construction Noise Levels (dBA)</b>					
<b>Equipment/Activity</b>	<b>Maximum Sound Level</b>				
	<b>50 feet</b>	<b>200 feet</b>	<b>400 feet</b>	<b>500 feet</b>	<b>1000 feet</b>
Backhoe	82-84	70-72	64-66	62-64	56-58
Concrete Pump	74-84	62-72	56-66	54-64	48-58
Generator	71-87	59-75	53-69	51-67	45-61
Hauler	83-86	71-74	65-68	63-66	57-60
Loader	86-90	74-78	68-72	66-70	60-64
Trucks	81-87	69-75	63-69	61-67	55-61

Source: Assessing and Mitigating Noise Impacts, NYSDEC.  
Also compiled from various sources by Tim Miller Associates, Inc.

The level of impact from these construction noise sources depends upon the type and number of pieces of construction equipment being operated, the duration of the construction activities, as well as the receptors distance from the construction areas. Noise levels due to construction activities will vary widely, depending on the phase of construction activities. These activities will include clearing and excavations, drilling, grading activities, delivery of construction materials, and the actual construction of the various components of the proposed project.

The noisiest periods of construction will occur during site clearing and grading activities, when sections of the site are prepared for the new roadways, utilities and building foundations, although all site-generated construction activities will produce increased on-site noise levels. It is anticipated that nearby residences on surrounding local roads would experience temporary elevated noise levels for intermittent, short term periods during future construction of the commercial and residential development.

The closest sensitive receptors to the site are located along US Route 6 approximately 50 to 100 feet north of the northeast portion of the parcel. These receptors are single family homes located on South Muscoot Road. In the Town of Carmel Code construction noise cannot be more than 70 dBA at 400 feet from the construction site within a residential zone. Table 3.10-6 above shows the approximate dBAs of typical construction equipment at different distances. A column showing dBAs of the construction equipment at 400 feet away is included. At 400 feet, the 70 dBA limit set forth in the Town Code is met by all types of construction equipment with the exception of the loader. However, the loader can be placed further than 400 feet from the property line to comply with the Town Code and minimize potential impact to the surrounding residences. All equipment meet the requirement at 500 feet.

Based on on-site subsurface investigations, it is reasonable to believe that blasting will not be necessary for the development of the project. Refer to Chapter 3.1 Soils and Topography for additional information regarding subsurface investigations and presence of bedrock on the project site.

Operational Noise

Site generated project noise levels would be associated with a variety of on- and off-site factors, which include:

- normal vehicular traffic for the residential area and the commercial development;
- truck deliveries for commercial merchandise;
- refuse/dumpsters areas for each commercial building, possible trash compacting areas;
- snow plowing and shoveling;
- garbage disposal activities;
- and normal residential noise;

Operation of the commercial facility located in the southwestern portion of the property would result in an increase in ambient noise levels in the immediate vicinity of the site. Site generated noise would primarily result from vehicular traffic associated with the proposed commercial development.

Noise levels collected in residential areas surrounding the Union Place project site ranged from 53.4 to 62.2 (dBA). The stationary operational noise associated with the proposed residential development for the Union Place Property will be similar to the noise generated from the existing adjacent residential areas where noise levels were collected.

Measures have been taken to minimize the projected operational noise level of the Union Place commercial development site from such activities as deliveries at loading docks, dumpster and trash compactor locations and HVAC equipment noises. Although the land uses in the vicinity of the project site are primarily mixed commercial and residential, the Project design is intended to minimize noise impacts to the few nearby residential properties, placing loading docks and dumpsters along building sides to minimize noise impacts. The buildings have been located towards the south central portion of the property, with Baldwin Place Road separating the development from the residential properties to the west of the site. Therefore, noise generated at the proposed commercial buildings would be at least 300-450 feet from the nearest residential properties, west of the project. Other residential properties in the vicinity, would not be impacted due their distance from the project site.

#### *Stationary Noise - Air Conditioning Systems*

According to the NYSDEC policy guidance document Assessing and Mitigating Noise Impacts, a typical air conditioning unit, at a distance of 20 feet, would have a sound level of approximately 60 dBA. To determine if the stationary sources of noise from the proposed development of Union Place would comply with the Town of Carmel noise ordinance the closest onsite proposed building for both the residential and commercial areas of the site were reviewed. Within the residential development the closest proposed residential building is located approximately 50 feet from the property line on the northeastern portion of the site. According to the NYSDEC guidance document mentioned above, a doubling of the distance between the noise source and the receptor (being the property line in this case) would result in a reduction in the noise level of the stationary object by 6 dBAs. Therefore, at a distance of 40 feet from the air conditioning unit (twice the 20 foot distance noted previously) the noise would be 54 dBA. Since the property line is 50 feet from the nearest proposed residential building the noise from the air conditioner would comply with the Town of Carmel Noise Code requirement of 55 dBA.

Within the commercial area of the property the closest proposed commercial building is located approximately 150 feet from the property line within the southwestern portion of the site. As with the residential units, since the nearest proposed commercial building is greater than 40 feet

from the property line, the proposed noise from the air conditioner unit will comply with the Town of Carmel Code requirement of 55 dBA.

#### *Mobile Noise Sources*

The vehicular noise analysis that was completed for the proposed Union Place Development employed a logarithmic equation to identify if there would be the potential for significant noise impacts as a result of the proposed project. Due to its ease of use, the New York City Environmental Quality Review (CEQR) Manual recommends using this logarithmic equation as the screening analysis technique for the first-level screening purposes for most actions where traffic is the dominant noise source (see equation below).

Using the following formula, future traffic noise level increases can be calculated using existing traffic volumes (No Build) and predicted Build traffic volumes:

$$F\ NL\ increase = 10 * \log_{10} (F\ PCE / E\ PCE)$$

Where:

F NL = Future 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 the NYSDOT as Vehicle Class F5 (two axle truck with six tires) through F8 (four or less 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. Larger trucks composed of detachable components (including tractor-trailer combinations) and categorized by the NYSDOT as Vehicle Class F9 through F13 were assigned a value of 47 PCE. During traffic counts conducted for this impact statement, medium and large trucks were not distinguished.

The roads on which the noise analysis were conducted are classified as follows:

- US Route 6 - Rural Principal Arterial, with a functional class of 02;
- Baldwin Place Road - Rural Major Collector, with a functional class of 07;
- Stillwater Road/Miller Road - Rural Minor Collectors, with a functional class of 08; and
- Maple Drive - Rural Local, with a functional class of 09.

Roads are classified by the type and frequency of vehicles that travel on them. The NYSDOT's Environmental Procedures Manual (EPM) provides a table showing vehicle distribution for Region 8 (the DOT region the proposed project is within) with the percentage of each different type of vehicle that travels on each of the roads, separated by the roads functional class. This table as well as the traffic counts provided by John Collins Engineering, P.C., the traffic engineer for the Union Place Project, was used to determine the number of cars, medium trucks, and large trucks that normally travel on the area roads.

To determine the increase in noise levels related to traffic in the Peak AM, Peak PM, and Peak Saturday traffic hours for the Build Condition, four intersections surrounding the Union Place project property were used:

- Intersection #3: Stillwater Road and Baldwin Place Road, located to the northwest of the property;
- Intersection #4: Maple Drive and Baldwin Place Road, located southwest of the property where residences are located;
- Intersection #13: Jonathan Drive/Miller Drive and US Route 6, located east of the property; and
- Intersection #19: Grand Meadow Drive and Baldwin Place Road, located directly west of the property where a new intersection is proposed.

Noise level calculations for each of these intersections are presented in Tables 3.10-7 through 3.10-12.

<b>Table 3.10-7 Noise Level Calculations - No Build Condition Peak AM</b>					
	<b>Existing Total PCE (E PCE)</b>	<b>Future No Build Total PCE (F PCE)</b>	<b>F PCE/ E PCE</b>	<b>Log10</b>	<b>Log10*10 = F NL Increase (dBA)</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	2,595	2,965	1.14	0.06	<b>0.58</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	2,174	2,577	1.19	0.07	<b>0.74</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	4,411	5,062	1.15	0.06	<b>0.6</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	2,240	2,709	1.21	0.08	<b>0.83</b>
Notes: E PCE and F PCE calculations shown in Appendix K.					

<b>Table 3.10-8 Noise Level Calculations - Build Condition Peak AM</b>					
	<b>Existing Total PCE (E PCE)</b>	<b>Future No Build Total PCE (F PCE)</b>	<b>F PCE/ E PCE</b>	<b>Log10</b>	<b>Log10*10 = F NL Increase (dBA)</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	2,595	3,536	1.36	0.13	<b>1.34</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	2,174	689	0.32	-0.5	<b>-4.99</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	4,411	6,336	1.44	0.16	<b>1.57</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	2,240	3,467	1.55	0.19	<b>1.9</b>
Notes: E PCE and F PCE calculations shown in Appendix K.					

<b>Table 3.10-9 Noise Level Calculations - No Build Condition Peak PM</b>					
	<b>Existing Total PCE (E PCE)</b>	<b>Future No Build Total PCE (F PCE)</b>	<b>F PCE/ E PCE</b>	<b>Log10</b>	<b>Log10*10 = F NL Increase (dBA)</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	3,854	4,546	1.18	0.07	<b>0.72</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	3,534	4,241	1.2	0.08	<b>0.79</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	6,317	7,559	1.2	0.08	<b>0.78</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	3,316	4,073	1.23	0.09	<b>0.89</b>
Notes: E PCE and F PCE calculations shown in Appendix K.					

<b>Table 3.10-10 Noise Level Calculations - Build Condition Peak PM</b>					
	<b>Existing Total PCE (E PCE)</b>	<b>Future No Build Total PCE (F PCE)</b>	<b>F PCE/ E PCE</b>	<b>Log10</b>	<b>Log10*10 = F NL Increase (dBA)</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	3,854	5,457	1.42	0.15	<b>1.51</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	3,534	874	0.25	-0.61	<b>-6.07</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	6,317	9,800	1.55	0.19	<b>1.91</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	3,316	5,557	1.68	0.22	<b>2.24</b>
Notes: E PCE and F PCE calculations shown in Appendix K.					

<b>Table 3.10-11 Noise Level Calculations - No Build Condition Peak Saturday</b>					
	<b>Existing Total PCE (E PCE)</b>	<b>Future No Build Total PCE (F PCE)</b>	<b>F PCE/ E PCE</b>	<b>Log10</b>	<b>Log10*10 = F NL Increase (dBA)</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	3,349	4,073	1.22	0.08	<b>0.85</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	3,267	3,975	1.22	0.09	<b>0.85</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	7,354	8,867	1.21	0.08	<b>0.81</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	3,080	3,839	1.25	0.1	<b>0.96</b>
Notes: E PCE and F PCE calculations shown in Appendix K.					

<b>Table 3.10-12 Noise Level Calculations - Build Condition Peak Saturday</b>					
	<b>Existing Total PCE (E PCE)</b>	<b>Future No Build Total PCE (F PCE)</b>	<b>F PCE/ E PCE</b>	<b>Log10</b>	<b>Log10*10 = F NL Increase (dBA)</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	3,349	5,100	1.52	0.18	<b>1.83</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	3,267	909	0.28	-0.56	<b>-5.56</b>
Intersection #13: Jonathan Rd-Miller Rd. & Route 6	7,354	11,332	1.54	0.19	<b>1.88</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	3,080	5,255	1.71	0.23	<b>2.32</b>
Notes: E PCE and F PCE calculations shown in Appendix K.					

Table 3.10-13 shows the change in noise levels between the No Build and Build Conditions due to project generated traffic during the weekday Peak AM hours, weekday Peak PM hours and the Peak Saturday hours.

<b>Table 3.10-13</b>			
<b>Noise Level Increase from No Build to Build Condition</b>			
<b>Peak AM</b>			
	<b>No-Build NL Increase (dBA)</b>	<b>Build NL Increase</b>	<b>Difference Between No Build and Build Conditions</b>
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	0.58	1.34	<b>0.76</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	0.74	-4.99	<b>-4.25</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	0.6	1.57	<b>0.97</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	0.83	1.9	<b>1.07</b>
<b>Peak PM</b>			
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	0.72	1.51	<b>0.79</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	0.79	-6.07	<b>-5.28</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	0.78	1.91	<b>1.13</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	0.89	2.24	<b>1.35</b>
<b>Peak Saturday</b>			
Intersection #3: Stillwater Rd. & Baldwin Place Rd.	0.85	1.83	<b>0.98</b>
Intersection #4: Maple Dr. & Baldwin Place Rd.	0.85	-5.56	<b>-4.71</b>
Intersection #13: Jonathan Rd.-Miller Rd. & Route 6	0.81	1.88	<b>1.07</b>
Intersection #19: Grand Meadow Dr. & Baldwin Place Rd.	0.96	2.32	<b>1.36</b>
Notes: Information collected from Tables 3.10-7 to 3.10-12.			

Between the No-Build and Build Conditions, noise levels due to project generated traffic during the Peak weekday AM hours would increase by 0.76, 0.97, and 1.07 dB's for Intersection #3, Intersection #13, and Intersection #19 respectively. Noise levels between the No-Build and Build conditions due to project related traffic during the Peak weekday PM hours would increase by 0.79, 1.13, and 1.35 for these same intersections. For the Peak Saturday hours, noise levels between the No-Build and Build conditions due to project generated traffic would

increase by 0.98, 1.07, and 1.36 for Intersection #3, Intersection #13, and Intersection #19 respectively.

Intersection #4 would have a substantial decrease in noise levels from the No-Build to the Build condition. This correlates with the rerouting of traffic to the proposed connector road and away from this intersection. The connector road is proposed to extend from Baldwin Place Road, opposite of Grand Meadow Drive, through the Union Place project site and to US Route 6. This new connector road will provide an alternative travel path for vehicles from Baldwin Place Road to US Route 6 and will result in the diversion of existing and proposed traffic in the Build Year. This connector road is further described in Section 3.7 of this document.

As stated above, a 6 dBA increase requires abatement for highway projects, according to NYSDOT guidelines. While this proposed project is not a highway project, the difference between noise levels under the No-Build condition and Build condition is minimal and, as shown in the tables above, would not result in a 6 dBA increase. Therefore noise related to the increase in traffic in the vicinity of the Union Place project is not considered a significant noise impact.

As a result of the measures proposed as part of Proposed Action, and in consideration of the NYSDOT Environmental Procedures Manual criterion discussed above, no significant impacts are anticipated as a result of the Union Place related mobile noise sources.

#### *Compliance with the Local Noise Ordinance*

As stated above the construction of the Proposed Action will comply with the Town of Carmel Noise ordinance as will the noise generated during its operation.

#### **3.10.4 Mitigation Measures**

Several mitigation measures are proposed to reduce noise to nearby residents. These mitigation measures include planning and operational measures.

##### Construction Noise Mitigation

Construction activity would be limited to hours between 8:00 a.m. and 6:00 p.m. Typically, construction activities would be expected to cease prior to 6:00 p.m. All construction vehicles and equipment would be expected to be well maintained and operated in an efficient manner. Noise levels at and beyond the site property line will adhere to the Town of Carmel Noise Control Code Chapter 104 explained above.

##### Operational Noise Mitigation

The proposed Union Place project has been designed to minimize impacts to adjoining residential properties, including impacts from noise. The majority of buildings will be located towards the south-central portion of the property, away from the existing residential development to the west across Baldwin Place Road. As stated above in Section 3.10.3, the HVAC systems for both the proposed commercial and residential buildings on the Union Place property will be placed at distance far enough from the property line and any adjacent sensitive receptors that the attenuation of the noise over that distance will meet the Town of Carmel

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noise code requirements and therefore no mitigation measure are needed for the HVAC equipment.

The dumpster and trash compactor areas for both the commercial and residential areas will be surrounded by a solid fence to help mitigate potential visual and noise impacts. The loading and unloading areas are not anticipated to impact surrounding properties due their location and distance from off-site sensitive receptors. The proposed commercial development is situated in the central portion of the western area of the property and the loading docks are placed on the sides of the buildings to offset noise associated with loading of unloading activities.

Mitigation for potential impacts associated with mobile noise sources is not proposed as the increase in traffic is not anticipated to result in significant impacts to uses in the area surrounding the project site.



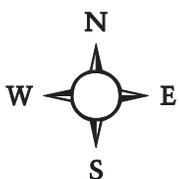
Figure 3.10-1: Noise Monitoring Locations

Union Place

Town of Carmel, Putnam County, New York

Source: NYS GIS Clearinghouse, 2007 Aerial Photo

Scale: 1" = 750'



 Noise Monitoring Location