Section 3.9
Noise

SECTION SUMMARY

This section addresses the potential noise impacts associated with the construction and the operation of the proposed Project. The Project sound sources and the potential effect on the surrounding area could result from increasing the vessel repair and build capacities at the Project site. An analysis of potential impacts on noise associated with the alternatives is detailed in Chapter 6, Analysis of Alternatives.

Section 3.9, Noise, provides the following:

- A description of existing environmental setting in the Port area;
- A description of the existing sound levels in the surrounding area;
- A description of decibel scale;
- A description of applicable local and policies that apply to the Project;
- A discussion on the methodology used to determine whether the proposed Project result in a noise impact;
- A description of any mitigation measures proposed to reduce any potential impacts, if applicable.

Key Points of Section 3.9:

The proposed Project would redevelop an existing boat shop, and its operations would be consistent with other uses in the Project area.

The proposed Project would result in a significant noise impact during construction. The noise level is projected to temporarily exceed ambient levels by more than 5 dBA to noise sensitive uses at Al Larson Marina (Fish Harbor) and Reservation Point. Noise from pile driving would be audible and may be perceived as intrusive or annoying by the community at the Al Larson Marina and Reservation Point. However, the potential for construction noise impacts is well below the threshold for residences and hotels along Harbor Boulevard in San Pedro, the other identified sensitive receptors in the vicinity.

Although implementation of mitigation measures would not be sufficient to reduce the projected increase in the pile driving noise levels to a level below significance, impacts on the two closest sensitive receptors resulting from construction would remain significant, but temporary. The following mitigation measures would reduce potentially significant impacts to less than significant levels:

- **MM NOI-1: Noise Reduction during Pile Driving.** Where feasible, the contractor shall be required to use a pile driving system, such as a Bruce hammer (with silencing kit), an IHC Hydrohammer SC series (with sound insulation system), or equivalent silenced hammer, which is capable of limiting maximum noise levels at 50 feet from the pile driver to 104 dBA, or less, for wharf construction.

- **MM NOI-2: Erect Temporary Noise Attenuation Barriers Adjacent to Pile Driving Equipment, Where Necessary and Feasible.** Erect temporary noise attenuation barriers suitable for pile driving equipment where feasible and effective. The barriers should be installed directly between the equipment and the nearest noise sensitive use to the construction site. The need for and feasibility of noise attenuation barriers should be evaluated on a case-by-case basis considering the distance to noise sensitive receptors, the available space at the construction location, and taking account of safety and operational considerations.

- **MM NOI-3. Temporary Noise Attenuation Barriers.** When construction is occurring within 500 feet of a residence, temporary noise barriers (solid fences or curtains) will be located between noise-generating construction activities and sensitive receivers. The following will reduce the impact of noise from construction activities:

  a) *Idling Prohibitions.* Unnecessary idling of internal combustion engines near noise-sensitive areas will be prohibited.

  b) *Equipment Location.* All stationary noise-generating construction equipment, such as air compressors and portable power generators, will be located as far as practical from existing noise-sensitive land uses.

  c) *Quiet Equipment Selection.* All internal combustion powered equipment shall be equipped with properly operating mufflers and kept in tune to avoid backfires. In addition, if exposed, engines are to be fitted with protective shrouds to reduce motor noise. Comply where feasible with noise limits established in the City of Los Angeles Noise Ordinance.

  d) *Notification.* Sensitive receptors including residences within 500 feet of the proposed Project site will be notified of the construction schedule in writing prior to the beginning of construction.

Operational activities at the ALBS site would not generate noise increases greater than 3 dBA. Given that the types of equipment and operations planned for the proposed Project is similar what is currently existing uses at the site, noise increases at noise sensitive receptors is expected to be imperceptible. Therefore, operation of the proposed Project would not result in significant impacts to noise sensitive uses in the Port area.

3.9.1 Introduction

This section addresses potential noise impacts that could result from the proposed Project, and where applicable, potential noise mitigation measures. This section also describes the general characteristics of noise, the requirements of applicable regulations related to noise control, and existing noise environment at the proposed Project area.

3.9.2 Environmental Setting

Existing ambient (background) noise levels in the proposed Project area are the result of vehicular traffic on the local street network and the freeways, railroad train movements along the various railroad lines in the area, industrial noise sources, and other activities at the Port (such as ship engines, operation of bulk loading facilities and container terminal operations). In general, average noise levels in an area are directly determined by local noise generating activity. Unless such activity in that area changes rather dramatically, average noise levels do not change appreciably over time. For example, a doubling of noise generating activity (e.g. traffic) results in a barely audible increase in average noise level. Therefore, background noise measurements would tend to be reasonably consistent over time provided there has been no substantial change in noise generating activity.

3.9.2.1 Noise Fundamentals

Noise may be defined as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound can be caused by its *pitch* or its *loudness*. *Pitch* of a tone or sound depends on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave— the higher the amplitude, the louder the sound. Technical acoustical terms commonly used in this section are defined in Table 3.9-1.

Table 3.9-1: Definitions of Acoustical Terms

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals in air). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq[h]}$.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

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3.9.2.1.1 Decibels and Frequency

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise. The *decibel (dB)* is a unit of measurement, which indicates the relative amplitude of a sound. Zero on the decibel scale is based on the lowest sound pressure that a healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a 10-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its level. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a wide range of amplitudes. Since decibels are logarithmic units, sound pressure levels are not added arithmetically. When two sounds of equal sound pressure level are added, the result is a sound pressure level that is 3 dB higher. For example, if the sound level were 70 dB when 1,000 cars pass by, then it would be 73 dB when 2000 cars pass the observer. Doubling the amount of energy would result in a 3 dB increase to the sound level. Noise levels will not change much when a quieter noise source is added to relatively louder ambient noise levels. For example, a 60 dB noise source is added to 70 dB ambient noise levels, resulting in noise level equal to 70.4 dB at the location of the new noise source.

There is also a relationship between the subjective loudness of a sound and its level. Each 10-decibel (tenfold) increase in sound pressure level is perceived as approximately a doubling of loudness over a wide range of amplitudes. Since decibels are logarithmic units, sound pressure levels do not add arithmetically. If two sounds of equal sound pressure level are added together at the same location, the result is a sound pressure level that is 3 dB higher (that is, a doubling of sound pressure level results in a 3 dB increase in measured sound, which is barely audible to the human ear). For example, combining two sources of 70 dB and 70 dB would result in a sound pressure level measuring 73 dB. In the same way, for construction equipment, when two pieces of equipment are operating simultaneously, the incremental sound pressure level created by the second piece of equipment depends upon the difference between the two noise levels. If there is a difference of 0-1 dB between the two pieces of equipment (that is, they are nearly the same), the resultant sound pressure level would be 3 dB above the higher noise level. A difference of 2-3 dB would cause the total sound pressure level to be 2 dB above the higher noise level, and a difference of 4-9 dB would cause the total sound pressure level to be 1 dB above the higher noise level. A 10 dB difference or more would cause the total sound pressure level to be 0 dB above the higher noise level, and the difference added by the second piece of equipment would not be audible in most cases.

Frequency relates to the number of pressure oscillations per second, or *Hertz (Hz)*. The range of sound frequencies that can be heard by healthy human ears is from about 20 Hz at the low frequency end to 20,000 Hz (20 kilohertz [kHz]) at the high frequency end. Sensitivity of the human ear to very high or very low frequencies on this scale is less than for intermediate frequencies.

Several methods have been devised to express noise levels. 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. Studies have shown that the A-weighted level is closely correlated with annoyance to noise. Other frequency weighting networks, such as *C weighting* or *dBC*, have been devised to describe noise levels for specific types of noise (e.g., explosives). Table 3.9-2 shows typical A-weighted noise levels that occur in human environments.

Table 3.9-2: Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 984 feet (300 meters)		Rock concert
	110 dBA	
Pile driver at 98 feet (30 meters)	100 dBA	
		Night club with live music
	90 dBA	
Large truck passes by at 49 feet (15 meters)		
		Noisy restaurant
		Garbage disposal at 3 feet (1 meter)
Gas lawn mower at 98 feet (30 meters)	70 dBA	Vacuum cleaner at 9 feet (3 meters)
Commercial/Urban area daytime		Normal speech at 3 feet (1 meter)
Suburban expressway at 295 feet (90 meters)	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

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3.9.2.1.2 Noise Descriptors

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 is utilized. Most commonly, environmental 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 Leq. A common averaging period is hourly, but Leq can describe any series of noise events of arbitrary duration. The Leq of a time period with varying noise levels and that of a steady noise are the same if they deliver the same acoustic energy to the ear during the period of exposure. The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within approximately plus or minus 1 dBA. Two metrics describe the 24-hour average, Ldn, and CNEL. Both include penalties for noise during the nighttime. Ldn is the time average of noise levels for a 24-hour period with a 10 dB addition to noises occurring between 10:00 p.m. and 7:00 a.m. This adjustment accounts for the increased sensitivity of people to nighttime noise. CNEL penalizes noise during the evening and adds 5 dB to evening noise levels (7:00 p.m. to 10:00 p.m.). CNEL and Ldn are normally within 1 dBA of each other and are used interchangeably in this section. Ldn and CNEL are approximately equal to the Leq peak hour under normal traffic conditions (Caltrans, 1998).

3.9.2.1.3 Human Response to Noise

Studies have shown that under controlled conditions in an acoustics laboratory, a healthy human ear is able to discern changes in sound levels of 1 dBA. In the normal environment with average background noise, the healthy human ear can detect changes of about 2 dBA; however, it is widely accepted that changes of 3 dBA in the normal environment are considered just noticeable to most people. An increase of 3 dBA is perceived as approximately a 25 percent increase in noise level. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as being twice as loud even though it results from a tenfold increase in sound pressure level.

3.9.2.1.4 Noise and Health

A number of studies have linked increases in noise with health effects, including hearing impairment, sleep disturbance, cardiovascular effects, psychophysiological effects, and potential impacts to fetal development (Babisch, 2005). Potential health effects appear to be caused by both short- and long-term exposure to very loud noises and long-term exposure to lower levels of sound. Acute sounds of LAF > 120 dB can cause mechanical damage to hair cells of the cochlea (the auditory portion of the inner ear) and cause hearing impairment (Babisch, 2005). As discussed in Section 3.9.2.1.1, LAF > 120 dB is equivalent to a rock concert or a plane flying overhead at 984 feet (300 meters).

The World Health Organization and the EPA consider LAeq = 70 dBA to be a safe daily average noise level for the ear. However, even this “ear-safe” level may cause disturbance to sleep and concentration and may be linked to chronic health impacts such as hypertension and heart disease (Babisch, 2006). A number of studies have looked at the potential health effects from the sound of chronic lower noise levels, such as traffic, especially as these noise levels affect children. However, recent research has not unequivocally identified community noise levels above which specific health effects may occur. In the absence of more definitive research, a level of 120 dBA may be a suitable

threshold above which acute exposure would be health threatening. Similarly, chronic exposures above the 70 dBA threshold used by the WHO and USEPA may potentially be health threatening.

3.9.2.1.5 Sound Propagation

When sound propagates over a distance, it changes in both level and frequency content. The manner in which noise is reduced with distance depends on the following important factors:

Geometric spreading. Sound from a single source (i.e., a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. Highway noise is not a single stationary point source of sound. The movement of vehicles on a highway makes the source of the sound appear to emanate from a line (i.e., a "line" source) rather than from a point. This results in cylindrical spreading rather than the spherical spreading resulting from a point source. The change in sound level from a line source is 3 dBA per doubling of distance.

Ground absorption. Usually the noise path between the source and the observer is very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation because of geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is done for simplification only; for distances of less than 200 feet (60 meters), prediction results based on this scheme are sufficiently accurate. For acoustically "hard" sites (i.e., sites with a reflective surface, such as a parking lot or a smooth body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or "soft" sites (i.e., sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.

Atmospheric effects. Research by Caltrans and others has shown that atmospheric conditions can have a major effect on noise levels. Wind has been shown to be the single most important meteorological factor within approximately 500 feet (150 meters), whereas vertical air temperature gradients are more important over longer distances. Other factors, such as air temperature, humidity, and turbulence, also have major effects. Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur because of temperature inversion conditions (i.e., increasing temperature with elevation).

Shielding by natural or human-made features. A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object, proximity to the noise source and receiver, surface weight, solidity, and the frequency content of the noise source. Natural terrain features (such as hills and dense woods) and human-made features (such as buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to

reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 20 dB of noise reduction.

3.9.2.2 Existing Noise Environment

The proposed Project is located on Terminal Island within an industrial area in Fish Harbor of the Port. The site is within the Port of Los Angeles Plan area in the City of Los Angeles, adjacent to the communities of San Pedro and Wilmington.

Existing noise levels within the Port Complex are a result of a wide variety of sources including: ship engines, operation of bulk loading facilities and other container terminal uses, truck traffic and train operations, and vehicle traffic on local street network and the freeways. The noise environment at any particular location depends upon proximity to the various noise sources, although traffic noise is the predominant noise source in the Project area. The City of Los Angeles' Municipal Code ambient noise levels within heavy manufacturing/industrial areas such as the Project area are 65 dBA during daytime and nighttime due to its light and heavy industrial land uses.

3.9.2.2.1 Noise Sensitive Uses

Noise-sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound may adversely affect the use of the land. Noise-sensitive land uses are defined as residences, schools, libraries, churches, hospitals, guest lodging, nursing homes, and certain types of passive recreational uses. Figure 3.9-1 shows noise-sensitive receivers in the Project vicinity. Generally, noise-sensitive receptor locations that are closest to the source of noise generation are likely to receive the greatest impact.

The Project site and surrounding areas are industrial in nature. The nearest noise-sensitive receptors are at the Al Larson Marina (liveaboards) approximately 280 feet to the south of the nearest onshore portion of the Project (Phase 3 area) and 100 feet south of the limits of proposed Project dredging (Phase 2); at Reservation Point located approximately 0.7 mile south (residences for U.S. Coast Guard (USCG) personnel at the USCG U.S. Coast Guard base; housing for prison personnel at the southern tip of Reservation Point; and inmates at the Federal Correctional Institution); and at residences and hotels along Harbor Boulevard in San Pedro approximately 0.65 mile to the west and residential community of Wilmington to the north.

The City of Los Angeles Planning Department indicates that in 2009 within the Port of Los Angeles Community Plan Area, there was an estimated resident population of approximately 2,094. (551 non-single-family unit occupants in 301 units), single- and multi-family units in the area (668 occupants in 300 units), and in group quarters including the population of the Federal prison and military personnel living at the Coast Guard facility at Reservation Point (1,294 occupants).[1] Marina areas that would facilitate most of the liveaboard population are located along the West Channel near the City of San Pedro, and near the East Basin and Cerritos Channel in the northern portion of the

[1] City of Los Angeles Department of City Planning Demographic Research Unit, Local Population and Housing Profile for the Port of Los Angeles Community Plan Area. Available online at:" http://cityplanning.lacity.org/DRU/Locl/LocPfl.cfm?geo=CP&loc=PtL&yrx=Y09

Port. There are two liveaboards at the Al Larson Marina, located approximately 100 feet of the southernmost part of the proposed Project (Phase 2 dredging).

3.9.2.2.2 Noise Monitoring

Noise monitoring readings were taken from recent surveys in March 2008 and September 2009. The Port Complex had slightly higher throughput in 2008 compared to 2009 when throughput was at its lowest point due to economic conditions. Nevertheless, this reliable database of existing ambient noise levels was both accessible and representative of noise-sensitive land uses near the Project area. It provided a better understanding of effects on the physical environment. Noise levels were monitored during the daytime, evening, and nighttime in consecutive hourly intervals at three locations (LT-2, LT-3, and LT-5), which are indicted on Figure 3.9-1 and discussed below. The results of the noise measurements are shown in Figures 3.9-2 through 3.9-4. The figures provide the range of noise levels measured during each hour depicted by the statistical descriptors L_{90}, L_{50}, L_{10}, and L_{01}, as well as the maximum noise level and the energy average or equivalent sound level, $L_{eq(h)}$. Although not required, the statistical noise levels (L_n) were obtained to provide further perspective on background noise levels. The measured CNEL, the 24-hour (day/evening/night) average noise level, also is shown in each figure.

Measurement LT-2 was made on a pylon at the end of a residential Pier E within the Al Larson Marina liveaboards at an approximate distance of 280 feet to the Project site. This location is representative of the closest Port-related residences to the Project site. The primary noise source at this location was local activities at the marina, and activities at the adjacent ALBS. Occasional Port-related activities beyond the Al Larson Marina, such as ocean-going ships and commercial harbor craft and cargo handling equipment at port rail yards, were also audible at this location. The hourly trends in noise levels measured between 2:00 p.m. on Monday, September 28, 2009, and 2:00 p.m. on Tuesday, September 29, 2009, including the energy equivalent noise level (L_{eq}), and the noise levels exceeded 01, 10, 50 and 90 percent of the time (indicated as $L_{1,}$ L_{10}, L_{50} and L_{90}) are shown on Figure 3.9-2. The daytime and nighttime average (L_{eq}) noise levels at this location ranged from 54 to 61 dBA and 47 to 60 dBA, respectively with an average daytime L_{eq} of 57 dBA and an average nighttime L_{eq} of 54 dBA. The CNEL at this location was 62 dBA.

Measurement LT-3 was made on a light standard at the corner of South Beacon Street and West 12th Street in the San Pedro residential district at an approximate distance of 3,750 feet to the Project site. This location is representative of the closest residences within San Pedro to the Project site. The primary noise source at this location was local traffic on Beacon Street and more distant traffic on Harbor Boulevard. Port-related noise was not distinctly audible at this location. The hourly trends in noise levels measured between 2:00 p.m. on Monday, September 28, 2009, and 2:00 p.m. on Tuesday, September 29, 2009, including the energy equivalent noise level (L_{eq}), and the noise levels exceeded 01, 10, 50 and 90 percent of the time (indicated as $L_{1,}$ L_{10}, L_{50} and L_{90}) are shown on Figure 3.9-3. The daytime and nighttime average (L_{eq}) noise levels at this location ranged from 58 to 74 dBA and 49 to 59 dBA, respectively with an average daytime L_{eq} of 65 dBA and an average nighttime L_{eq} of 55 dBA. The CNEL at this location was 65 dBA.

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Project Site

CDM Smith

0 1,700 3,400 Feet

Port of Los Angeles
Al Larson Boat Shop
Improvement Project
Noise Measurement Locations
Figure 3.9-1

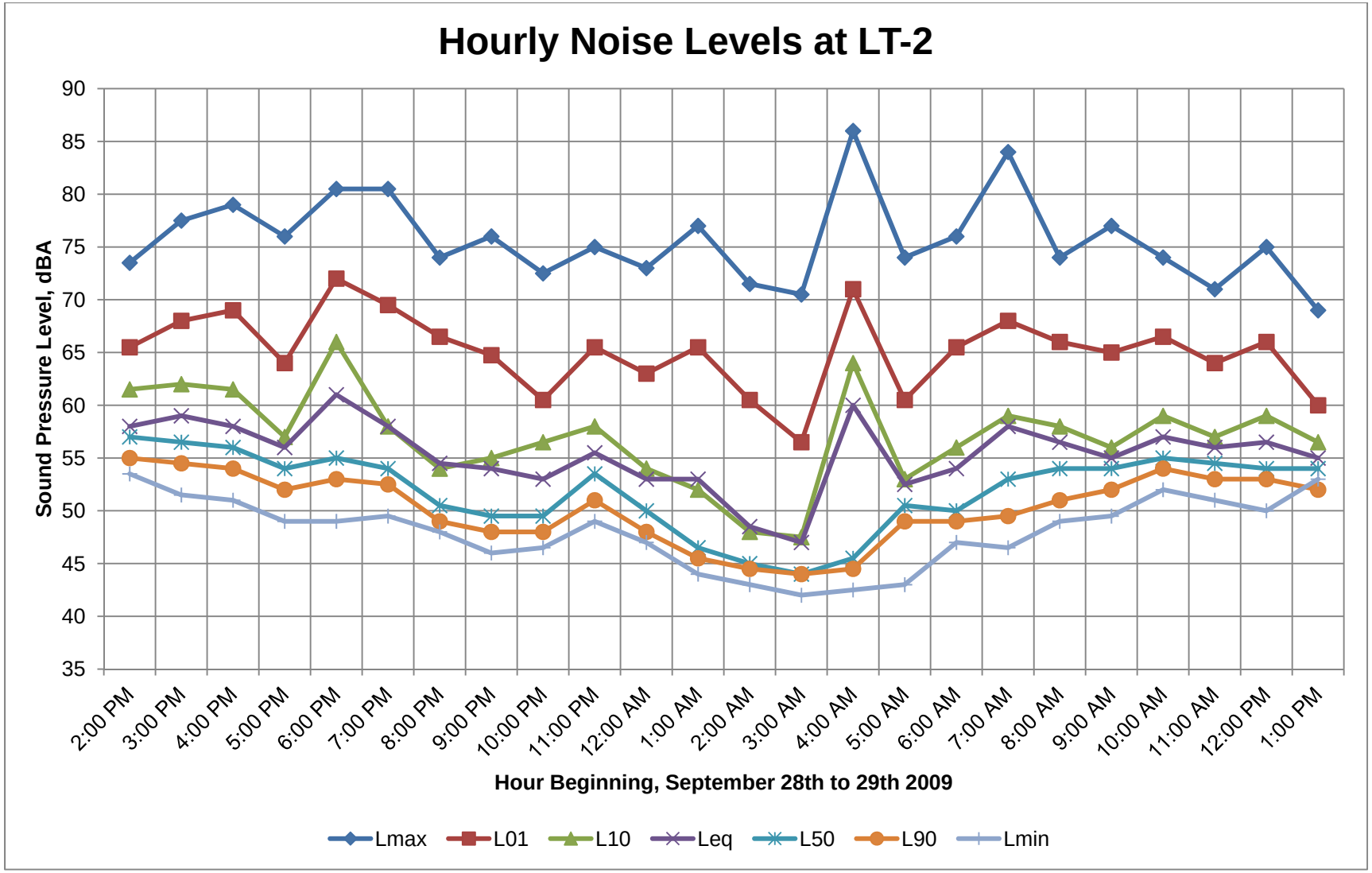

Figure 3.9-2. Hourly Noise Levels at LT-2 – Al Larson Marina

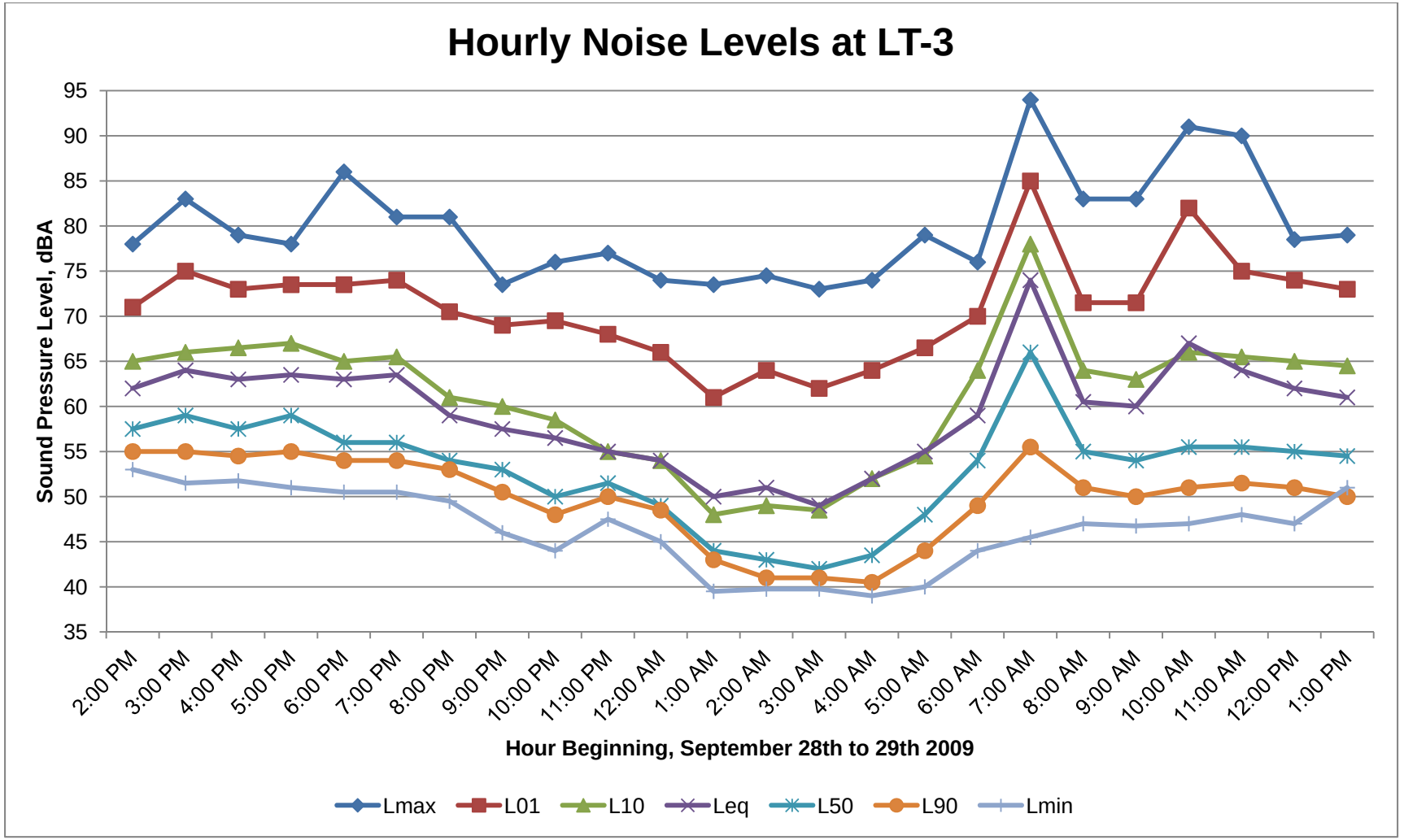

Figure 3.9-3. Hourly Noise Levels at LT-3 – South Beacon St. and W. 12th St.

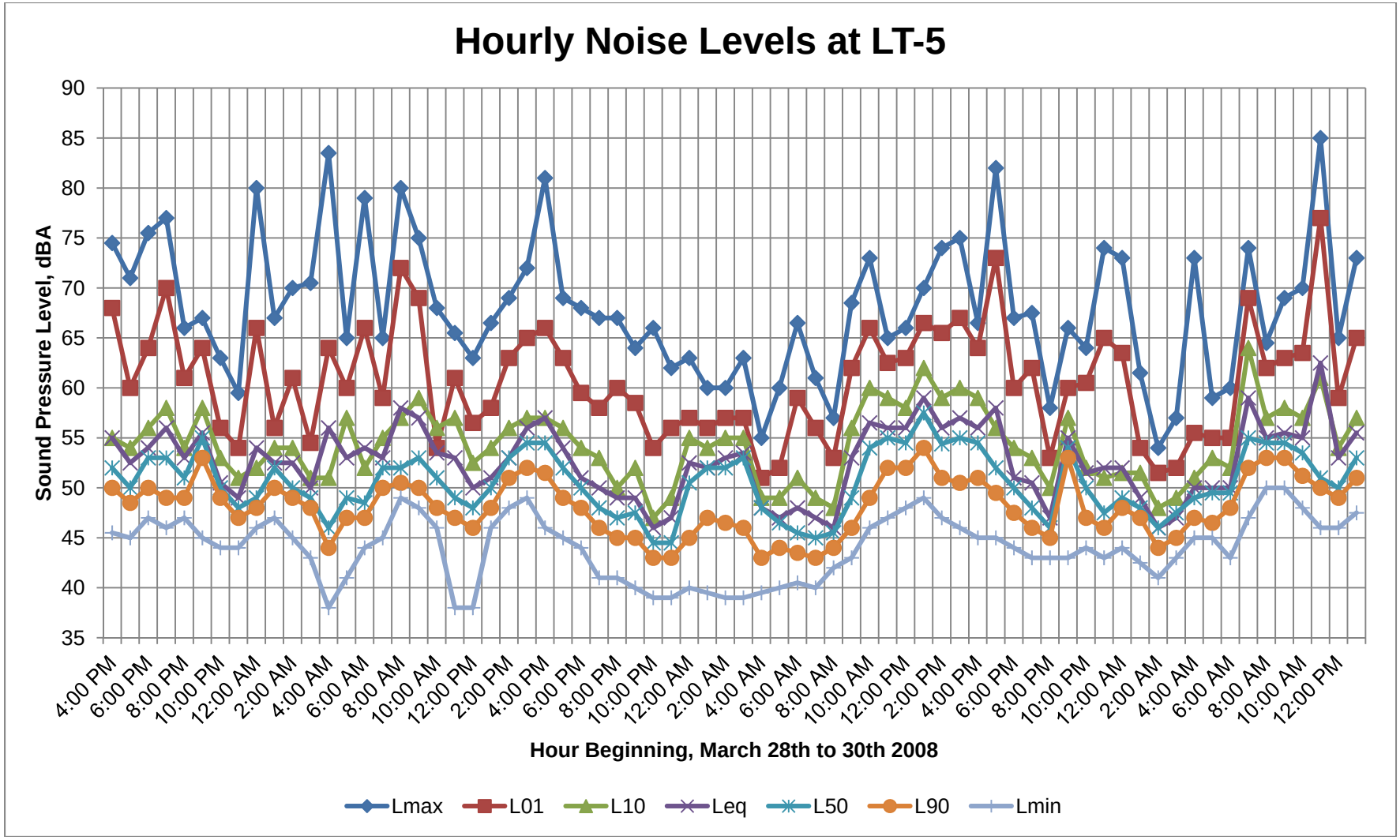

Figure 3.9-4. Hourly Noise Levels at LT-5 – Southeast end of Reservation Point

Measurement LT-5 is located at the Federal housing facility on Reservation Point, approximately 60 feet from the nearest residence, and approximately 3,600 feet south of the Project site. The primary noise sources at this location were local facility and Port-related activities, such as container terminal operations on Pier 300 and 400 and vessel traffic, as well as general port activities, which may include noise occurring at ALBS.

The hourly trends in noise levels measured between 4:00 p.m. on Friday, March 28, 2008, and 2:00 p.m. on Monday, March 31, 2008, including the energy equivalent noise level (L_{eq}), and the noise levels exceeded 01, 10, 50 and 90 percent of the time (indicated as $L_{1,}$ L_{10}, L_{50} and L_{90}) are shown on Figure 3.9-4 (above). Typical hourly average daytime noise levels ranged from 47 to 62 dBA L_{eq} and nighttime noise levels typically ranged from 46 to 56 dBA L_{eq}. The calculated CNEL for the entire measurement period was 59 dBA, with the CNEL over the weekend days and calculated for an equivalent weekday period also at 59 dBA.

Short-term noise measurements were taken from recent field surveys at representative locations (depicted as Sites ST-2 and ST-8 in Figure 3.9-1). The results of the short-term noise level measurements are summarized in Table 3.9-3.

Site ST-2 is at the Terminal Islander Memorial south of the Al Larson Boat Dock near Firehouse 111, approximately 1,000 feet south of the Project site. The primary noise source at this location was local traffic on Seaside Avenue at between 58 to 64 dBA. Other measurable noise sources at this location were activities at the adjacent firehouse at between 52 to 55 dBA, bird and sea lion sounds at between 52 to 54 dBA, and a passing tugboat at between 51 to 52 dBA. Though unloading activities at both piers 300 and 400 were observed during the measurement period, these activities were not audible or measurable over other area ambient noise.

Site ST-8 is located adjacent to LT-5, at the southeast end of Reservation Point, approximately 60 feet from the nearest residence and 4,000 feet from the Project site. Aircraft and wind were the predominant sources of noise during the survey. Port-related noise was not a major source of noise at this location. Port-related noise was a primary source of noise identified at nearby LT-8, this difference is likely attributable to the particular activities that were occurring at the time the noise measurements were taken.

Table 3.9-3: Short-Term Noise Monitoring Results

Site	Location (Date, Time)	Noise Level, dBA					Noise Sources
		L_{01}	L_{10}	L_{eq}	L_{50}	L_{90}	
ST-2	Terminal Islander Memorial (9/28/09,16:35-16:45)	63	58	55	53	52	Local traffic, firehouse, bird & sea lion activities
ST-8	Southeast end of Reservation Point. (3/28/08, 16:45-17:00)	67	54	54	51	50	Aircraft and wind

Source: Illingworth & Rodkin, Inc., 2009

3.9.3 Applicable Regulations

The *LA CEQA Thresholds Guide* (City of Los Angeles, 2006) includes the following checklist questions regarding environmental noise impacts:

a. Would the project result in 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?

b. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c. Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above the existing without the project?

e. 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?

f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Significance criteria are established to address questions a, c, and d for potential noise impacts during each of the two stages of construction and operation proposed for this Project. Questions b, e, and f are not applicable to this assessment. Question b deals with vibration impacts on people. Construction, specifically pile driving, would generate vibration, but no features of the proposed Project (or alternatives) would generate significant levels of vibration. Pile driving would typically need to occur within 50 feet of residential or other sensitive areas to be felt as "distinctly perceptible." Although there are no federal, state, or local regulations limiting vibration impacts, guidance criteria is based on a vibration significance threshold level of 0.24 inches/second at the receptor and a typical source vibration level of 0.644 in/sec at 25 feet per the Caltrans Transportation and Construction Induced Vibration Guidance Manual (Caltrans, 2004). This value would avoid damage to residential structures but may be of short-term annoyance to occupants of residences. The nearest sensitive use is the liveaboards community at the Al Larson Marina, approximately 280 feet south from where the pile driving would occur (as part of construction of the CDF under Phase 2). Therefore, vibration impacts from pile driving would not be an issue for the proposed Project, and it is not addressed further in this document. Background information is presented in the following paragraphs regarding applicable or related regulations adopted by the City of Los Angeles or other agencies.

3.9.3.1 City of Los Angeles Municipal Code

Section 41.40 of the City of Los Angeles Municipal Code establishes when construction work is prohibited. The Municipal Code section states the following:

> *No person shall between the hours of 9:00 p.m. and 7:00 a.m. of the following day perform any construction or repair work of any kind upon or any excavating for, any building or structure, where any of the foregoing entails the use of any power-driven drill, driven machine, excavator, or any other machine, tool, device, or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in any dwelling, hotel, or apartment or other place of residence. In addition, the operation, repair or servicing of construction equipment and the jobsite delivering of construction materials in such areas shall be prohibited during the hours herein specified. Any person who knowingly and willfully violates the foregoing provision shall be deemed guilty of a misdemeanor punishable as elsewhere provided in this code.*

3.9.3.2 Los Angeles Noise Element of the General Plan

The Noise Element of the City of Los Angeles General Plan provides a broad perspective of the noise issues throughout the city and identifies goals, policies, and implementation measures to guide future actions by the City (City of Los Angeles, 1999). The Noise Element identifies the freight train activities associated with the Los Angeles and Long Beach Harbors as a major noise generator in the City. It also points out that, generally, train noise is buffered from sensitive noise uses by surrounding industrial, warehouse, and commercial uses. The Noise Element states that the maximum acceptable outdoor noise exposure-level for residential, hospital, and school zones is 65 dBA CNEL and that silencers and mufflers on intake and exhaust openings for all construction equipment are required. The Noise Element identifies NEPA and CEQA as the primary regulations that guide environmental assessments in the City. CEQA requires that mitigation measures be incorporated into the proposed Project to avoid or minimize significant impacts to the maximum extent feasible. Under the Goals, Objectives, and Policies chapter of the Noise Element, Objective 1 is to "reduce airport and harbor related noise impacts." No specific measures or further discussion relating to harbor operations is provided in this chapter. However, the following chapter in the Noise Element, Chapter IV—Implementation, identifies specific implementation policies for the Los Angeles Harbor. Implementation program P2 applies to both airports and the harbor and states:

> *Noise abatement, mitigation and compatibility measures shall be incorporated into the city's general plan airport and harbor elements, including, where feasible, sound proofing of impacted sensitive uses, buffering, land use reconfiguration, modification of associated circulation and transportation systems, modification of operational procedures, conversion or phasing out of uses that are incompatible with airport or harbor uses, and/or other measures designed to reduce airport and harbor related noise impacts on adjacent communities.*

3.9.4 Impacts and Mitigation Measures

3.9.4.1 Methodology

The existing ambient noise levels are based on field noise monitoring levels taken in 2008 and 2009. These levels are used to assess construction and operational noise impacts.

Construction noise calculations provide a rough estimate of the potential noise impacts that construction activities can have on their surrounding environment. An L_{eq} is assigned to each type of construction equipment and represents the typical average noise level that would be expected to occur at a given distance (e.g., 50 feet) from the construction site as a result of the noise that is generated by each particular piece of construction equipment operating on the construction site. The average noise generated by each piece of construction equipment is based on both the maximum noise generated by the equipment while it is operating as well as the percentage of time during the construction period that the equipment would be expected to be operating. This method is consistent with the Federal Highway Administration's Roadway Construction Noise Model (RCNM) Version 1.1.

The noise level at the nearest sensitive receptors during the construction of each component was determined by calculating the combined noise levels from construction equipment on the Project site, assuming a reference distance of 50 feet. Distances from construction locations to sensitive receptors were measured and input to the RCNM as the basis for calculating noise attenuation with distance at sensitive receptor locations. During construction, use of construction equipment at each construction site would vary throughout the workday, and equipment utilization rates could range from 10 to 100 percent of the workday, with middle ranges more likely. The peak noise period is estimated to occur during Phase 1 pile driving activities (associated with construction of the two concrete piers and representative of driving associated with construction of the sheet pile walls).

Construction generally occurs in several discrete phases. Each phase requires a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment in the project vicinity. The effect of construction noise largely depends on the construction activities being performed on a given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment at the receptors. The proposed Project has three separate phases. For the purpose of the analysis, construction equipment associated with the Project was assumed to be operating at one time. This represents a worse case analysis. The types of equipment used in the analysis and the results of the modeling can be found in Appendix F.

Operational noise impacts are evaluated based on the increase in traffic volume that the project would have on existing traffic volume and the addition of new operational noise sources to the existing ambient noise level.

Both construction and operation are evaluated for significance based on the City's significance thresholds per the *L.A. CEQA Thresholds Guide*, and mitigation measures are provided, where feasible for impacts found to be significant.

3.9.4.2 Thresholds of Significance

The *L.A. CEQA Thresholds Guide* (City of Los Angeles, 2006) contains the following significance thresholds related to construction noise. Quantification of ambient noise levels (existing and projected at the time of construction) is measured in CNEL.

A project would normally have a significant impact on noise levels from construction during the *daytime* if:

NOI-1 Construction activities lasting more than 1 day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use; or if construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use.

A project would normally have a significant impact on noise levels from construction during the *nighttime* if:

NOI-2 Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.

The *L.A. CEQA Thresholds Guide* (City of Los Angeles, 2006) contains the following significance thresholds for operational noise impacts due to stationary sources, vehicular traffic, or increased railroad operations.

NOI-3 A project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the 'normally unacceptable' or 'clearly unacceptable category,' or any 5 dBA or greater noise increase.

Table 3.9-4 presents the land use noise compatibility guidelines.

Sensitive receivers in the Port area that could potentially be effected by operational noise from the proposed Project include the residential uses at Fish Harbor (the Al Larson Marina) and Reservation Point. At these land uses, a significant impact would occur if the proposed Project causes CNEL noise levels to increase by (1) 5 dBA or greater where the existing CNEL is less than 70 dBA; or (2) 3 dBA or greater where the existing CNEL exceeds 70 dBA.

Table 3.9-4: Land Use Noise Compatibility Guidelines

Land Use	Community Noise Exposure CNEL, dB			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single-Family, Duplex, Mobile Homes	50-60	55-70	70-75	above 70
Multifamily Homes	50-65	60-70	70-75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	Above 80
Playgrounds, Neighborhoods Parks	50-70	—	67-75	above 72

Normally Acceptable: Specified land use is satisfactory, based on the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable: New construction or development generally should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development generally should not be undertaken.

Source: City of Los Angeles, 2006

3.9.4.3 Impact Determination

Impact NOI-1: Construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use.

Noise levels generated by construction equipment will vary greatly depending on factors such as the type of equipment, the specific model, the operation being performed, and the condition of the equipment. The equivalent sound level (L_{eq}) of the construction activity also depends on the fraction of time that the equipment is operated over the time period of construction. The dominant source of noise from most construction equipment is the engine. In a few cases, such as impact pile-driving or pavement-breaking, noise generated by the process dominates.

Construction of the proposed Project is anticipated to commence in 2012 and last for approximately three years. The proposed Project would be constructed in three phases to allow ALBS to continue operating during the three year construction period. Construction of the proposed Project would include demolition of the existing timber

wharf and buildings on the Project site, dredging, installing sheet pile walls for the CDF, construction two new finger piers to support the 600-ton and 100-ton boat hoists, site grading, and paving.

Phase 1 would last approximately one year, employing approximately 30 people. Phase 2 would last approximately six to ten months and would employ 30 people. Phase 3 would last approximately six months and would employ 20 people. Construction would take place on the site Monday through Friday (with some Saturdays) from 7:00 a.m. until 3:30 p.m.

Table 3.9-5 shows the maximum noise levels for a variety of construction equipment that would be used during the noisiest construction activities.

Table 3.9-5: Typical Construction Equipment Noise Emission Levels

Equipment	Impact Device	Usage (%)	Lmax (dBA) 50 feet from Source
Derrick Barge Crane Hoist	Yes	16	88
Concrete Mixer Truck	No	40	78.8
Dump Truck	No	40	76.5
Front End Loader	No	40	79.1
Compressor (air)	No	40	77.7
Generator	No	50	80.6
Barge Crane	Yes	85	88
Impact Pile Driver	Yes	20	101.3
Excavator	No	40	80.7
Grader	No	40	85
Paver	No	50	77.2
Roller	No	20	80
Backhoe	No	40	77.6
Crane	No	16	80.6
Slurry Trenching Machine	No	50	80.4
Dozer	No	40	81.7
Pickup Truck	No	40	75

Source: Roadway Construction Noise Model, 2011 (equipment list also developed based on air quality equipment assumptions in Appendix C)

The ALBS would be operational during construction and its workforce would be exposed to noise generated from the proposed Project construction. Operational locations located adjacent to the construction site would be exposed to intermittent noise levels. In addition to the noise from the construction site, there would also be noise from trucks delivering materials to the site and hauling material from the site. Trucks en route to and from the site are estimated to produce a typical exposure level of approximately 75 dB at a distance of 50 feet. Temporary increases in truck traffic used to transport materials on- and off-site would result in a temporary increase in localized noise. However, land uses along the roadways in Terminal Island are not considered noise-sensitive. Additionally, truck deliveries on the Project site would be restricted between the hours of 9:00 p.m. and 7:00 a.m., as per the municipal code. Thus, construction truck traffic would not create any permanent, adverse noise impacts to human health or the local environment. Therefore, noise impacts from trucks delivering to the site would be less than significant.

During peak construction, construction worker based vehicle trips are expected to represent a small fraction (1 to 10 percent) of the AM and PM peak hour traffic volumes in the Project area. Chapter 2 provides detail about the distribution of truck trips. This small fraction of vehicles on S. Seaside Avenue compared to the overall heavy truck traffic in the Project area would not result in a noticeable increase in noise levels (A doubling of traffic would be required for a minimally audible 3 dBA increase in noise to occur). Therefore, traffic noise generated from construction worker trips would be considered a less than significant impact.

Construction activities would typically last more than 10 days in any 3-month period for all proposed Project components. Based on the thresholds of significance, an impact would be considered significant if noise from these activities would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use.

The nearest noise-sensitive receptor, Al Larson Marina, would be exposed to construction noise with the resultant L_{eq} summarized in Table 3.9-6. The RCNM is able to take into consideration the effects of shielding from natural or man-made obstacles that would reduce sound levels over distance. Shielding of various types between source locations and receptors include buildings, other structures, boats, etc. With a 3 dBA reduction assumed for shielding, Table 3.9-7 summarizes construction noise levels with shielding at Al Larson Marina.

Table 3.9-6: Summary of Construction Noise Impacts for the Al Larson Marina (no shielding assumed)

Equipment	Calculated Leq (dBA)	Total (Ambient + Calculated Leq)	Increase from construction noise (total – ambient)
Derrick Barge Crane Hoist[1]	74	74.08	**17.08**
Concrete Mixer Truck	59.9	61.69	4.69
Dump Truck	57.5	60.26	3.26
Front End Loader	60.2	61.89	4.89
Compressor (air)	58.7	60.94	3.94
Generator	62.7	63.73	**6.73**
Barge Crane	72.3	72.42	**15.42**
Impact Pile Driver	79.3	79.32	**22.32**
Excavator	61.8	63.04	**6.04**
Grader	66.1	66.6	**9.6**
Paver	59.2	61.24	4.24
Roller	58	60.53	3.53
Backhoe	58.6	60.88	3.88
Crane	57.6	60.32	3.32
Slurry Trenching Machine	62.4	63.5	**6.5**
Dozer	62.7	63.73	**6.73**
Pickup Truck	56.1	59.58	2.58

Source: Roadway Construction Noise Model, 2011

[1] Use of derrick barge crane for dredging is measured at 100 feet from the Al Larson Marina, while rest of equipment is measured at 280 feet.

Bold text indicates a significant impact (noise increase over 5 dBA).

Table 3.9-7: Summary of Construction Noise Impacts for the Al Larson Marina, with Shielding

Equipment	Calculated Leq (dBA)	Total (Ambient + Calculated Leq)	Increase from construction noise (total – ambient)
Derrick Barge Crane Hoist[1]	71	71.16	**14.16**
Concrete Mixer Truck	56.9	59.96	2.96
Dump Truck	54.5	58.93	1.93
Front End Loader	57.2	60.11	3.11
Compressor (air)	55.7	59.4	2.4
Generator	59.7	61.56	4.56
Barge Crane	69.3	69.54	**12.54**
Impact Pile Driver	76.3	76.35	**19.35**
Excavator	58.8	61	4
Grader	63.1	64.05	**7.05**
Paver	56.2	59.62	2.62
Roller	55	59.12	2.12
Backhoe	55.6	59.36	2.36
Crane	54.6	58.97	1.97
Slurry Trenching Machine	59.4	61.37	4.37
Dozer	59.7	61.56	4.56
Pickup Truck	53.1	58.48	1.48

Source: Roadway Construction Noise Model, 2011
[1] Use of derrick barge crane for dredging is measured at 100 feet from the Al Larson Marina, while rest of equipment is measured at 280 feet.
Bold text indicates a significant impact (noise increase over 5 dBA).

As shown in Table 3.9-6, the Al Larson Marina would experience an increase in ambient noise levels by 5 dBA or more from the following construction equipment: derrick barge crane hoist, generator, barge crane, pile driver, excavator, grader, trenching machine, and dozer. Noise produced by such equipment may be perceived as intrusive or annoying by the Al Larson Marina liveaboards. In particular, the impact pile driver used for wharf construction and representative of construction of the sheet pile walls (associated with construction of the CDFs) would be the noisiest of all construction equipment. However, the noise would be intermittent since pile driving typically involves short periods of driving interspersed with longer periods of adjustment, alignment, or relocating equipment from one driving location to another. Therefore, the average noise level, though indicative of the overall effect of the noise on the auditory environment, may not reflect the typical individual's perception of the noise as intrusive or annoying. Nonetheless, on the basis of the likely perception of some individuals that pile driving noise is intrusive or annoying, the impact of construction noise is considered potentially significant, but temporary.

Construction noise would not increase over 5 dBA at the other identified noise receptors (Reservation Point and San Pedro) due to the Project site's industrial surroundings, in which noise is a part of the normal auditory environment (for results associated with these two locations, refer to Appendix F). Therefore, construction noise would not exceed the City of Los Angeles construction noise threshold; as such, no significant impact would occur at Reservation Point and San Pedro.

The City's noise ordinance exempts construction activities within 500 feet of a residence from the noise standard providing that such activities take place between the hours of 7:00 a.m. and 9:00 p.m. Monday through Friday, 8:00 a.m. and 6:00 p.m. on Saturdays, and no time on Sundays. In addition, the mitigation measures, described below, would reduce the noise levels to the extent practicable. However, as shown in Table 3.9-7, control measures aimed to shield noise from use of construction equipment (i.e., derrick barge crane hoist, barge crane, pile driver, and grader) would continue to exceed the noise level threshold. As a result, the temporary and periodic increases in noise levels would be considered a significant impact during construction.

Mitigation Measures

MM NOI-1: Noise Reduction during Pile Driving

Where feasible, the contractor shall be required to use a pile driving system, such as a Bruce hammer (with silencing kit), an IHC Hydrohammer SC series (with sound insulation system), or equivalent silenced hammer, which is capable of limiting maximum noise levels at 50 feet from the pile driver to 104 dBA, or less, for wharf construction.

MM NOI-2: Erect Temporary Noise Attenuation Barriers Adjacent to Pile Driving Equipment, Where Necessary and Feasible

Erect temporary noise attenuation barriers suitable for pile driving equipment where feasible and effective. The barriers should be installed directly between the equipment and the nearest noise sensitive use to the construction site. The need for and feasibility of noise attenuation barriers should be evaluated on a case-by-case basis considering the distance to noise sensitive receptors, the available space at the construction location, and taking account of safety and operational considerations.

MM NOI-3: Temporary Noise Attenuation Barriers

When construction is occurring within 500 feet of a residence, temporary noise barriers (solid fences or curtains) will be located between noise-generating construction activities and sensitive receivers. The following will reduce the impact of noise from construction activities:

a) *Idling Prohibitions.* Unnecessary idling of internal combustion engines near noise-sensitive areas will be prohibited.

b) *Equipment Location*. All stationary noise-generating construction equipment, such as air compressors and portable power generators, will be located as far as practical from existing noise-sensitive land uses.

c) *Quiet Equipment Selection.* All internal combustion powered equipment shall be equipped with properly operating mufflers and kept in tune to avoid backfires. In addition, if exposed, engines are to be fitted with protective shrouds to reduce motor noise. Comply where feasible with noise limits established in the City of Los Angeles Noise Ordinance.

d) *Notification*. Sensitive receptors including residences within 500 feet of the proposed Project site will be notified of the construction schedule in writing prior to the beginning of construction.

Residual Impacts

Impacts from construction noise would be significant and unavoidable.

Impact NOI-2: Noise levels from construction activities would not exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.

The proposed Project will follow construction hours in accordance with the City of Los Angeles Noise Ordinance. Accordingly, no construction would take place between the hours of 9:00 p.m. and 7:00 a.m., Monday through Friday or before 8:00 a.m., or after 6:00 p.m. on Saturday, or at anytime on Sunday. A project would normally have a significant impact on noise levels from construction during the nighttime. Therefore, no construction-related noise impacts are anticipated during the nighttime or weekend.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact NOI-3: Operations would not generate noise levels that exceed existing ambient noise levels at sensitive receivers by 3 dBA in CNEL to or within the 'normally unacceptable' or 'clearly unacceptable category,' or otherwise by 5 dBA or greater.

Similar to the existing noise environment, operational noise sources under the proposed Project would include the intermittent sounds associated with the operation of equipment, welding and sandblasting shops, vessel-related repairs, and the use of the boat hoists to dry dock vessels. The new 600- and 100-ton boat hoists would be used for short durations during daytime hours to transport vessels from the finger piers to the yard, and to launch completed vessels. Due to the short durations of hoist use during the day, no substantive increases in CNEL are expected.

All such Project-related activities will be more than 280 feet from the closest noise sensitive receptor (liveaboards at Al Larson Marina) and are expected to produce noise levels less than or equal to those documented at measurement site LT-2, with noise levels from Project operation at between 54 to 61 dBA, occasionally reaching to low to mid-60 dBA range. The Al Larson Marina liveaboards, which is currently exposed to a CNEL 62 dBA, would not be exposed to a significant noise impact by an increase in CNEL noise levels of 3 dBA or greater. Operational noise from the Project would increase noise levels at the adjacent noise sensitive uses (Al Larson Marina, Reservation Point, and San Pedro Community) by less than 3 dBA, and would not result in a significant impact at any adjacent noise sensitive uses. Further, the marina is located in a high noise environment adjacent to industrial uses and any noise generated by the proposed Project

would be consistent with the existing noises that are currently generated on-site and within the working Port as a whole. The separation distances to the other identified noise sensitive receptors (Reservation Point and San Pedro) are large enough to naturally attenuate noise to insignificant levels before it reaches these sites.

Project implementation would result in increased number of vessels served by ALBS during over the course of a year between 240 and 304. The Project would allow ALBS to dry dock more vessels at a time, thus minimizing backlog in dry docking and eliminate the dependence on the existing marine railways. The improved efficiency of the site that would reduce dependency on the marine railways and allow a larger number of vessels to be served is not expected to result in a noticeable increase in ambient noise levels. Likewise, the increased number of employees at the site would not result in changes to the hours of operation or shifts times, nor would it result in a substantial increase in traffic to the site, or otherwise result in the generation of noise at the site that could cause a 3 dBA increase in the CNEL.

The liveaboards in the Al Larson Marina have been identified as the noise sensitive use with the greatest potential to be impacted by increases in Project-generated noise, but the marina is blocked from exterior shipyard activities and noise by Building B or C2. Further, the Project site is an existing shipyard within a working port, which is a high noise environment, and the increase in shipyard operations for the proposed Project would not result in a 3 dBA increase in the CNEL at the Al Larson Marina, Reservation Point, or San Pedro. Therefore, Project-generated increases in background noise levels at noise-sensitive receptors would be below a 3 dBA increase in ambient noise levels, and would result in a less than significant impact at any adjacent noise sensitive uses.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

3.9.4.4 Summary of Impact Determinations

Table 3.9-8 summarizes the impact determinations of the proposed Project related to Noise, as described in the detailed discussion in Section 3.9.4.3. Identified potential impacts are based on federal, state, and City of Los Angeles significance criteria, Port criteria, and the scientific judgment of the report preparers, as applicable.

Table 3.9-8: Summary of Potential Impacts and Mitigation Measures for Noise Associated with the Proposed Project

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
NOI-1: Construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use (i.e., Al Larson Marina).	Significant	**MM NOI-1:** Noise Reduction During Pile Driving **MM NOI-2:** Erect Noise Attenuation Barriers next to Pile Driving **MM NOI-3:** Temporary Noise Attenuation Barriers w/in 500 feet of sensitive receptors	Significant and unavoidable
NOI-2: Noise levels from construction activities would not exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.	No impact	No mitigation is required	No impact
NOI-3: Operations would not generate noise levels that exceed existing ambient noise levels at sensitive receivers by 3 dBA in CNEL to or within the 'normally unacceptable' or 'clearly unacceptable category,' or otherwise by 5 dBA or greater.	Less than significant	No mitigation is required	Less than significant

1

2

3.9.4.5 Mitigation Monitoring

The following mitigation monitoring program is applicable to the proposed Project:

Impact NOI-1: Construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use.	
Mitigation Measure	**MM NOI-1: Noise Reduction during Pile Driving.** Where feasible, the contractor shall be required to use a pile driving system, such as a Bruce hammer (with silencing kit), an IHC Hydrohammer SC series (with sound insulation system), or equivalent silenced hammer, which is capable of limiting maximum noise levels at 50 feet from the pile driver to 104 dBA, or less, for wharf construction.
Timing	During the bid process (i.e., as part of contract/construction specifications) and construction of the proposed Project.
Methodology	The construction contractor shall ensure, where feasible, that the proposed pile driving equipment and measures are used during construction. The LAHD shall evaluate the contractor proposals with regard to reducing pile-driving noise. The LAHD would subsequently perform periodic inspections to ensure that the approved equipment and methods are being used.
Responsible Parties	LAHD; ALBS
Residual Impacts	Significant and unavoidable
Mitigation Measure	**MM NOI-2: Erect Temporary Noise Attenuation Barriers Adjacent to Pile Driving Equipment, Where Necessary and Feasible.** Erect temporary noise attenuation barriers suitable for pile driving equipment where feasible and effective. The barriers should be installed directly between the equipment and the nearest noise sensitive use to the construction site. The need for and feasibility of noise attenuation barriers should be evaluated on a case-by-case basis considering the distance to noise sensitive receptors, the available space at the construction location, and taking account of safety and operational considerations.
Timing	During the bid process (i.e., as part of contract/construction specifications) and construction of the proposed Project.
Methodology	The contractor should install noise attenuation barriers, where feasible according to the above criteria in consultation with the LAHD and shall be monitored for compliance by the LAHD.
Responsible Parties	LAHD; ALBS
Residual Impacts	Significant and unavoidable
Mitigation Measure	**MM NOI-3: Temporary Noise Attenuation Barriers.** When construction is occurring within 500 feet of a residence, temporary noise barriers (solid fences or curtains) will be located between noise-generating construction activities and sensitive receivers. The following will reduce the impact of noise from construction activities: a) Idling Prohibitions. Unnecessary idling of internal combustion engines near noise-sensitive areas will be prohibited. b) Equipment Location. All stationary noise-generating construction equipment, such as air compressors and portable power generators, will be located as far as practical from existing noise-sensitive land uses. c) Quiet Equipment Selection. All internal combustion powered equipment shall be equipped with properly operating mufflers and kept in tune to avoid backfires. In

	addition, if exposed, engines are to be fitted with protective shrouds to reduce motor noise. Comply where feasible with noise limits established in the City of Los Angeles Noise Ordinance. d) Notification. Sensitive receptors including residences within 500 feet of the Project site will be notified of the construction schedule in writing prior to the beginning of construction.
Timing	During the bid process (i.e., as part of contract/construction specifications) and construction of the proposed Project.
Methodology	The contractor should install noise attenuation barriers, where feasible according to the above criteria in consultation with the LAHD and shall be monitored for compliance by the LAHD.
Responsible Parties	LAHD; ALBS
Residual Impacts	Significant and unavoidable

3.9.5 Significant Unavoidable Impacts

Mitigation measures are not expected to reduce residual construction impacts due to pile driving activities of to less than significant and are therefore considered to be significant and unavoidable. While noise attenuation measures may be applicable and are likely to reduce sound levels, operational constraints and uncertainties as to the effectiveness of available measures or the availability of equipment with lower noise emissions may limit the effectiveness of mitigation such that impacts cannot be reduced to less than significant levels. In addition, even with noise attenuation devices, the noise of pile driving may be perceived as intrusive or annoying by some individuals. Therefore, residual impacts of pile driving during construction are considered significant and unavoidable. However, given the limited duration of construction activities, the impact would be short-term and there would be no long-term residual impact.

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