Appendix 7-9

Glossary of Terms

This section includes some of the terms used throughout the report which may require a more detailed explanation.

ANS-weighted	A high-frequency natural sound (HFNS) filter applied to the measured one-third octave-band data to remove seasonal noise like insects. This technique removes all sound energy above the 1,250 Hertz frequency band. The methodology for the filtration process is specified in ANSI/ASA S12.100-2014 and the sound pressure levels presented using this methodology are indicated as ANS-weighted levels (presented in dBA).
G	The portion of ground that is considered porous as defined under ISO 9613-2. This is used as part of the ground attenuation calculation between the source and receiver. For example, a G-factor of 0.5 corresponds to “mixed ground” consisting of half hard and half porous ground cover. A G-factor of zero (0) corresponds to “hard ground” consisting of surfaces with low porosity including water, and a G of 1 represents all porous ground.
Intensity (Loudness)	Sound intensity is a measure of how much energy or power is transmitted. Humans do not perceive increases in sound level (loudness) in a linear manner. For this reason, sound levels are quantified in terms of a logarithmic ratio between the sound pressure of a given noise and the minimum sound pressure discernable by the human ear. This ratio is called the sound pressure level (L_p) and is always reported on a decibel (dB) scale. The logarithmic dB scale accommodates the wide range of sound intensities found in the environment. For example, 0 dB is the minimum discernable sound pressure at 2.9 x 10^{-9} lbs/in^2, while 140 dB is the threshold of pain at 0.029 psi. The ratio of the two sound pressures is 10,000,000, but there is only a 140-dB difference when using the logarithmic scale.
Infrasound	Sound in the frequencies below 20 Hz.
ISO 9613-2	An international standard which specifies an engineering method for calculating the attenuation of sound during outdoor propagation in order to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the equivalent continuous A-weighted sound level under meteorological conditions favorable to propagation from sources of known sound emission, and is used throughout the United States and the world.

L_{eq} The equivalent sound level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is also A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud noises.

L_n Or nth percentile, is the sound level exceeded "n" percent of the time during a measurement period. For example, if 100 sound levels were measured over a 10-minute period, and were sorted from highest to lowest, the L_{90} would be the 90^{th} lowest of the 100 values. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources. The L_{10} is the sound level exceeded only 10 percent of the time. It is the 10^{th} lowest of the 100 samples described above. It is close to the maximum level observed during the measurement period.

L_{max} The maximum sound level over a given time period. The L_{max} is typically due to discrete, identifiable events such as an airplane overflight, car or truck pass by, or a dog bark for example.

Low frequency Sound contained in the frequencies from 20 Hz to 200 Hz.

Octave bands The International Standards Organization (ISO) has agreed upon "preferred" frequency bands for sound measurement and by agreement the octave band is the widest band for frequency analysis. The upper frequency limit of the octave band is approximately twice the lower frequency limit and each band is identified by its geometric mean called the band center frequency. The octave band center frequencies typically used for sound level analyses are 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz. When more detailed information about a noise is required, standardized one-third octave band analysis may be used.

Weighting The sound level meter used to measure noise is a standardized instrument.[2] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various conditions. One network is the A-weighting network, which most closely approximates how the human ear responds to sound as a function of frequency, and is the accepted scale used for community sound level measurements. Sounds are frequently reported as detected

[2] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

with the A-weighting network of the sound level meter in dBA. A-weighted sound levels emphasize middle frequencies (i.e., middle pitched—around 1,000 Hertz sounds), and de-emphasize lower and higher frequencies. The C-weighting network has a nearly flat response for frequencies between 63 Hz and 4000 Hz and is noted as dBC. These are shown graphically below.