4.9 NOISE

This section presents the fundamentals of environmental noise, describes regulatory criteria that would be applicable in the project's assessment, and summarizes the results of a noise monitoring survey made in the project area, including potential noise-related project and cumulative impacts. Discussion in this section is based on a technical report prepared for the project, which is included as **Appendix G**.

4.9.1 ENVIRONMENTAL SETTING

Fundamentals of Environmental Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. This section utilizes several technical terms to describe existing and potential future noise in the project area. These terms are presented in **Table 4.9-1** below.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels for common noise sources are shown in **Table 4.9-2**.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources, which create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01}, L_{10}, L_{50}, and L_{90}, are commonly used. They are the A-weighted noise levels equaled or exceeded during 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period. A single number descriptor called the Leq is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. Most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, L_{dn} (day/night average sound level), was developed. The L_{dn} (or DNL) divides the

24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level.

Table 4.9-1. Definitions of Acoustical Terms Used in this Report

Term	Definitions
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.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 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). 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 sound 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, Leq	The average A-weighted noise level during the measurement period. The hourly Leq used for this report is denoted as dBA Leq[h].
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, Ldn or DNL	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 pm and 7:00 am.
Ln Values L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% 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, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Illingworth & Rodkin, 2009

Table 4.9-2. Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 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	
Most quiet remote areas	10 dBA	
Threshold of human hearing	0 dBA	Threshold of human hearing

Source: Illingworth & Rodkin, 2009

Existing Noise Environment

The project site is centered on West Broadway Avenue between Del Monte Boulevard and Fremont Boulevard. Land uses in the vicinity of the project site include residential, commercial, light industrial, office, and institutional. State Route 1 (SR 1) lies to the west of the project site and is the main transportation corridor for the region. Major arterial streets that serve the project vicinity include Canyon Del Rey Boulevard, Del Monte Boulevard, West Broadway Avenue, and Fremont Boulevard. The noise environment in the project vicinity results primarily from local traffic noise generated along these arterial streets and distant traffic noise from SR 1.

A noise monitoring survey was conducted from June 5-6, 2008 quantify the existing noise environment in and near the project area.[1] The survey included four long-term noise measurements (LT-1 through LT-4), and five short-term measurements (ST-1 through ST-5) as indicated on **Figure 4.9-1**. A summary of the long-term noise measurements is discussed below. Detailed daily trends in noise levels for these long-term noise measurements are included in the *Environmental Noise Assessment* report (see **Appendix G**). **Table 4.9-3** summarizes the results of the short-term noise measurements.

Noise measurement location LT-1 was approximately 120 feet from the center of Fremont Boulevard. This noise measurement location represented the noise environment resulting from traffic along Fremont Boulevard and West Broadway Avenue. Hourly average noise levels typically ranged from 63 to 68 dBA L_{eq} during the day, and from 53 to 62 dBA L_{eq} at night. The Community Noise Equivalent Level (CNEL) at this measurement location was 67 dBA CNEL.

Long-term noise measurement LT-2 documented existing ambient noise levels along West Broadway Avenue between Alhambra Street and Calaveras Street. This noise measurement location represented the noise environment resulting from traffic along West Broadway Avenue. Hourly average noise level typically ranged from 65 to 72 dBA L_{eq} during the day, and from 55 to 65 dBA L_{eq} at night. The CNEL at this measurement location was 70 dBA CNEL.

Noise measurement location LT-3 was approximately 25 feet from the center of Del Monte Boulevard. This noise measurement location represented the noise environment resulting from traffic along Del Monte Boulevard. Hourly average noise levels typically ranged from 68 to 74 dBA L_{eq} during the day and from 59 to 70 dBA L_{eq} at night. The CNEL at this measurement location was 75 dBA CNEL.

Long-term noise measurement LT-4 was approximately 50 feet from the center of Canyon Del Rey Boulevard. This noise measurement location represented the noise environment resulting from traffic along Canyon Del Rey Boulevard. Hourly average noise levels typically ranged from 66 to 70 dBA L_{eq} during the day and from 57 to 68 dBA L_{eq} at night. The CNEL at this measurement location was 71 dBA CNEL.

1 On the days noise monitoring was conducted, the Monterey Peninsula Airport was in use; regular flights were arriving and departing.

Short-term (ten-minute) noise measurements were made at five additional locations within the project area to complete the noise monitoring survey. Short-term noise measurement ST-1 was made approximately 18 feet from the center of Trinity Avenue. The average noise level during this time period was 55 dBA L_{eq}. Short-term noise measurement ST-2 was conducted at a distance of approximately 250 feet from the center of Del Monte Boulevard. The average noise level during this time period was 60 dBA L_{eq}. Short-term noise measurement ST-3 was conducted at a distance of 21 feet from the center of Elm Avenue. The average noise level during this time period was 55 dBA L_{eq}. Short-term noise measurement ST-4 was conducted approximately 20 feet from the center of Olympia Avenue adjacent to the City of Seaside's Department of Public Works facility. The average noise level during this time period was 56 dBA L_{eq}. Short-term noise measurement LT-5 was made approximately 40 feet from the Auto Mall property line behind commercial uses that front West Broadway Avenue. The average noise level during this time period was 56 dBA L_{eq}.

Table 4.9-3. Summary of Short-Term Noise Measurement Data

Noise Measurement Location	L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}	L_{dn}
ST-1: 18 feet from the center of Trinity Avenue. (6/6/2008, 10:20-10:30 a.m.)	66	62	57	54	52	55	57
ST-2: 250 feet from the center of Del Monte Boulevard. (6/6/2008, 10:40-10:50 a.m.)	68	65	62	60	58	60	62
ST-3: 21 feet from the center of Elm Avenue. (6/6/2008, 11:00-11:10 a.m.)	71	63	58	53	52	55	56
ST-4: 20 feet from the center of Olympia Avenue. (6/6/2008, 11:20-11:30 a.m.)	69	67	58	54	52	56	56
ST-5: 40 feet from the Auto Mall property line. (6/6/2008, 11:40-11:50 a.m.)	69	64	58	55	54	56	59

Note: Ldn approximated by correlating to corresponding period at long-term site.
Source: Illingworth & Rodkin, 2009

4.9.2 Regulatory Setting

The proposed project would be subject to noise-related regulations, plans, and policies established within documents prepared by the State of California and the City of Seaside. These planning documents are implemented during the environmental review process to limit noise exposure at existing and proposed noise sensitive land uses. Applicable planning documents include: (1) the 2007 California Building Code, (2) the Noise Element of the Seaside General Plan, and (3) the City of Seaside Municipal Code. Regulations, plans, and policies presented within these documents form the basis of the significance criteria used to assess project impacts.

2007 California Building Code, Title 24

Multi-family housing in the State of California is subject to the environmental noise limits set forth in the 2007 California Building Code (Chapter 12, Appendix Section 1207.11.2). The noise limit is a maximum interior noise level of 45 dBA L_{dn}/CNEL.

Generally, interior noise levels for standard residential units are approximately 15 decibels lower than exterior noise levels with the windows partially open Due to this, the California Building Code requires that when exterior noise levels exceed 60 dBA L_{dn}/CNEL, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the project to meet the interior noise level limit.

Seaside General Plan

The Noise Element of the Seaside General Plan addresses noise sources in the community and identifies ways to reduce noise impacts. The Noise Element contains policies and programs to achieve and maintain noise levels compatible with various types of land uses. The Noise Element identifies noise sensitive land uses and estimates future noise generation with the intent of reducing impacts to sensitive areas. The Noise Element includes the following applicable goals, policies and implementation plans.

Goal N-1: *Provide consistent and effective noise control through proper land use planning.*

Policy N-1.1: *Ensure that new development and reuse/revitalization projects can be made compatible with the noise environment and existing development.*

Implementation Plan N-1.1.1: Compatible Development

Any proposed development located within an existing 60 dB or higher noise contour shall be reviewed for potential noise impacts and compliance with the noise and land use compatibility standards. The thresholds established in the Zoning Ordinance, Noise Ordinance, the Noise Contours Map, and Tables N-1 and N-2 of the General Plan will be used to determine the significance of impacts.

If potential impacts are identified, mitigation in the form of noise reduction designs/structures will be required to reduce the impact to a level less than significant. If the impact cannot be reduced to a level less than significant or avoided with accepted noise reduction methods, the proposed project will be determined "Clearly Unacceptable" and will not be approved.

Goal N-2: *Minimize transportation-related noise impacts.*

Policy N-2.1: *Reduce noise impacts associated with motorized vehicles, aircraft, and trains.*

***Goal N-3**:* *Minimize non transportation related noise impacts.*

Policy N-3.1: *Reduce the impacts of noise producing land uses, activities, and businesses on noise-sensitive land uses.*

Implementation Plan N-3.1.1: Enforcement of Non-Transportation Noise Standards

Enforce the noise limits and construction and operation regulations contained in the Noise Element and in the City's Municipal Code.

Implementation Plan N-3.1.2: Hours of Operation Limits

Limit delivery or service hours for stores and businesses with loading areas, docks, or trash bins that front, side, border, or gain access on driveways next to residential and other noise sensitive areas. Promptly investigate noise complaints and abate any noise impacts associated with commercial activities. Only approve exceptions to noise limits if full compliance with the nighttime limits of the noise regulations is achieved.

Implementation Plan N-3.1.3: Construction Noise Limits

Require all construction activity to comply with the limits (maximum noise levels, hours and days allowed activity) established in the City noise regulations (Title 24 California Code of Regulations, Zoning Ordinance and Chapter 21A of the Municipal Code).

Table 4.9-4. Interior and Exterior Noise Standards

Land Use	Noise Standards (dBA)	
	Exterior	Interior
Residential	65	45
Mixed Use Residential	70	45
Commercial	70	--
Office	70	50
Industrial	75	55
Public Facilities	70	50
Schools	50	50

Note: Noise Standards are in Community Noise Level Equivalent (CNEL)
Source: Table N-1, Seaside General Plan, 2004

Table 4.9-5. Noise/Land Use Compatibility Matrix – Noise Contours and Noise Impact Areas

Land Use Category	Community Noise Equivalent Level CNEL, dB						
	55		60	65	70	75	80
Residential – Single Family, Multifamily, Duplex	A	A	B	B	C	---	---
Residential – Mobile Homes	A	A	B	C	C	---	---
Transient Lodging – Motels, Hotels	A	A	B	B	C	C	---
Schools, Libraries, Churches, Hospitals, Nursing Homes	A	A	B	C	C	---	---
Auditoriums, Concert Halls, Amphitheaters, Meeting Halls	B	B	C	C	---	---	---
Sports Arenas, Outdoor Spectator Sports, Amusement Parks	A	A	A	B	B	---	---
Playgrounds, Neighborhood Parks	A	A	A	B	C	---	---
Golf Courses, Riding Stables, Cemeteries	A	A	A	A	B	C	C
Office and Professional Buildings	A	A	A	B	B	C	---
Commercial Retail, Banks, Restaurants, Theaters	A	A	A	A	B	B	C
Industrial, Manufacturing, Utilities, Wholesale, Service Stations	A	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A	A

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

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

C = Normally Unacceptable – New construction or development should generally be discouraged. If it 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 should generally not be undertaken.

Note: Information taken in part from Aircraft Noise Impact Planning Guidelines for Local Agencies, US Department of Housing and Urban Development, TE/NA-472, November 1972.

Source: Table N-2, Seaside General Plan, 2004

City of Seaside Municipal Code

The City's noise regulations are contained in Chapter 9.12 and 17.30 of the Seaside Municipal Code. Chapter 9.12, Noise Regulations does not establish quantitative noise limits; rather it contains a series of specific prohibitions and exemptions. The ordinance seeks to control noise by setting forth time periods when activities are allowed or prohibited. For example, excessive unnecessary or unusually loud construction noise activity before 7:00 AM or after 7:00 PM daily (except Saturday, Sunday and holidays when the hours are before 9:00 AM and after 7:00 PM) is prohibited. Section 17.30.60, Noise Standards, sets quantitative exterior and interior noise limits for various land uses and establishes normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise level categories for various land uses.

The noise standards listed in Section 7.30.60 of the Municipal Code are the same as those established Seaside General Plan Noise Element, shown in **Tables 4.9-4** and **4.9-5**.

Vibration

The City has not identified quantifiable vibration limits that can be used to evaluate the compatibility of land uses with respect to vibration levels generated by railroad trains. Although there area no local standards that control the allowable vibration in new residential development, the U.S. Department of Transportation has developed vibration impact assessment criteria for evaluating vibration impacts associated with transit projects.[2] The Federal Transit Administration (FTA) has proposed vibration impact criteria, based on maximum overall levels for a single event. The impact criteria for groundborne vibration are shown in **Table 4.9-6**. Note that there are criteria for frequent events (more than 70 events of the same source per day), occasional events (30 to 70 vibration events of the same source per day), and infrequent events (less than 30 vibration events of the same source per day).

Table 4.9-6. Groundborne Vibration Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1 Buildings where vibration would interfere with interior operations	65 VdB[4]	65 VdB[4]	65 VdB[4]
Category 2 Residencies and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3 Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB

[1] "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

[2] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

[3] "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research should always require detailed evaluation to define the acceptable vibration levels. Ensuring low vibration levels in a building requires special design of HVAC systems and stiffened floors.

Source: Illingworth & Rodkin, 2009; U.S. Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006, FTA-VA-90-1003-06.

[2] U.S. Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Impact Assessment May 2006, FTA-VA-90-1003-06.

Project Consistency

Relevant zoning ordinances and state regulatory requirements will be implemented for the project at the time of preliminary development plans and tentative map applications. The noise environment in many portions of the project area currently exceed the City's noise level goal for exterior noise in residential areas(65 dBA CNEL) as a result of existing vehicular traffic noise sources in the project vicinity.

For the multi-family residential development that would be permitted as part of the Specific Plan, compliance with Title 24 is a matter of law and the project would be required to maintain consistency. Multi-family development projects within the Specific Plan area would be required to comply with the building code to ensure that interior noise level would remain below 45 dBA.

Where Title 24 does not apply, such as for the mixed-use areas, mitigation measures identified in Section 4.9.3, such as implementing building construction techniques and noise control measures, would ensure acceptable indoor and outdoor noise levels and will avoid, minimize, or reduce potential impacts to noise sensitive land uses, thus representing project consistency with the Noise Element of the City's General Plan and Chapter 9.12 and Section 17.30.60 of the City's Municipal Code.

4.9.3 Environmental Impacts and Mitigation Measures

Methodology

Future noise conditions in the project area were estimated using the existing noise survey results, predicted traffic volume information[3], and by assuming typical noise levels generated by the land uses included in the Specific Plan.

Significance Criteria

Appendix G of the *CEQA Guidelines* identifies issues to be considered when determining whether a project could have significant noise or vibration effects. The project would have a potentially significant noise or vibration impact if it would:

a) Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

> *A significant noise impact would be identified where noise-sensitive land uses are proposed in exterior noise environments exceeding 65 dBA CNEL. Interior noise levels within residential land uses in excess of 45 dBA CNEL would also result in a significant noise impact.*

3 West Broadway Urban Village Specific Plan Draft Transportation Impact Study, Fehr and Peers, November 2008.

b) Expose people to or generate excessive groundborne vibration or groundborne noise levels;

A significant vibration impact would be identified where vibration levels would exceed the standards set forth by the FTA.

c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels 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, expose people residing or working in the project area to excessive noise levels; or

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

Issues Not Discussed Further

Project-Generated Traffic Noise

Anticipated project traffic volume information[4] was reviewed at several selected intersections in and around the project area. Traffic volumes under the "existing", "background", and "background plus project" scenarios were compared to calculate the relative increase in traffic noise attributable to the proposed project. A noise impact would be identified at noise-sensitive land uses where the traffic would result in a noise level increase of 3 dBA CNEL or more.

The comparison of background and background plus project traffic volumes indicates that the project would not substantially increase traffic noise levels at noise sensitive land uses in the project vicinity.[5] The project would increase traffic noise levels by less than 1 dBA CNEL, which would not be perceptible to the human ear.

Although project-generated traffic noise would not substantially increase, noise levels at some of the proposed sensitive land uses in the project area would exceed standards established in the Seaside General Plan, and are further discussed under Impact 4.9-1.

Exposure to Excessive Noise Levels from a Public or Private Airport

Although the project is located approximately 1-mile north of the Monterey Peninsula Airport, noise levels from the airport are not considered to be excessive in the project area (as discussed

4 West Broadway Urban Village Specific Plan Draft Transportation Impact Study, Fehr and Peers, November 2008.

5 See Table 5 in Appendix G for the calculations of increases in noise levels resulting from project traffic.

previously under "Existing Noise Environment"). Implementation of the project would not expose people residing or working in the project area to excessive noise levels from aircraft flight patterns. Therefore, there would be no impacts resulting from noise from this source.

Project Impacts

Impact 4.9-1: Noise sensitive land uses developed within the project area would be exposed to exterior noise levels greater than 65 dBA CNEL. (Significant)

The noise environment in many portions of the project area currently exceed the City's noise level goal for exterior noise (65 dBA CNEL) as a result of existing vehicular traffic noise sources in the project vicinity (e.g., Canyon Del Rey Boulevard, Del Monte Boulevard, Fremont Boulevard, and West Broadway Avenue). As the project proposes mixed use (i.e. residential and commercial) developments throughout the project area, the project has the potential to result in more noise sensitive land uses (primarily residential) in areas where ambient noise levels already exceed 65 dBA CNEL. However, it should be noted that residential land uses proposed along Palm Avenue and Imperial Street are not anticipated to be exposed to noise levels greater than 65 dBA CNEL.[6]

Commercial land uses proposed by the project could also generate noise levels in excess of the Seaside General Plan noise standards or the noise standards presented in the Municipal Code. Noise sources at these commercial uses could include loading docks, outdoor mechanical equipment (e.g., heating and cooling equipment, etc.), and parking lots. Restaurants, bars, and other entertainment-oriented uses could also generate noise from music and patrons.

Noise associated with the use of parking lots would include vehicle circulation, loud engines, car alarms, squealing tires, door slams, and human voices. The maximum sound (L_{max}) of a passing car at 15 mph typically ranges from 43 dBA to 53 dBA at 150 feet. The noise generated during an engine start is similar. Door slams create lower noise levels. Hourly average noise levels resulting from all of these noise-generating activities in a busy parking lot could range from 35 dBA to 45 dBA L_{eq} at a distance of 150 feet from the parking area.

Heating, ventilation, and cooling equipment could generate noise levels in the range of 50 dBA to 70 dBA L_{eq} at 150 feet depending on the number, type, and size of the proposed equipment. Trash compactors typically generate maximum noise levels of 40 to 50 dBA at 150 feet, depending on the power rating and enclosure characteristics.

Neighborhood parks are also sources of community noise. Noise generated by a particular park is a function of the amenities provided, groups which use the facilities, and the timing and duration of use. The linear park and pedestrian plazas/courtyards proposed by the project would be considered passive park areas, and would not provide large playing fields and/or

6. Noise levels along these lightly traveled residential corridors were not measured specifically but are expected to be similar to those observed along Trinity Avenue, Elm Avenue, and Olympia Avenue, which were surveyed and are not anticipated to exceed 65 dBA CNEL at the exterior common outdoor use areas.

playgrounds where noise levels tend to be higher. Noise from the project's linear park and pedestrian facilities is not anticipated to cause any adverse noise impacts upon either existing or future noise sensitive receptors in the area.

The following mitigation measures shall be included in the design of the project to provide an acceptable exterior noise environment for existing and proposed noise-sensitive uses:

Mitigation Measure 4.9-1a: The location of common outdoor use areas for individual residential buildings is not known at this time. Prior to the issuance of building permits within the project area, the City Resource Management Services Department shall continue to locate noise sensitive outdoor use areas outside of the 65 dBA CNEL noise contours provided above or in acoustically shielded areas. Residential structures will be expected to provide approximately 10 dBA of noise reduction in common outdoor use areas.

Private outdoor balconies or patios may be included in mixed-use residential projects throughout the Specific Plan area and may front major roadways. Although these outdoor use areas may be subjected to noise levels in excess of 65 dBA CNEL, they are not typically held to the noise standard because they are used infrequently, mitigation is often infeasible (i.e., enclosing a balcony in sound proof material no longer makes it an outdoor area), there are aesthetic considerations with creating soundproof barriers around these spaces, and the fact that common outdoor areas that meet noise standards are normally provided.

Mitigation Measure 4.9-1b: Prior to the issuance of building and occupancy permits, the City Resource Management Services Department shall require project level acoustical analyses where residential exterior use areas are proposed to be located in noise environments exceeding 65 dBA CNEL, and/or where residential land uses are immediately adjacent to active parks or commercial land uses. These analyses will identify project-specific mitigation in the form of site design. Mitigation may include but is not limited to the following site design measures: design of the site so that the proposed buildings acoustically shield outdoor use areas, construction of noise barriers to block noise from sensitive receptors, or extension building setbacks from noise sources. Exterior noise levels at residential land uses in the vicinity shall be maintained in accordance with the standards presented in the Seaside General Plan and Section 17.30.60 of the City of Seaside Municipal Code and the City Resource Management Services Department.

Mitigation Measure 4.9-1c: On-going through project operation, the City Resource Management Services Department shall ensure that parking lot cleaning activities in commercial areas are limited to daytime and evening hours (7 AM. to 10 PM.).

Mitigation Measure 4.9-1d: Noise impacts from trash compactors and the corresponding mitigation measures will vary depending on the type of unit selected, distance from sensitive receptors, the type of shielding provided, and the frequency and time of use. The City Resource Management Services Department shall ensure that trash compactors in commercial areas are located away from adjacent residential receivers or shielded with noise barriers. If determined necessary by the City Resource Management Services Department, project applicants shall present report(s) prepared by a qualified noise consultant to evaluate potential impacts and

recommend mitigation measures, which the City Resource Management Services Division would incorporate as conditions of project approval.

Mitigation Measure 4.9-1e: On-going through project operation, the City Resource Management Services Department shall ensure that any loading docks have hours of operation limited to daytime and early evening hours (7 AM to 10 PM).

Significance After Mitigation: Less than Significant.

Impact 4.9-2: Interior noise levels would be expected to exceed 45 dBA CNEL at portions of the project site that are exposed to exterior noise levels greater than 60 dBA CNEL. (Significant)

As required by the California Building Code, Seaside General Plan, and Section 17.30.60 of the City of Seaside Municipal Code, interior noise levels within proposed residential units are required to be maintained at or below 45 dBA CNEL. In residential units of standard construction, interior noise levels are approximately 15 decibels lower than exterior noise levels with the windows partially open. Because many of the exterior noise levels surrounding the residential land uses are anticipated to be above 60 dBA CNEL, the interior noise levels at these same locations are likely to exceed 45 dBA CNEL. The California Building Code and the City of Seaside require project-specific acoustical analyses to ensure the achievement of interior noise levels of 45 dBA CNEL or lower in residential units that are exposed to exterior noise levels greater than 60 dBA CNEL.

Mitigation Measure 4.9-2a: Prior to the issuance of building and occupancy permits, the City Resource Management Services Department shall ensure that building sound insulation includes the provision of forced-air mechanical ventilation where exterior noise environments exceed 60 dBA CNEL, so that windows can be kept closed at the occupant's discretion to control noise. Typically, standard construction with forced air ventilation (allowing enough ventilation in the building so that the occupant to control noise by maintaining the windows shut) provides approximately 20 to 25 dBA of noise reduction in interior spaces, which would likely reduce interior noise levels below 45 dBA CNEL.

Mitigation Measure 4.9-2b: During the project design phase and prior to the issuance of a building permit, the City Resource Management Services Department shall require that project applicants include special building construction techniques (e.g., sound-rated windows and building facade treatments) where exterior noise levels exceed 60 dBA CNEL. These treatments include, but are not limited to sound rated windows and doors, sound rated exterior wall assemblies, acoustical caulking, etc. The specific determination of what treatments are necessary shall be conducted on a unit-by-unit basis by a qualified noise consultant during project design. Results of the analysis, including the description of the necessary noise control treatments, shall be submitted to the City Resource Management Services Department along with the building plans and approved prior to issuance of a building permit. Construction techniques such as these would adequately reduce interior noise levels to 45 dBA CNEL or lower.

Significance After Mitigation: Less than Significant.

Impact 4.9-3: Noise associated with a multi-modal transit station could produce noise levels in excess of 65 dBA CNEL at nearby noise sensitive receptors. (Significant)

The project designates a site for the potential future construction of a multi-modal transit station at the intersection of Del Monte Boulevard and Contra Costa Street. Possible services include bus rapid transit (BRT) and light rail transit (LRT). Project specific details are not available at this time. It is possible that residential land uses could be located near the transit station, and further project level analysis could be necessary to identify any possible noise impacts to noise-sensitive receptors.

Mitigation Measure 4.9-3: Implementation of **Mitigations 4.9-1a through 4.9-1e**, **4.9-2a,** and **4.9-2b** would reduce potential noise impacts from a transit station located within the project area to a less than significant level. To the extent residential or other noise sensitive land uses are proposed in proximity to the transit station, the City Resource Management Services Department shall require additional project-level environmental review in the form of an EIR or mitigated negative declaration, including a noise analysis.

Significance After Mitigation: The incorporation of feasible mitigation and/or avoidance measures from subsequent environmental studies would be considered to mitigate potential noise impacts at the programmatic level to less than significant level.

Impact 4.9-4: Future development in the project area may result in the location of additional sensitive receptors in close proximity to the rapid transit line. The sensitive receptors could experience groundborne vibration levels in excess of FTA standards. (Significant)

The proposed "transit hub" component of the project could serve as a stop along a light rail or bus-rapid-transit line, depending ultimately on what the regional transit agency elects to construct. Light-rail rapid transit lines are a source of groundborne vibration when receivers are located close to the tracks. This vibration could impact existing residential development in the vicinity of the proposed transit line and/or any future development that might be constructed in the project area in accordance with the Specific Plan.

Future groundborne vibration levels are difficult to predict because of the variables involved (i.e., size, type, and speed of trains, geologic conditions, and building construction methods and materials). Typical groundborne vibration levels from rapid transit systems range from approximately 70 VdB to 80 VdB at 50 feet from the source. Building setbacks ranging from 75 to 100 feet from the center of the rapid transit line would typically be sufficient to ensure a compatible residential development with respect to future groundborne vibration levels anticipated as a result of rapid transit trains traveling along the line.

The development of a new fixed rail transit line would be subject to NEPA review by the Federal Transit Administration (FTA). FTA NEPA implementation guidelines require an assessment of

vibration impacts in proximity to new fixed transit facilities. Any proposal to develop a rail line here would be expected to be accompanied by a vibration study, which would include recommendations to avoid, minimize, or reduce vibration impacts for existing sensitive receptors. These recommendations may include but are not limited to property acquisition, building insulation, foundation improvements, trenching, or other methods to reduce vibration impacts on existing sensitive receptors.

Mitigation Measure 4.9-4: Along the corridor proposed for a potential fixed transit line, the City Resource Management Services Department shall require that any development proposals include preparation of a vibration impact study prepared by a qualified vibration consultant. This study shall recommend appropriate mitigation measures to ensure that railroad train vibration levels are at levels acceptable to the FTA in any new residential construction. Mitigation measures to accomplish this may include but are not limited to increased setbacks, trenching, building insulation, and/or foundation improvements.

Significance After Mitigation: At the programmatic level, the requirement to conduct vibration studies and incorporate feasible mitigation measures into subsequent development proposals would reduce potential vibration impacts to a less than significant level.

Impact 4.9-5: The project area is bordered by existing residential land uses to the south and east. Noise generated by construction in the project area would substantially increase noise levels at these existing residential land uses. (Significant)

Future construction within the project area would temporarily increase noise levels at adjacent land uses. Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive receptors. Where noise from construction activities exceeds 60 dBA Leq and exceeds the ambient noise environment by at least 5 dBA at noise-sensitive uses in the project vicinity for a period of more than one construction season, the impact would be considered significant.

Construction activities generate considerable amounts of noise, especially during the demolition phase and the construction of project infrastructure when heavy equipment is used. **Table 4.9-7** depicts the range of noise levels generated by specific pieces of construction equipment at a distance of 50 feet. **Table 4.9-8** presents typical ranges in hourly average noise levels generated during different phases of construction. Typical hourly average construction generated noise levels are about 81 dBA to 88 dBA measured at a distance of 50 feet from the center of the site during busy construction periods (e.g., earth moving equipment, impact tools, etc.). Construction generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor.

Table 4.9-7. Construction Equipment 50-foot Noise Emission Limits

Equipment Category	Lmax Level (dBA)[1,2]	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous

Equipment Category	Lmax Level (dBA)[1,2]	Impact/Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

[1] Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

[2] Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

[3] Portable air compressor rated at 75 cfm or greater and that operated at greater than 50 psi.

Source: Illingworth & Rodkin, 2009

Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, weekend, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time. Limiting the hours when construction can occur to daytime hours is often a simple method to reduce the potential for noise impacts. In areas immediately adjacent to construction, controls such as constructing temporary noise barriers and utilizing "quiet" construction equipment can also reduce the potential for noise impacts.

Construction of the project would be built out over more than one construction season, and some construction methods generate higher noise levels and noise that would be considered impulsive. Construction noise levels are anticipated to exceed 60 dBA Leq and the ambient by 5 dBA or more over extended periods of time. It is conceivable that a particular receiver or group of receivers would be subject to construction noise levels in excess of 60 dBA Leq and the ambient by 5 dBA for durations exceeding one construction season.

Table 4.9-8. Typical Ranges of Energy Equivalent Noise Levels at 50 Feet

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I = All pertinent equipment present at the site.

II = Minimum required equipment present at the site.

Source: Illingworth & Rodkin, 2009; US EPA, Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Mitigation Measure 4.9-5: Prior to the issuance of grading, demolition, and/or building permits within the project area, as well as on-going through project construction, the City Resource Management Services Department shall ensure that project applicants and/or construction teams adhere to the following construction noise control measures:

- Restrict noise-generating activities at the construction site or in areas adjacent to the construction site to the hours of 7:00 AM to 7:00 PM daily (except Saturday, Sunday and holidays when work is prohibited prior to 9:00 AM and after 7:00 PM).

- Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Unnecessary idling of internal combustion engines is strictly prohibited.

- Locate stationary noise generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise generating equipment when located near adjoining sensitive land uses. Temporary noise barriers could reduce construction noise levels by 5 dBA. An adequate temporary noise barrier would interrupt the line of sight from the receiver to the construction activities and be solid over the face and at the base of the barrier.

- Utilize "quiet" air compressors and other stationary noise sources where technology exists.[7]

- Route all construction traffic to and from the project site via designated truck routes where possible. Prohibit construction related heavy truck traffic in residential areas where feasible.

- Control noise from construction workers' radios to a point that they are not audible at existing residences bordering the project site.

- The contractor shall prepare and submit to the City Resource Management Services Department for approval a detailed construction plan identifying the schedule for major noise-generating construction activities.

- The applicant(s) shall designate a "disturbance coordinator," who will be approved by the City Resource Management Services Department, and will be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. The applicants shall conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Significance After Mitigation: Less than Significant.

Cumulative Impacts

The area for cumulative impacts analysis for noise is the project area and the City of Seaside. The methodology used for evaluating cumulative impacts related to noise utilizes the 2004 Seaside General Plan and General Plan EIR. The General Plan EIR concluded that implementation of the General Plan (ie, an increased level of development and associated traffic) may result in an unavoidable, significant, cumulative noise impact. The General Plan EIR acknowledged that significant noise levels already occur along regional transportation corridors and that existing development along such corridors and in other locations is already impacts by vehicular noise and would continue to experience such impacts with or without implementation of the General Plan. Cumulative noise impacts would remain significant.

Traffic volumes along roadways serving the project area will increase as a result of cumulative growth anticipated in the City, which will directly increase traffic noise levels inside and outside of the project area. The noise analysis for the project sought to more precisely quantify the project's potential contributions to cumulative noise levels to determine if the contributions

7 "Quiet" equipment normally generate noise levels that are 5-10 dBA less than similar equipment that are not considered to be "quiet".

would be cumulatively considerable. As shown in **Appendix G** (the project noise study) cumulative traffic noise level increases were calculated by comparing anticipated cumulative plus project traffic volumes to cumulative no project traffic volumes. This analysis concluded that the project's contribution to cumulative traffic noise level increases would be less than 1 dBA CNEL, which would not be cumulatively considerable.

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