

3.11 Noise

3.11.1 Existing Conditions

Noise can be defined as undesirable or “unwanted sound.” Although what is considered “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. Levels of noise are measured in units called decibels. Since the human ear cannot perceive all pitches or frequencies equally well, these measures are adjusted or weighted to correspond to human hearing. This adjusted unit is known as the A-weighted decibel, or dBA.

It should be noted that under normal conditions, a change in noise levels of two or three decibels is required for the average person to notice a difference. Tables 3.11-1 and 3.11-2 show community perception of noise change and response to increased levels. The level of a noise is measured and expressed in decibels (dB). Commonly, a standardized A-weighting is applied to sound levels to correct for certain characteristics of human hearing. The A-weighted sound level (dBA) is useful for gauging and comparing the subjective loudness of sounds.

Table 3.11-1 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 3.11-2 Community Response to Increases in Noise Levels		
<i>Estimated Community Response</i>		
Change (dBA)	Category	Description
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, <i>Noise Assessment with Respect to Community Reactions</i> , 150/TC 43. (New York: United Nations, November 1969.)		

Existing Ambient Noise Levels

Ambient noise levels were monitored by Tim Miller Associates, Inc. (TMA). Existing levels were collected at five (5) locations along the site’s property line and along roadways within the site.

The extent and locations of noise monitoring were determined based on the scoping requirements, taking into account potential sensitive receptors that would be most affected by the proposed project and roadways associated with truck and automobile traffic. The site area is predominantly undeveloped, wooded land with individual residences located sporadically along the local roads. The monitoring locations were selected to be near these local roads, since traffic is the primary source of the ambient noise in the area, and near existing residential homes. The noise monitoring locations are shown in Figure 3.11-1, Noise Monitoring Locations, and are as follows:

- Noise Location 1: Northwestern property boundary at St. Joseph’s Road;
- Noise Location 2: North-central portion of the property, along St. Joseph’s Road;
- Noise Location 3: Eastern property boundary at St. Joseph’s Road;
- Noise Location 4: Off the southeastern property boundary, along County Route 121;
- Noise Location 5: Off the northeastern property boundary, along County Route 121.

Ambient noise monitoring was conducted on June 17, 2009, between the hours of 10:45 am and 12:45 pm. Sound levels were recorded for a fifteen minute period at each monitoring location. A Casella 460 dosimeter was used for the monitoring. These $L_{eq(.25)}$ levels, using the “A” weighted scale (dBA), are provided in Table 3.11-3, below.

Table 3.11-3 Ambient Sound Levels (dBA)($L_{eq(.25)}$)	
Location	Noise Level
Noise Location 1: Northwestern Property Boundary at St. Joseph’s Road	51.1
Noise Location 2: North-Central portion of the Property along St. Joseph’s Road	52.6
Noise Location 3: Eastern Property Boundary at St. Joseph’s Road	56.0
Noise Location 4: Off the Southeastern Property Boundary, along County Route 121	46.0
Noise Location 5: Off the Northeastern Property Boundary, along County Route 121	54.6
Average Noise Level	52.1
Source: Tim Miller Associates, Inc.: June 12, 2009	

The narrow range of noise levels recorded at the five locations indicates there is little noise-generating activity at any particular location around the project site and provides a representative range of the daytime environmental noise levels experienced in the immediate site vicinity. As indicated in Table 3.11-3, existing noise levels are highest at Noise Location 3. Noise at this location was observed to be affected mostly by wildlife. A woodpecker was observed during the time period the noise measurements were collected at Location 3. Monitoring at Location 5 recorded the next highest ambient noise reading. No vehicles were

observed on the roads next to the sampling locations during the collection of the measurements.

Noise levels at all of the sites were either influenced by wildlife noises or the limited vehicular traffic that drove by on St. Joseph's Road or County Route 121 while the measurements were being collected.

In addition to the area measurements, a noise meter (Casella 460 dosimeter) was set up on January 5, 2010, at Noise Location 5 to collect ambient noise measurements for a 24-hour period. Given the narrow range of ambient noise recorded at the five monitoring locations around the project area in June, one representative location was selected for the 24-hour sample. This location was chosen due to its proximity to the primary through road in the site vicinity and to provide a representative sample at the proposed development's main entrance, which will ultimately experience the greatest project-related noise. The meter was started at 14:28 and collected measurements until January 6, 2010 at 14:56. A decibel reading was recorded by the dosimeter each minute. The graphed results from these measurements and the trend line are shown in Appendix T, as is the data print out from the meter. The measurements for the 24-hour period ranged from a low of 35.8 dBA to a high of 75.5 dBA, and averaged 49.2 dBA over the 24-hour period. These measurements are similar to the noise measurements collected in June 2009 at the five site area locations.

In summary, existing noise levels at the Lost Lake Development site were observed to be influenced primarily by surrounding land uses since the site is vacant. The greatest source of ambient noise detected at the site is from vehicles traveling along the major roads in the area and/or the wildlife noises. Noise sources that contribute to the ambient noise levels at the project site are as follows:

- on-site mobile source noise from traffic along St. Joseph's Road, which traverses the site from west to east;
- off-site mobile source noise from County Route 121, located along the east of the eastern boundary line;
- overhead aircraft; and
- natural sounds emanating from the site such as birds and the wind blowing through the trees and other vegetation on-site.

The Town of Forestburgh does not have a noise ordinance.

3.11.2 Potential Impacts

Short-term Construction Related Impacts

Local daytime ambient noise levels will increase both on and off of the project site during construction of the proposed Lost Lake Development. Construction activities and the operation of construction equipment are an expected and intermittent consequence of any new construction project and cannot be avoided. Thus, some noise impacts will be expected. It is important to note that noise resulting from construction activities is a temporary impact, and will cease upon completion of the project. The following table shows representative maximum sound levels for diesel powered equipment and activities at a range of receptor distances.

Table 3.11-4 Construction Noise Levels (dBA)				
	Maximum Sound Level			
Equipment/Activity	50 feet	200 feet	500 feet	1000 feet
Backhoe	83-86	71-74	63-66	57-60
Blasting	N/A	76-108	68-100	62-94
Concrete Pump	74-84	62-72	54-64	48-58
Generator	71-87	59-75	51-67	45-61
Hailer	83-86	71-74	63-66	57-60
Loader	86-92	74-78	66-70	60-64
Rock Drill	83-99	71-87	63-79	57-73
Trucks	81-90	69-75	61-67	55-61

Source: Tim Miller Associates, Inc., 2005, and *Assessing and Mitigating Noise Impacts*, NYSDEC, Rev. February 2, 2001

For sensitive receptors such as residences, the level of impact from 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 distance of the receptor from the construction sites. The noisiest period of construction will occur during site clearing and grading activities, when sections of the site are prepared for the building although all construction activities at the site are likely to produce increased noise levels.

Elevated noise occurrences are typically sporadic during the construction period. As described above, noise levels actually experienced on nearby properties will vary, depending upon the distance of the property from the noise source and the type of activity. It is anticipated that nearby properties will experience elevated noise levels at occasional periods during construction of the proposed project. This is a temporary, unavoidable impact resulting from project construction.

Due to the known presence of rock outcrops and bedrock and the proposed grading, the project engineer anticipates that blasting will be required for the proposed development. Although it is anticipated that some bedrock near the site's surface can be removed by mechanical means (i.e. ripping, chipping), blasting will be required for limited portions of the proposed development. Blasting will be avoided where another method of rock removal will be effective and is not anticipated for individual lot construction or the golf course. In areas where rock is encountered and the developer determines that it will require blasting, the developer will schedule specific dates and times in order to maintain the operations of the resort and coordinate with other construction activities. The goal will be to perform all necessary blasting in a particular phase or subphase of the project at the same time to minimize frequency of these activities. The frequency will depend on the amount of rock, however, it is estimated that this will be limited to about once a month in any construction phase. The blasting may need to occur on two or more consecutive days, depending on the amount of rock encountered.

Blasting, where necessary, will be carried out in accordance with the Industrial Code Rule 39 of the New York State, Department of Labor, Industrial Board of Appeals and the applicable section of the New York State Labor Laws. These regulations require insurance and licensing

for the contractor as well as provide guidelines for the possession, handling, storage, and transportation of all explosives.

Typically, blasting results in very short term noise impacts. As indicated above in Table 3.11-4, blasting may result in short term (seconds) noise in the range 76 to 108 within 200 feet of the blasting site and 68 to 100 within 500 feet of the blasting site. The closest sensitive receptors, residences, are located northeast of the property. One residence is located along Cold Spring Road approximately 800 feet from the property line, which indicates that residence will be further than 800 feet from any potential blasting site on the property. A group or neighborhood of residences is also located northeast of the property on Rose Valley Road. These residences are located more than 1,200 feet away from the property boundary and therefore they will be more than 1,200 feet from any potential blasting site.

Operational Noise

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

- normal vehicular traffic for the proposed residential and recreational development;
- truck deliveries;
- snow plowing and shoveling;
- garbage disposal activities;
- and normal residential noise;

Noise levels collected in residential areas surrounding the Lost Lake Resort project site ranged from 46.0 to 56.0 (dBA). The stationary operational noise associated with the proposed residential development for the Lost Lake Resort property will be similar to the noise generated from the existing adjacent residential areas where noise levels were collected.

Mobile Noise Sources

The vehicular noise analysis that was completed for the proposed Lost Lake Resort Development employed a logarithmic equation to identify if there will 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:

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

Where:

F NL = Future Noise Level

F PCE = Future Passenger Car Equivalent (both Build and No-Build)

E PCE = Existing Passenger Car Equivalent

ENL = Existing Noise Level

Traffic volumes are represented as Passenger Car Equivalent (PCE) values, since vehicles such as trucks will 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 includes 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 using the Federal Highway Administration's definitions of rural road classification. They are as follows:

- Cold Spring Road - Rural Minor Collector, with a functional class of 08, and
- St. Joseph's Road - Rural Local Road, 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 9 (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 collected for the Lost Lake Resort Project, were used to determine the number of cars, medium trucks, and large trucks that normally travel on the area roads and are shown in Appendix Q.

To determine the increase in noise levels related to traffic in the Weekday (Friday Peak PM) and Sunday traffic hours for the Build Condition, five noise locations surrounding the Lost Lake Resort project property were used:

- Noise Location 1: The western portion of St. Joseph's Road. The traffic numbers used for this analysis were taken from the link volume west of Cold Spring Road (based on Peak Hour of nearest intersection):
- Noise Location 2: The center of St. Joseph's Road, within the Lost Lake Resort Property. The traffic numbers used for this analysis were taken from the link volume west of Cold Spring Road.
- Noise Location 3: The eastern portion of St. Joseph's Road. The traffic numbers used for this analysis were taken from the link volume west of Cold Spring Road.
- Noise Location 4: Off the southeastern property boundary, along County Route 121. The traffic numbers used for this analysis were taken from the link volume south of St. Joseph's Road.
- Noise Location 5: Off the northeastern property boundary, along County Route 121. The traffic numbers used for this analysis were the total number of vehicles calculated for the intersection.

Due to the anticipated lengthy build-out for the Lost Lake Resort (anticipated to be decades) a traffic analysis was conducted for "Interim 2016 Build" conditions, representing the construction of Phases 1, 2 and 3 including the 18-hole golf course with clubhouse and driving range, and

making 1032 lots available to home construction (corresponding to the Interim Build assessment for traffic). This Interim Build condition is approximately one-third of the proposed Lost Lake Resort “2021 Full Build” condition. For the noise analysis below, the “Interim 2016 No Build” condition is defined as future traffic conditions in the year 2016 without the Lost Lake project, taking into account normal development growth in the vicinity of the site. The “Interim 2016 Build” condition is defined as future traffic conditions in the year 2016 with Phases 1, 2 and 3 completed. The “2021 Full Build” condition is defined as future traffic conditions estimated for the year 2021 with the entire project completed and occupied.

Table 3.11-5 shows the change in noise levels between the Interim 2016 No-Build and Interim 2016 Build conditions due to project generated traffic during the Friday Peak PM hour and the Peak Sunday hours.

Table 3.11-5				
Noise Level Increase from Interim 2016 No Build to Interim 2016 Build Condition				
Friday PM				
	Existing Noise Level (dBA)	Interim 2016 No-Build Condition Noise Level (dBA)	Interim 2016 Build Condition Noise Level (dBA)	Difference Between Interim 2016 No Build and Interim 2016 Build Condition
Noise Location 1	51.1	51.24	52.15	0.91
Noise Location 2	52.6	52.74	53.65	0.91
Noise Location 3	56	56.14	57.05	0.91
Noise Location 4	46	46.45	49.85	3.4
Noise Location 5	54.6	54.8	61.1	6.3
Sunday				
Noise Location 1.	51.1	51.68	54.69	3.01
Noise Location 2	52.6	53.18	56.19	3.01
Noise Location 3	56	56.58	59.59	3.01
Noise Location 4	46	46.68	52.44	5.76
Noise Location 5	54.6	54.69	67.98	13.79
Notes: Source Tim Miller Associates, Inc., 2009. Calculations shown in Appendix Q.				

Table 3.11-6 shows the change in noise levels between the 2021 No Build and Full Build conditions due to project generated traffic during the Friday Peak PM hour and the Peak Sunday hours.

Table 3.11-6				
Noise Level Increase from 2021 No Build to Full Build Condition				
Friday PM				
	Existing Noise Level (dBA)	2021 No-Build Condition Noise Level (dBA)	2021 Full Build Condition Noise Level (dBA)	Difference Between 2021 No Build and Full Build Condition
Noise Location 1	51.1	52.1	53.59	1.49
Noise Location 2	52.6	53.6	55.09	1.49
Noise Location 3	56	57	58.46	1.49
Noise Location 4	46	46.81	52.07	5.26
Noise Location 5	54.6	55.08	61.02	5.94
Sunday				
Noise Location 1.	51.1	51.68	57.56	5.88
Noise Location 2	52.6	53.18	59.06	5.88
Noise Location 3	56	56.58	62.46	5.88
Noise Location 4	46	46.72	55.27	8.55
Noise Location 5	54.6	55.24	71.67	16.43
Notes: Source Tim Miller Associates, Inc., 2009. Calculations shown in Appendix Q.				

Between the Interim 2016 No-Build and Interim 2016 Build conditions, noise levels due to project generated traffic during the Peak Friday PM hours will increase by 0.91, 3.4, and 6.3 dB's for Noise locations 1, 2, 3, 4 and 5 respectively (the same traffic data was used for Noise Locations 1, 2, and 3 which yielded the same decibel difference). Noise levels between the Interim 2016 No-Build and Interim 2016 Build conditions due to project related traffic during the Sunday Peak hours will increase by 3.01, 5.76, and 13.79 for these same intersections.

Between the 2021 No-Build and Full Build conditions, noise levels due to project generated traffic during the Peak Friday PM hours will increase by 1.49, 5.26, and 5.94 dB's for Noise locations 1, 2, 3, 4 and 5 respectively (the same traffic data was used for Noise Locations 1, 2, and 3 which yielded the same decibel difference). Noise levels between the 2021 No-Build and Full Build conditions due to project related traffic during the Sunday Peak hours will increase by 5.88, 8.55, and 16.43 for these same intersections.

Noise Location 5 is shown to have the greatest increase in noise levels due to the proposed single site entrance located at this location along Cold Spring Road. This increase is greatest on Sundays. The decibel increase presented above is only an approximate number. The actual future noise levels will not be as great as estimated in the above tables, based upon several factors such as actual future truck traffic and future total traffic. The Interim 2016 Build and 2021 Full Build traffic numbers were calculated by using general information provided by the NYSDOT associated with the classification of Cold Spring Road and St. Joseph's Road and

may not be indicative of the actual amount of trucks on the roads in that specific area. However, further noise monitoring is proposed to mitigate this potential impact. It is proposed that as the construction of the development proceeds, noise monitoring will be conducted at the completion of Phase 3 to determine the actual ambient noise levels and those levels will be evaluated in the context of potential impacts to neighbors.

It is noted that Cold Spring Road in the vicinity of the proposed site entrance, the location of highest estimated noise increase, is sparsely developed with several single family homes on wooded lots. The closest community is the Melody Lake neighborhood which is greater than 1000 feet from Cold Spring Road.

On-Site Activities

The Lost Lake Resort development is proposed as a resort or seasonal development. It is anticipated that many of the homeowners will be occupying the property during the weekend or summer months to take advantage of the golf course and the amenities. It is proposed by the Applicant that no gas powered motorized boats will be allowed on the Lake, only non-motorized or electric powered boats will be allowed. This will avoid creating operational noise within the resort. The closest sensitive receptor is a residential community northeast of the property, located approximately 1,500 feet from the northern portion of Lost Lake. The Applicant is also prohibiting the use of snowmobiles and all terrain vehicles (ATV's) to avoid any noise or nuisance from such vehicles.

Truck deliveries are anticipated to occur during normal business hours so to not impact the residences on the property or surrounding the development. These deliveries will be mainly deliveries for supplies for the clubhouse, restaurant, and conference center.

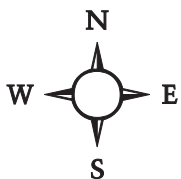
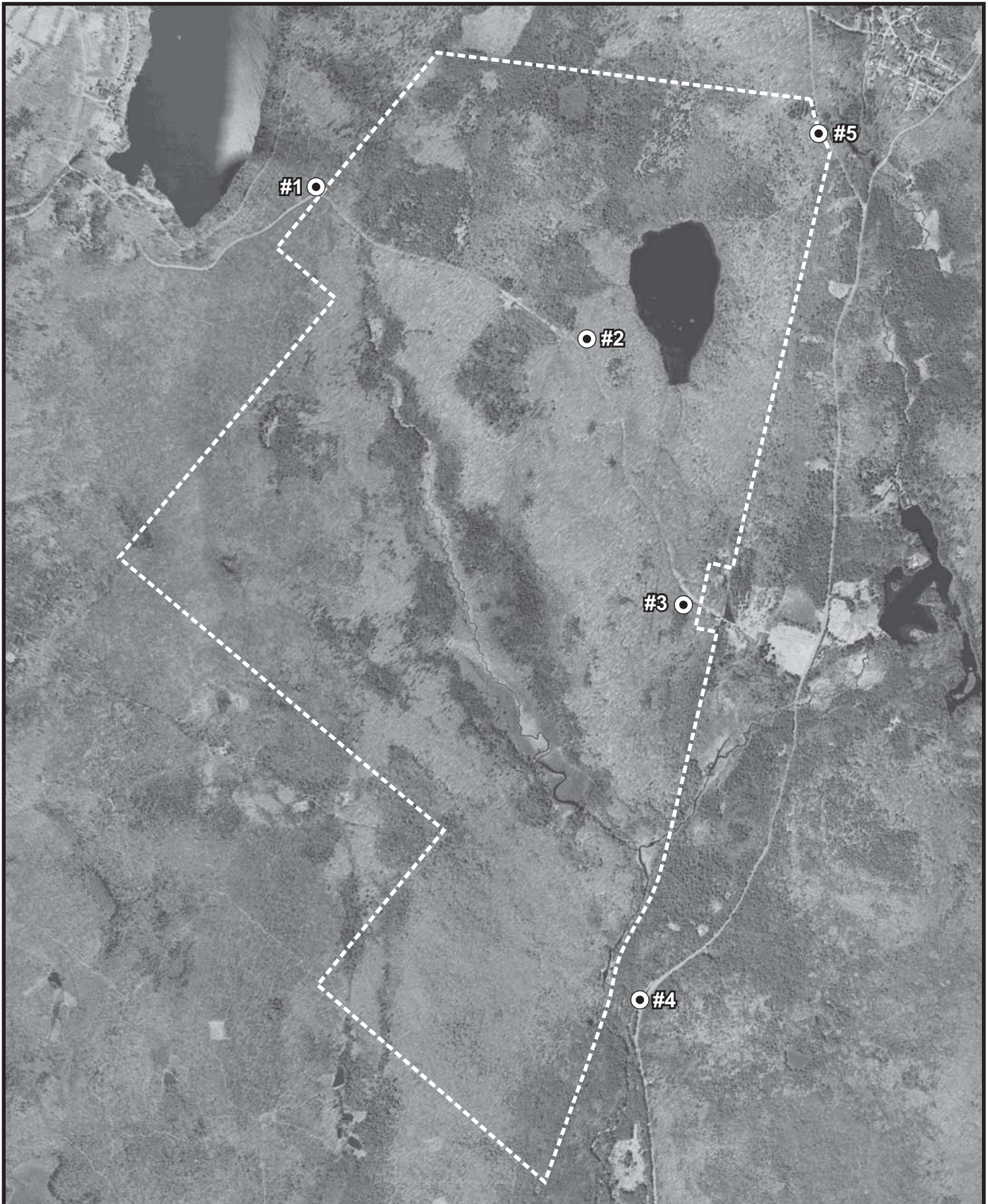
Construction activities associated with single family home construction are anticipated to be ongoing after Phase 1 but will involve only a few houses at any one time. These activities will occur well inside the project site, within a substantial buffer of woodland from off-site receptors. No significant noise is anticipated from any of the recreational or leisure activities in the resort.

Impacts Related to Tree Removal

Trees will be removed within the site for the proposed development. Trees, however, generally do not have a large dampening effect on noise except when there is more than 200 feet of dense trees between the noise source and the receptor. This site, although containing mature forest with many trees, has a clear understory in some places which does not mitigate noise as well as a dense understory. The closest sensitive receptors from the property boundary include a residential community located approximately 1,500 feet from the northeastern property boundary, and a residential community located approximately 1,000 feet from the western property boundary, along St. Joseph's Road. These distances provide enough separation between the proposed development and these receptors to allow for natural noise reduction. According to the NYSDEC policy guidance document Assessing and Mitigating Noise Impacts, a doubling of the distance between the noise source and the receptor would result in a reduction of the noise level of the stationary object or objects by 6 dBAs. Therefore, at a distance of 1,000 feet the noise levels from the property can reduce by approximately 26 dBAs and at a distance of 1,500 feet the noise levels from the property can reduce by approximately 29 dBAs. Given the distance between the site borders and surrounding development, tree clearing will have no noticeable affect on noise levels for existing project neighbors.

3.11.3 Mitigation Measures

The Town of Forestburgh does not have noise regulations that apply to construction activities. However, the proposed construction on the property will occur during normal working hours with no noise generating activities occurring on normal federal holidays. Once construction is completed the residential homes and the resort center will result in noise levels typical of low density residential development. No mitigation measures are required or proposed.



KEY
 ● Noise Sampling Locations

Figure 3.11-1: Noise Location Map

Lost Lake Resort

Town of Forestburgh, Sullivan County, New York

Base: NYS GIS Clearinghouse Orthoimagery, 2004

Scale: 1" = 2,000'