

4.6 NOISE

4.6.1 ENVIRONMENTAL SETTING

Noise is defined as unwanted sound. Pressure waves traveling through air exert a force registered by the human ear as sound. Sound pressure levels are measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. **Table 4.6-1** provides examples of A-weighted maximum sound levels associated with common noise sources. Researchers generally agree that A-weighted sound pressure levels are very well correlated with community reaction to noise. The A-weighted unit of sound level measurement is expressed as dBA. A-weighted sound pressure levels are used to describe noise in the project area, unless otherwise indicated.

TABLE 4.6-1
TYPICAL A-WEIGHTED MAXIMUM SOUND LEVELS OF COMMON NOISE SOURCES

Decibels	Description
130	Threshold of pain
120	Jet aircraft take-off at 100 feet
110	Riveting machine at operators position
100	Shot-gun at 200 feet
90	Bulldozer at 50 feet
80	Diesel locomotive at 300 feet
70	Commercial jet aircraft interior during flight
60	Normal conversation speech at 5-10 feet
50	Open office background level
40	Background level within a residence
30	Soft whisper at 2 feet
20	Interior of recording studio

Sound pressure fluctuation can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of each measured Hz and corresponding sound power level. The audible sound spectrum consists of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum (20 to 20,000 Hz). As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasized the frequencies below 1,000 Hz and above 5,000 Hz in a manner

corresponding to the human ears decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range.

The decibel notation used for sound levels describes a logarithmic relationship of acoustical energy, so that sound levels cannot be added or subtracted in the conventional arithmetic manner. For example, a doubling of acoustical energy results in a change of three dB, which is usually considered to be barely perceptible. A 10-fold increase in acoustical energy yields a 10-dB change, which is subjectively like a doubling of loudness.

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of six to nine dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative, topographic or manufactured, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or streets with moving vehicles, would typically attenuate at a lower rate, approximately four to six dB per doubling of distance.

NOISE EXPOSURE AND COMMUNITY NOISE

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout the day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources such as aircraft flyovers, vehicles passing by, sirens, etc., which are readily identifiable to the individual. These successive additions of sound to the community noise environment varies the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical descriptors. Noise descriptors used to describe the existing noise environment and project noise impacts in the project area are summarized below:

L_{eq} : the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{dn} : 24-hour day and night A-weighted noise exposure level that accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between midnight and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the general annoyance of nighttime noises.

EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can be placed in three categories:

- subjective effects of annoyance, nuisance, and dissatisfaction;
- interference with activities such as speech, sleep, and learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual’s past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called “ambient noise” level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it.

EXISTING NOISE CONDITIONS IN THE PROJECT AREA

The project vicinity is undeveloped forest land. There is no industry, commercial development or community facilities (such as schools, meeting halls etc.) within miles of the site. There is one residence approximately 1,500 feet from the east end of the project, and 2,000 feet from James Creek. There is a residence approximately one mile west of the project’s western terminus. No other inhabited structures exist within hearing distance of the project. Noise levels in the project vicinity are generally very quiet, dominated by occasional traffic on Hyampom Road over a background of forest noises (birds, wind, etc.). The amount and intensity of noise from vehicles is dependent on the number and type of vehicles and the speed at which they travel. Other factors include the use of snow tires during the dry months and whether or not the vehicles have defective or modified mufflers.

Existing land use designations within the project area are Resource, Open Space, and federal land designated as Roaded Recreation. The land uses that are the primary concern with regards to noise generated by the proposed project include residential, recreation and wildlife habitat. Effects of noise on wildlife are discussed in Section 4.7, *Biological Resources*.

4.6.2 PLANNING DOCUMENT GOALS, OBJECTIVES, AND POLICIES

TRINITY COUNTY GENERAL PLAN NOISE ELEMENT

The purposes of the County's Noise Element are to provide mechanisms to mitigate existing noise conflicts and to minimize future noise conflicts by the adoption of policies and implementation measures designed to achieve land use compatibility for the proposed development. The noise element expresses the County's intent to minimize the impact of existing noise levels and to prevent adverse noise levels from occurring in the future. (Trinity County 1974) The Trinity County Noise Element does not provide recommendations for land use compatibility with respect to major noise sources. The section of the Noise Element referred to as "Specific Recommendations" infers that 60 dB CNEL/ L_{dn} is the test of significance for major noise sources.

Trinity County is in the process of a comprehensive revision of the existing Noise Element (Brown-Buntin Associates 2003). A Draft Noise Element is being circulated for public review and comments concurrently with this document. The Draft Noise Element presents existing noise levels at various locations in the County, including two locations in Hayfork. No measurements were made on Hyampom Road. The survey concluded that maximum noise levels observed were generally caused by local automobile traffic or heavy trucks. Other sources included occasional aircraft overflights and construction noise.

The Draft noise element contains the following goals, objectives, and policies that relate to this project:

Policy 4.2.2: Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so that resulting noise levels do not exceed the standards shown in Table III at noise-sensitive land uses. (The table indicates that and L_{dn} of 60 dB at outdoor activity areas associated with all land uses is acceptable.)

A proposed Noise Ordinance is being circulated with the Draft Noise Element. The Draft Ordinance, Section F.3., provides an exemption for "noise sources associated with construction, provided such activities do not take place before seven a.m. or after eight p.m. on any day except Sunday. No construction shall take place on Sundays."

4.6.3 SIGNIFICANCE CRITERIA

Appendix G of the CEQA *Guidelines*, the CEQA Environmental Checklist, poses the following questions to be considered in determining whether the project would cause significant noise impacts:

Would the project cause:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.6.4 IMPACTS AND MITIGATION MEASURES

PERMANENT IMPACTS AND MITIGATION MEASURES

The project is not within two miles of an airport. The project is rehabilitation of an existing road. The project will not cause an increase in traffic on Hyampom Road that would result in an increase in noise levels at residences or other receptors. The project will increase traffic noise so as to extend the 60 dB contour further from the road. Due to the distance to the nearest receptors, the heavy vegetation in the area, and the fact that traffic will not increase as a result of the project, no permanent increase in ambient noise levels in the project vicinity above levels existing without the project will occur.

TEMPORARY IMPACTS AND MITIGATION MEASURES

Noise Impact – 1: Noise levels within the project area will increase temporarily during construction.

Noise levels within the project area will increase during construction of the proposed project. Noise and vibrations will be generated by heavy equipment while excavating, grading, pile driving, etc. Equipment typically used in construction would generate noise levels as indicated in **Table 4.6-2**.

TABLE 4.6-2
CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dBA at 50 feet
Scrapers	88
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85
Pile Drivers	100

Source: Environmental Noise Pollution, Patrick R. Cunniff, 1977.

Construction noise is regulated by Caltrans Standard Specifications Section 7-1.01I "Sound Control Requirements". These requirements state that noise levels generated during construction shall comply with applicable local, state, and federal regulations and that all equipment shall be fitted with adequate mufflers according to the manufacturers' specifications.

No sensitive receptors (e.g., residences) are located within the project area and only two residences are potentially within hearing distance. The low population density and the distance to the nearest residence will result in minimal, if any, impact from construction noise on human receptors. As described above, noise attenuates rapidly with distance, and even more rapidly when it moves through a heavily forested area in steep terrain, such as the project vicinity. Distance to these receptors, combined with heavy vegetation and steep topography will attenuate these noise levels considerably before the sound reaches either residence. If construction noise is audible at one or more residences, it will be at tolerable levels, and will not be in excess of local standards.

Noise impacts will be temporary and relatively short-term. Over the course of this linear project, construction noise would only be audible at a particular residence during a portion of the duration of construction, until construction was complete in the area within audible range of the residence. The temporary increase in ambient noise levels is therefore not considered significant. However, mitigation is proposed to ensure compliance with the future Trinity County Noise Ordinance.

Significance: Less Than Significant Impact

Noise Mitigation – 1: Construction activities shall comply with the Trinity County Noise Ordinance by either scheduling construction activities in order to qualify for the Noise Source Exemption, or by limiting construction noise to comply with the exterior and interior noise level standards at the nearest residence, as set forth in the current Trinity County Noise Ordinance. If no Noise Ordinance is in effect at the time of construction, then construction activities

producing significant noise (80 dB or greater at 50 feet) shall be scheduled for between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday, with no construction taking place on Sunday.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Noise Impact –2: Construction noise from the proposed project could combine with noise from other projects in the vicinity, resulting in a cumulative increase in ambient noise.

While several road projects are proposed for the vicinity and each would increase noise levels during construction, significant cumulative noise impacts will not result since the various projects would not be constructed simultaneously. In addition, these projects are spread out over a 14-mile stretch of Hyampom Road and in Hayfork. The noise from construction of these projects would not overlap, even if they were done concurrently. The sparse population along Hyampom Road is another reason the projects will not be cumulative. Receptors would likely only be exposed to noise from one of these projects. The next project would likely be outside of the audible range of that same residence.

Each of the projects would be required to adhere to the Trinity County Noise Ordinance and the Caltrans Standard Specifications or equivalent Federal Highway Administration Standards with respect to noise, which would further lessen the potential for significant cumulative noise impacts.

Significance: Less Than Significant

Mitigation Measure: None Required