NEW YORK STATE OF OPPORTUNITY. | Adirondack Park Agency

PROJECT GUIDELINE: NOISE

Objective: **All development activities should strive to preserve the existing soundscapes of the Park.**

Background:

Existing Soundscapes

The Park's natural soundscapes constitute valuable resources. Natural soundscapes include animal sounds produced to establish territories, attract mates, nurture young, locate prey, navigate, detect, and avoid predators. The songs of birds, trill of spring peepers, and hum of summer cicadas are all animal sounds familiar to the Park.

Physical processes contribute to the natural soundscapes of the Park, as well, through the sounds of wind in the trees, rain and leaves falling, thunderstorms, waterfalls, and other natural occurrences.

Human communities are also a part of the Park's soundscapes. Existing hamlets, transportation corridors, and other more isolated developments all contribute sound.

Noise Definition, Causes, and Effects

Noise is sound that is unwanted or disturbing, often by interfering with normal animal and human activities. Amplitude (loudness), frequency (pitch), impulse patterns, and duration are relevant considerations when determining whether sound becomes noise.

Other factors that influence the perception of sound include the distance between a sound source and receptors, uses of surrounding lands, ambient sound levels, time of day, topography, wind direction, air temperature, and relative humidity. The combination of sound characteristics, environmental factors, and the physical and mental sensitivity of a receptor to a sound determine whether or not sound will be perceived as noise. Numerous studies have demonstrated adverse impacts from noise on fish, wildlife and human interactions and health.[1]

Noise associated with new or established development can disrupt the natural soundscapes of the Park and nearby human communities. For example, dump trucks, bulldozers, concrete mixers, drills, and backhoes can all create noise while construction activities are occurring. Noises associated with established development include increased vehicle and human traffic, and the use of commercial or manufacturing equipment. To calculate the sound generated by equipment operation, one can consult the manufacturer's specifications for sound generation, available for various types of equipment. Another option for calculating sound generated by equipment is to make actual measurements of sound generated by existing similar equipment, elsewhere.

Sound levels are measure in units of decibels, symbolized as dB. The decibel scale is a logarithmic scale, which means the scale is not directly proportional to the energy or loudness of the noise. For instance, while an increase in sound of 3 dB over ambient sound levels may be just perceptible, an increase in sound of 10 dB causes a doubling of perceived loudness. Increases in sound pressure level above ambient levels have the potential to create adverse noise impacts on receptors.

Typical human reactions to increases in sound pressure are shown in the following chart, taken from the New York State Department of Environmental Conservation's Policy on Assessing and Mitigating Noise Impacts.

[1] For more information, see http://www.dec.ny.gov/docs/permits_ej_operations_pdf/noise2000.pdf; http://www.epa.gov/air/noise.html; http://www.nature.nps.gov/sound/effects.cfm#wildlife.

Increase in Sound Pressure (dB)	Human Reaction
Under 5	Unnoticed to tolerable
5 - 10	Intrusive
10 - 15	Very noticeable
15 - 20	Objectionable
Over 20	Very objectionable to intolerable

(Down and Stocks - 1978)

Guidelines:

The Agency may include conditions related to noise when authorizing a specific proposal. Even when not mandated, however, development activities within the Park should always be designed to minimize disruption to existing natural and human soundscapes.

Practices that help to avoid and mitigate impacts from noise include the following:

Location

Sources of sound related to development activities should be located so as to have the least possible impact. Sound generating activities should occur far from sound receptors, including animal habitats and existing human developments. Wherever possible, sources of sound should be placed away from fields, rivers, valleys, and bodies of water, as sound travels easily across these landscape features. Existing natural barriers such as slopes and vegetation, as well as artificial barriers such as berms, walls, material stockpiles, and fences, can be used to limit the transfer of sound to surrounding areas. Soundproof or sound controlling housings or enclosures should also be considered, to limit the emission of sound from structures such as water pumps, generators, and sawmills.

Timing, Duration and Frequency

Avoiding construction and operation activities at certain times can be crucial in preventing sound from disrupting animal migratory and breeding activities. Limiting activities at night, during holidays, and other recognized times may also help to prevent disruption to neighboring communities. Reducing the duration and frequency of construction and operation activities can also mitigate noise impacts.

Equipment

Development activities should be completed using the quietest equipment available. For example, electrically-operated equipment is often quieter than equipment powered by internal combustion engines. Using pneumatic drill silencers, updated mufflers, silencers, alternative technology back-up alarms, and other technologies may also help to limit the creation of noise from development activities. Truck routes associated with development should be routed to avoid noise impacts to acoustically sensitive areas.

Noise impact analyses

A noise impact analysis may be required during the Agency's review for projects with the potential to create adverse noise impacts to the existing natural soundscape or human communities. Noise impact analyses will inherently vary, depending on the specific proposal and surrounding site conditions. Agency staff generally require that the methods and protocol of the analysis, format of the resulting report, and qualifications of the investigators be approved prior to the undertaking of a noise impact analysis.

Noise impact analyses must generally be prepared by a professional engineer licensed in New York State or other professional with appropriate experience, and must provide an assessment of changes to the ambient and operational level and character of the surrounding soundscape. The analysis should consider the potential for impacts to both animal and human communities, and should include the potential for impacts caused by vibrational changes. The analysis should detail any noise mitigation measures proposed with the development, as well as a method for handling and responding to complaints.