3.10 NOISE

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. Several noise measurement scales are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities.

There are several methods of characterizing sound. The most common is the A-weighted sound level, or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

Because the sensitivity to noise increases during the evening and at night—excessive noise interferes with the ability to sleep—24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5-dB penalty added to evening (7:00 p.m. to 10:00 p.m.) and a 10-dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) noise levels. The Day/Night Average Sound Level (L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

3.10.1 Affected Environment

The Old River and Connection Slough sites are located in a remote rural area. Primary sources of noise are agricultural activities on adjacent farmlands, although the use of power boats also would cause periodic noise increases. The EPA has indicated that background noise levels are generally near 44 to 45 dBA L_{dn} in agricultural cropland (EPA 1978). Some land uses are generally regarded as being more sensitive to noise than others due to the types of population groups or activities involved. Single- or multiple-family residences, schools, hospitals, churches, and public libraries are typically considered to be noise-sensitive receptors. The nearest known sensitive receptors are liveaboards at the marina located approximately 4,120 feet south of the Old River site. There are no noise-sensitive land uses near the Connection Slough site. The Roberts Island #1 disposal site is also located in an agricultural area, and the noise environment is dominated by vessels using the Stockton Deepwater Ship Channel.

Comment [BB1]: Change to 0.8 miles to make consistent with other sections.

3.10.2 Regulatory Setting

Comment [LW2]: I left the local noise ordinances--seems like sometimes these are used in NEPA docs, sometimes not.

Noise is regulated at the local level through policies and standards included in the Noise Elements of the Contra Costa County (2005) and San Joaquin County (1992) General Plans. The

Contra Costa County (2005) General Plan specifies that noise levels in agricultural areas are normally acceptable up to 75 dBA (L_{dn} or CNEL) and conditionally acceptable up to 80 dBA. Noise levels in residential areas are normally acceptable up to 60 dBA and conditionally acceptable up to 70 dBA (L_{dn} or CNEL). Policy 11-9 states that: "Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods" (Contra Costa County 2005).

The San Joaquin County (1992) General Plan Public Health and Safety Element, Section D, Noise, does not address construction noise, but indicates that the hourly equivalent sound level from stationary noise sources shall be 50 dB during the daytime and 45 dB during the nighttime for outdoor activity areas for residential development and that the maximum sound level from stationary sources shall be 70 dB during the nighttime at such areas (San Joaquin County 1992). The San Joaquin County Code, Part 9-1025.9 also contains noise standards. It exempts construction noise from the provisions of the noise chapter, as long as construction activities do not take place before 6 a.m. or after 9 p.m. on any day. Maximum allowable noise exposure at residential outdoor activity areas from stationary noise sources is 50 dB L_{eq} from 7 a.m. to 10 p.m. and 45 dB L_{eq} from 10 p.m. to 7 a.m. The maximum sound level (L_{max}) during these periods is 70 dB and 65 dB, respectively.

3.10.3 Affected Environment

3.10.3.1 No Action Alternative

The No Action alternative would not affect noise because no development would occur.

3.10.3.2 Proposed Action

The Proposed Action would generate noise primarily through the installation and removal of project components. The construction equipment and activities are those identified in Section 3.3, Air Quality; impacts from the removal of project components would be similar to those from their installation, but would occur for a shorter duration.

Noise from a point source, such as a construction site, attenuates, or is reduced, by about 6 dBA for every doubling of the distance. Noise from most construction activities would attenuate to 59 dBA CNEL at the marina south of the Old River site. Use of an impact hammer to install the king piles would result in approximately 70 dBA CNEL; this could take place up to 12 hours a day during daytime hours. Construction noise would fall within the limits of what Contra Costa County considers acceptable in residential locations and would comply with local requirements.

There are no residential outdoor activity areas near the Connection Slough site; therefore, construction would not expose persons to or generate noise levels in excess of established San Joaquin County noise standards.

The primary source of vibration would be pile driving in the channels during construction. The vibration pile driver typically results in an approximate vibration velocity level (velocity in decibels or VdB) of approximately 93 VdB at 25 feet (FTA 2006). Vibration attenuates very rapidly, and there are no sensitive receptors in the immediate vicinity of the Project sites. The

Comment [BB3]: What about wildlife as sensitive receptors, confirming that in both terrestrial and aquatic sections noise effects were discussed? Construction noise could drive away wildlife, including underwater.

nearest receptors are live-aboard residents at the marina located approximately 4,120 feet from the Old River site, and they would not experience groundborne vibration or noise.

The Proposed Action would not create permanent noise sources. Two small generators could be operated intermittently at the Old River and Connection Slough sites until PG&E power is available to provide electric power to the sites. Noise emitted by the generators would attenuate to inaudible levels at the marina to the south of the Old River site. There are no noise-sensitive land uses near the Connection Slough site; therefore, noise emitted by project generators would not adversely affect noise-sensitive receptors.

Comment [BB4]: Same comment as before

Comment [BB5]: This section does not discuss the fact that people (boaters) may be in the vicinity during construction and could be affected by the noise. As this is described as a remote/quiet area, the perception of the noise during construction could be adverse to the normal noise levels.

Comment [BB6]: The haul roads needed for equipment and materials, do they pass by any sensitive noise receptors? Not discussed. Again in this remote setting, roads with light use, during construction, noise conditions could change along it and be perceived as adverse.