

3.10 Noise and Air Resources

3.10.1 Noise

3.10.1.1 Existing Conditions

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. 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 a one decibel change in noise is the smallest change 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 3.10-1 and 3.10-2 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 3.10-1 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 3.10-2 Community Response to Increases in Noise Levels		
Change (dBA)	Estimated Community Response	
	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, Noise Assessment with Respect to Community Reactions, 150/TC 43. (New York: United Nations, November 1969.)

The following specific guidelines apply to ambient noise levels in the Towns of Ramapo and Haverstraw.

Town of Ramapo Noise Ordinance

Chapter 244, Noise, of the Ramapo Town Code regulates noise. Noise sensitive uses include hospitals, nursing homes, schools, courts, churches, or public libraries. The following activities are regulated:

- The keeping of animals that frequently or for continued duration make noise which creates an unreasonable noise across a residential property boundary;
- Any commercial, business or industrial equipment that produces an unreasonable sound level;
- Construction between the hours of 10:00 PM and 8:00 AM on weekdays, or at any time on Sundays or legal holidays, or during any other times, which produces an L_{10} of 60 dBA for the daily operation, if measured at a residential real property boundary;
- The use of any power tools outdoors within a residential area between the hours of 10:00 PM and 8:00 AM, which results in unreasonable noise across a residential real property boundary;
- The use of explosives, firearms or similar devices which create impulsive sounds so as to cause unreasonable noise across a real property boundary;
- The sounding of any horn or signaling device except to serve as a danger warning;
- The operation, repair or testing of any motor vehicle in such a manner as to cause unreasonable noise across a residential real property boundary within a noise sensitive zone;
- The use of any engine not equipped with a muffler in constant operation and maintained as to prevent any unreasonable noise or disturbance;
- The operation of any sound reproducing device that causes unreasonable noise across a real residential property boundary between the hours of 11:00 PM and 8:00 AM, or any time within a sensitive zone;
- Operation of any garbage or trash compactor, or any other truck where the loading or unloading is conducted within a residential district or within 300 feet from a hotel or motel between the hours of 11:00 PM and 6:00 AM.

Noises generated by notification signals, emergency, and noises generated from a sound reproduction device at any public event are exempt from the Town's regulations. Variances for noise levels above levels permitted by the regulations may be granted by the Town Board.

Existing Ambient Noise Levels

Vacant portions of the project site do not generate noise. Noise is generated from the existing three one acre single family parcels located with frontage on Old Route 202 and from Hasty Hills Stables, which is located in the southwestern quadrant of the property. Sources of noise at the site are from vehicles traveling along Routes 202 and 306. Table 3.10-3 indicates the locations, times and noise levels recorded. It is evident that with increasing distance, the noise levels drop off as one travels north to south on the project site.

Table 3.10-3 Site Noise Measurements		
Noise Monitoring Location	Time (minutes)	dB
#1	23:00	55.1
#2	16:00	56.1
#3	13:00	53.8
#4	15:00	48.5
#5	15:00	49.8
#6	15:00	52.4

Source: Tim Miller Associates, 2008

The noise monitoring locations are shown in Figure 3.10-1.

Location #1 is located in the northeast corner of the site, approximately 500 feet southeast of the intersection of US Route 202 and US Route 306. Noise monitoring Location #2 is located on the eastern edge of the property between the Moleston Fire District property and the Santi out parcel. Location #3 is located approximately 200 feet west of Haverstraw Road in the center portion of the property. Locations #4-6 are located on the southern border of the project parcel, approximately 200 feet from Scenic Drive.

3.10.1.2 Potential Impacts

Short Term Construction-related Noise

Local daytime ambient noise levels will increase both on and off of the project site during construction of the proposed Patrick Farm subdivision. Construction activities and the operation of construction equipment are an expected and required consequence of any new construction project and cannot be avoided. Thus, some noise impacts would 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 3.10-4 Construction Noise Levels (dBA)				
Equipment/Activity	Maximum Sound Level			
	50 feet	200 feet	500 feet	1000 feet
Backhoe	82-84	70-72	62-64	56-58
Blasting	93-94	81-82	73-74	67-68
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	86-90	74-78	66-70	60-64
Rock Drill	83-99	71-87	63-79	57-73
Trucks	81-87	69-75	61-67	55-61

Source: Tim Miller Associates, Inc., 2005.

Throughout construction of the project, the grading would involve approximately 239,990 cubic yards (cy) of earth cut and 212,395 cy of fill. This results in approximately 27,595 cubic yards of excess material which will be utilized on-site. Final grades will be adjusted to achieve an earthwork balance for the project. Noise levels associated with the loading and moving of fill will depend on the distance from any receptor.

Noise levels generated by construction activities elsewhere on the site would drop off with increasing distance and would not be readily noticeable to adjacent properties given the existing ambient noise levels at the property line.

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. Noise levels actually experienced on a nearby property would be expected to be lower, accounting for distance from the noise source and other attenuating factors.

Blasting Impacts

Rock removal is expected to be required around areas of rock outcrop primarily in the western portion of the project site. Construction methods, other than blasting will be evaluated, such as cutting, ripping, or chipping. Figure 3.1-4 shows potential areas where blasting may occur. Any blasting required would be done in full conformance with applicable codes. Potential blasting activities would be limited to the times and days noted in the mitigation section below.

Typically, blasting results in very short term, loud noise impacts. As indicated above, blasting may result in short term (seconds), noise in the range 68 to 100 dBA within 500 feet of the blasting site. Notification would be accomplished through mailings and by telephone calls to nearby residents. The mailings documenting the blasting schedule would be sent through the US Postal Service to the appropriate officials and all residents within 500 feet of the site. Phone calls to these residents would be made in the time frames specified above to provide additional notification of the pending blasting. The mailed notifications will include information regarding the blasting locations and the anticipated time during which the blasting would occur.

Long-Term Noise Effects

Patrick Farm subdivision is a development that will generate noises typical of residential neighborhoods. Sources of noise would include operating vehicles driving through the development, residents involved in recreational activities, and common area maintenance activities (e.g., lawnmowers).

The introduction of a residential neighborhood will introduce a noise source to the project site. Residential uses are sensitive receptors and would not be expected to have a significant effect on noise levels.

3.10.1.3 Mitigation Measures

Several mitigation measures are proposed to reduce noise to nearby residents. These mitigation measures include planning and operational measures, as well as the construction of physical noise barriers, in conjunction with the project development and construction.

Construction Noise Mitigation

Construction activity will not occur between the hours of 10:00 PM and 8:00 AM on weekdays, or at any time on Sundays or legal holidays in accordance with the Town of Ramapo laws. 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.

Should the need arise for blasting, any blasting would be done in full conformance with applicable codes. Prior to blasting, a general blasting schedule would be developed and a blasting permit would be obtained from the Building Inspector covering the specific blasting operation. It is anticipated that rock blasting would occur for short periods of time over a two month interval.

The blasting contractor will notify all residents within 500 feet of the blasting location of the anticipated blasting date and time. Notification will be done through mailings and by telephone calls to residents as described in the Blasting Impacts section above. All Blasting will be conducted in accordance with the Town of Ramapo Blasting Ordinance.

3.10.2 Air Quality

3.10.2.1 Existing Conditions

Air quality is a relative measure of the amount of noxious substances that occur in the air and that are caused by natural and human processes. Certain airborne gases and particles can cause or contribute to the deterioration and/or destruction of biological life as well as damage to property and other physical components of the environment. Air contaminants or pollutants can be defined as solid particles, liquefied particles, and vapor or gases, which are discharged into, or form in, the outdoor atmosphere. Air quality in any particular location is influenced by contaminants discharged into the atmosphere and by regional and local climatic and weather conditions. Atmospheric conditions such as sunlight, rainfall and humidity, air turbulence, temperature differences, and wind speed and direction can disperse, intensify or chemically change or alter the compositions of air contaminants.

Air Quality Standards and Compliance

The United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) have promulgated National Ambient Air Quality Standards (NAAQS) intended to protect the public health and welfare. These standards are designed to protect the most vulnerable segment of the population including children, the elderly and the infirm, who are more susceptible to respiratory infections and other air quality-related health problems. Locations or source-receptors that would be considered are schools, hospitals and convalescent homes and related facilities.

Several air contaminants have been identified by the EPA as being of concern nationwide. These pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃) (also termed photochemical oxidants), particulate matter, sulfur dioxide (SO₂), and lead (Pb). The sources of these contaminants, their effect on human health and the nation's welfare, and their final disposition in the atmosphere vary considerably. Particulate standards include only those particles with nominal diameters less than 10 microns which are inhalable.

NAAQS are mandated by the Federal Clean Air Act (1990). Standards promulgated by the EPA include primary and secondary standards. National Primary Standards are levels of air quality necessary, with a margin of safety, to protect the public health. National Secondary Standards are levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant, such as an adverse effect on vegetation. For all contaminants, except sulfur dioxide and suspended particulates, the primary and secondary standards are identical.

With the enactment of the Clean Air Act (the Act) and subsequent amendments, each state was required to achieve clean air through the submission of a State Implementation Plan (SIP) to the EPA for criteria pollutants which are not in attainment with the NAAQS. The SIPs describe how each state will attain and maintain air quality standards in non-attainment areas. The New York SIP adopted NAAQS from a list of seven criteria pollutants established by the EPA. These pollutants were selected by the EPA based on a list of pollutants of primary concern nationwide. Attainment of the NAAQS is required under the Act, and each State has a designated time period in which to bring nonconforming areas into compliance.

Noise and Air Impacts

April 15, 2009

New York State drafted a SIP to achieve compliance with the ozone NAAQS by November 15, 2007. The draft SIP was prepared by the NYSDEC Air Resources Division and reviewed by the EPA for approval. The draft SIP cites strategies for reducing ozone levels including limits on gasoline volatility, lower gasoline sulfur levels, diesel fuel reformation, annual inspections for heavy-duty diesel vehicles, nitrogen oxide controls, and other measures. Table 3.10-5 provides federal and state air quality standards.

**Table 3.10-5
State and Federal Air Quality Standards**

		New York State Standards			Corresponding Federal Standards (Primary Standards)		
Pollutant ¹	Avg Period	Conc.	Units	Stat ²	Conc.	Units ³	Stat
Sulfur Dioxide	12 consecutive months	0.03	PPM	Arithmetic Mean (A.M)	80	µg/m ³	Arithmetic Mean (A.M)
	24-hour	0.14	PPM	Maximum	365	µg/m ³	Maximum
	3-hour	0.50	PPM	Maximum			
Carbon Monoxide	8-hour	9	PPM	Maximum	10	µg/m ³	Maximum
	1-hour	35	PPM	Maximum	40	µg/m ³	Maximum
Ozone	1-hour	0.12	PPM	Maximum	235	µg/m ³	Maximum
	8-hour	0.08	PPM	Maximum	157	µg/m ³	Maximum
Hydrocarbons (non-methane)	3-hour (6-9 am)	0.24	PPM	Maximum			
Nitrogen Dioxide	12 consecutive months	0.05	PPM	Maximum	100	µg/m ³	AM
Lead ⁵	3 consecutive months				1.5	µg/m ³	Maximum
Fine Particulate Matter (PM _{2.5})	12 consecutive months				15	µg/m ³	Geometric Mean (G.M.)
	24-hours				65	µg/m ³	Maximum
Inhalable Particulates (PM ₁₀) ⁶	12 consecutive months				50	µg/m ³	Geometric Mean (G.M.)
	24-hours				150	µg/m ³	Maximum
Total Suspended Particulates (TSP) ⁷	12 consecutive months	75	µg/m ³	Geometric Mean (G.M.)			
	24-hours	250	µg/m ³	Maximum	260	µg/m ³	Maximum

¹ New York State also has standards for beryllium, fluorides, hydrogen sulfide, and settleable particulates (dustfall). Ambient monitoring for these pollutants is not currently conducted.

² All maximum values are concentrations not to be exceeded more than once per calendar year. (Federal Ozone Standard not to be exceeded more than three days in three calendar years).

³ Gaseous concentrations for Federal standards are corrected to a reference temperature of 25°C and to a reference pressure of 760 millimeters of mercury.

⁴ Former NYS Standard for ozone of 0.08 PPM was not officially revised via regulatory process to coincide with the Federal standard of 0.12 PPM which is currently being applied by NYS to determine compliance status.

⁵ Federal standard for lead not yet officially adopted by NYS, but is currently being applied to determine compliance status.

⁶ Federal standard for PM₁₀ not yet officially adopted by NYS, but is currently being applied to determine compliance status.

⁷ New York State also has 30, 60, and 90-day standards as well as geometric mean standards of 45, 55, and 65 µg/m³ in Part 257 of NYCRR. While these TSP standards have been superseded by the above PM₁₀ standards, TSP measurements may still serve as surrogates to PM₁₀ measurements in the determination of compliance status.

Noise and Air Impacts

April 15, 2009

Table 3.10-6 summarizes 2006 data for the NYSDEC Region 3. Sampling information for pollutants not included in the table is either not collected in NYSDEC Region 3 or is collected at locations distant from the project site. The Town of Ramapo is located in Region 3.

Nitrogen oxides (NO_x), a designation for nitrogen oxide (NO) and nitrogen dioxide (NO₂), are not monitored in Region 3. However, since they are precursors to the formation of ozone, they are of principal concern. The nearest monitoring station for nitrogen oxides is located in Region 2 at the Botanical Gardens in the Bronx.

Table 3.10-6 2006 Regional Air Quality Data Summary				
Monitoring Location	Pollutant	Concentration	Air Quality Standard	Within Standard?
Belleayre Mtn.	Sulfur Dioxide (SO ₂)	1.3 ppb ⁽¹⁾	30 ppb ⁽¹⁾	Yes
Mt. Ninham	Sulfur Dioxide (SO ₂)	1.7 ppb ⁽¹⁾	30 ppb ⁽¹⁾	Yes
Belleayre Mtn.	Inhalable Particulates (PM ₁₀)	11.0 g/m ³ ⁽¹⁾⁽⁴⁾	50 g/m ³ ⁽¹⁾	Yes
Newburgh	Inhalable Particulates (PM _{2.5})	11.2 ug/m ³ ⁽¹⁾	15 ug/m ³ ⁽¹⁾	Yes
Mamaroneck	Inhalable Particulates (PM _{2.5})	11.1 ug/m ³ ⁽¹⁾	15 ug/m ³ ⁽¹⁾	Yes
White Plains	Inhalable Particulates (PM _{2.5})	12.1 ug/m ³ ⁽¹⁾	15 ug/m ³ ⁽¹⁾	Yes
White Plains	Ozone (O ₃)	0.025 ppm ⁽²⁾	.08 ppm ⁽²⁾	Yes
Valley Central	Ozone (O ₃)	0.029 ppm ⁽²⁾	0.08 ppm ⁽²⁾	Yes
Millbrook	Ozone (O ₃)	0.024 ppm ⁽²⁾	0.08 ppm ⁽²⁾	Yes
Mt. Ninham	Ozone (O ₃)	0.028 ppm ⁽²⁾	0.08 ppm ⁽²⁾	Yes
Belleayre Mtn.	Ozone (O ₃)	0.034 ppm ⁽²⁾	0.08 ppm ⁽²⁾	Yes
Walkkill	Lead (Pb)	0.05 ug/m ³ ⁽³⁾	-----	Yes
Scotchtown	Lead (Pb)	0.01 ug/m ³ ⁽³⁾	-----	Yes
Belleayre	PM Sulfate	3.11 g/m ³ ⁽¹⁾⁽⁴⁾	-----	Yes
Belleayre	PM Nitrate	0.2 g/m ³ ⁽¹⁾⁽⁴⁾	-----	Yes
Queens College	Nitrogen Oxides	0.023 ppm ⁽⁵⁾	0.05 ppm ⁽⁵⁾	Yes

NOTES:
 (1) Annual Arithmetic Mean in parts per billion (ppb).
 (2) 4th Highest Daily Maximum 8-Hour Average in parts per million (ppm).
 (3) Maximum Quarterly Average in grams per cubic meter (g/m³).
 (4) Data is 2004 data since 2006 was not available.
 (5) 12-month average.

Based upon 2006 data, all monitored contaminants have achieved acceptable levels within the region. A geographic area that meets or exceeds the primary standard is defined as an attainment area; those that do not meet the primary standard are identified as non-attainment areas.

3.10.2.2 Potential Impacts

There are no proposed stationary air emission sources that would be introduced by this project. Air quality impacts from construction activities were assessed along with a determination of impacts from project induced traffic.

Short-term Construction Air Impacts

Potential short-term adverse air quality impacts that may result from the proposed project include fugitive dust and particulate matter from the project sites, and emissions from construction equipment and vehicles.

The construction of the proposed development will involve grading activities that may result in the release of fugitive dust and particulate matter from the project site. During this period, dust and particulate matter from the project site may be released into the air and carried off-site by wind. Construction-related air emissions will result from the use of diesel fuel as a source of energy for construction vehicles and equipment. Mitigation measures are proposed as a part of the project during construction to limit dispersal of particulate matter. Such increases in construction-related dust will be temporary.

3.10.2.3 Mitigation Measures

Short-term Fugitive Dust Emissions

Construction activities on the project site may generate airborne or fugitive dust during ground clearing and excavation activities. Throughout the construction period, passage of delivery trucks and other vehicles over temporary dirt roads and other exposed soil surfaces could also generate fugitive dust. The anticipated duration of the construction period is approximately 60 months. Construction activity will be limited to the hours set forth in the Town of Ramapo Code. On-site mitigation measures are proposed as part of the project during construction to limit the dispersal of particulate matter. No significant impacts to nearby residences on Route 202, Route 306, or Scenic Drive are expected to result from the construction-related dust emissions.

Methods to control dust will include:

- minimizing the area of grading at any one time and stabilizing exposed areas with mulch and seed as soon as practicable;
- minimizing vehicle movement over areas of exposed soil, and covering all trucks transporting soil;
- unpaved areas subject to traffic would be sprayed with water to reduce dust generation;
- truck vehicle washing pads would be constructed at all construction entrances to avoid the tracking of soil onto paved surfaces.

During dry weather conditions spraying water on unpaved areas subject to heavy construction vehicle traffic will help control dust. Paved areas will also be kept clear of loose dirt that can be re-entrained into the air during vehicle passage. The use of stone tracking

pads at access points to the site or washing of vehicle tires will greatly lessen the tracking of soil onto adjacent roadways.

Although exhaust emissions from construction equipment is not as significant as fugitive dust generation, particulate matter from diesel exhaust emission will also be controlled through proper tuning of the engine and maintenance of the air pollution controls. This will minimize additional contribution to site generated particulate emissions during construction.

Conclusion

Based on air quality analysis described above, no significant air quality impacts to local receptors are anticipated to result from the proposed project.

