4.0 ENVIRONMENTAL IMPACT ANALYSIS
F. NOISE

INTRODUCTION

This section of the EIR analyzes the project's potential to result in the following noise-related impacts: generation of noise levels in excess of established standards; generation of excessive groundborne vibration or groundborne noise; substantial temporary or periodic noise increases in the project area; and substantial permanent noise increases in the project area. The following issues related to noise were scoped out of the EIR in the project's Initial Study (IS): airport- and private airstrip-related noise impacts. Noise calculation and data sheets for the project are included in Appendix D of this EIR. A reference-list of entries for all cited materials is provided in Chapter 7, *Document Preparation and References*, of this EIR.

1. ENVIRONMENTAL SETTING

a. Noise and Vibration Basics

(1) Noise

Noise is usually defined as sound that is undesirable because it interferes with speech/communication and hearing, or is otherwise annoying (unwanted sound). The decibel (dB) is a conventional unit for measuring the amplitude of sound because it accounts for the large variations in sound pressure amplitude and reflects the way people perceive changes in sound amplitude.[1] The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human frequency-dependent response, the A-weighted system is used to adjust measured sound levels (dBA). The term "A-weighted" refers to a filtering of the noise signal in a manner corresponding to the way the human ear perceives sound.

People judge the relative magnitude of sound sensation by subjective terms such as "loudness" or "noisiness." A change in sound level of 3 dB is considered "just perceptible," a change in sound level of 5 dB is considered "clearly noticeable," and a change of 10 dB is recognized as "twice as loud."[2]

Community noise levels usually change continuously during the day. The equivalent sound level (Leq) is normally used to describe community noise. The Leq is the equivalent steady-state A-weighted sound level that would contain the same acoustical energy as the time-varying A-weighted sound level during the same time interval. For intermittent noise sources, the maximum noise level (Lmax) is normally used to represent the maximum noise level measured during the measurement.

To assess noise levels over a given 24-hour time period, the Community Noise Equivalent Level (CNEL) descriptor is used. CNEL is the time average of all A-weighted sound levels for a 24-hour period with a 10 dBA adjustment (upward) added to the sound levels which occur in the night (10 P.M. to 7 A.M.) and a 5 dBA adjustment (upward) added to the sound levels which occur in the evening (7 P.M. to 10 P.M.). These

[1] *All sound levels, measured in decibel (dB), in this study are relative to $2x10^{-5}$ N/m^2.*

[2] *Engineering Noise Control, Bies & Hansen, 1988.*

penalties attempt to account for increased human sensitivity to noise during the quieter nighttime periods, particularly where sleep is the most probable activity. CNEL has been adopted by the State of California for development of the community noise element of general plans.[3]

(2) Ground-Borne Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The response of humans, buildings, and equipment to vibration is more accurately described using velocity or acceleration.[4] Vibration amplitudes are usually described as either peak, as in peak particle velocity (PPV) or root-mean-square (RMS). The peak level represents the maximum instantaneous peak of the vibration signal and the RMS represents the average of the squared amplitude of the vibration signal. In addition, vibrations can be measured in the vertical, horizontal longitudinal, or horizontal transverse directions. Ground vibrations are most often greatest in the vertical direction.[5] Therefore, the analysis of ground-borne vibration associated with the proposed project is addressed in the vertical direction.

b. Regulatory Framework

Many government agencies have established noise regulations and policies to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise and ground-borne vibration. The City of Huntington Beach has adopted a number of policies, which are based in part on federal and State regulations and are intended to control, minimize or mitigate environmental noise effects. The regulations and policies that are relevant to project construction and operation noise are discussed below.

(1) State Regulations

(a) California Department of Health Services

The California Department of Health Services establishes noise criteria for various land uses. **Table 4.F-1**, *Land Use Compatibility for Community Noise Sources*, identifies the typically acceptable limits of noise exposure for various land use categories. As shown in Table 4.F-1, the noise exposure for a park land use is "normally acceptable" when the CNEL at exterior residential locations is equal to or below 70 dBA, "normally unacceptable" when the CNEL is between 70 to 75 dBA, and "clearly unacceptable" when the CNEL is greater than 75 dBA. In general, CNEL increases of less than 3 dBA are not considered an adverse change in the environment, while an increase of between 3 and 5 dBA is generally considered to be an adverse impact. An increase in CNEL of 5 dBA or more is generally considered a significant impact. These guidelines apply to noise sources such as vehicular traffic.

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[3] *State of California, General Plan Guidelines, 2002.*

[4] *Federal Transit Authority, Transit Noise and Vibration Impact Assessment, Final Report, page 7-3, April 1995.*

[5] *California Department of Transportation (Caltrans), Transportation Related Earthborne Vibrations, page 4, February 2002.*

Table 4.F-1

Land Use Compatibility for Community Noise Sources

Land Use Category	Noise Exposure (L_{dn} or CNEL, dBA)						
	55	*60*	*65*	*70*	*75*	*80*	
Residential Low Density Single Family, Duplex							
Residential Multiple Family							
Transient Lodging – Motel, Hotel							
School, Libraries, Places of Worship, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Outdoor Spectator Sports							
Playground, Parks, Neighborhood Park							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities							

	NORMALLY ACCEPTABLE: Specified land use is satisfactory. Based upon 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

Table 4.F-1 (Continued)

Land Use Compatibility for Community Noise Sources

	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 should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.

Source: Guidelines for the Preparation and content of the Noise Element of the General Plan, California Department of Health Services, in coordination with the office of Planning and Research.

(b) California Department of Transportation

The City of Huntington Beach currently does not have any specific policies or guidelines relative to ground-borne vibration. As such, the following is a summary of the California Department of Transportation (Caltrans)'s ground-borne vibration policies and guidelines. With respect to ground-borne vibration from construction activities, Caltrans has adopted guidelines/recommendations to limit ground-borne vibration based on the age and/or condition of the structures that are located in close proximity to construction activity. With respect to residential and commercial structures, Caltrans' technical publication, titled "Transportation- and Construction-Induced Vibration Guidance Manual" (June 2004), provides a vibration damage potential threshold criteria of 0.5 inches per second PPV for older residential structures, 1.0 inch-per-second PPV for newer residential structures, and 2.0 inches per second PPV for modern industrial/commercial buildings. Human perception would range from 0.02 to 0.1 inches per second PPV. The Caltrans' Transportation- and Construction-Induced Vibration Guidance Manual also provides human perception threshold of 0.01 inches per second PPV.

(2) Applicable City of Huntington Beach Regulations and Policies

The Noise Element of the City of Huntington Beach General Plan includes a number of goals, for land use planning purposes. The City also has policies and regulations to control unnecessary, excessive and annoying noise and vibration, as cited by the Huntington Beach Municipal Code (HBMC) Chapter 8.40 *Noise Control*. These regulations and plans are further described below.

(a) Noise Element

The overall purpose of the Noise Element of a General Plan is to protect citizens from the harmful and annoying effects of exposure to excessive noise. City of Huntington Beach Noise Element policies that relate to the proposed project include the following:[6]

- Goal N1- Ensure that all necessary and appropriate actions are taken to protect Huntington Beach residents, employees, visitors, and noise sensitive uses from the adverse impacts created by excessive noise levels from stationary and ambient sources.

[6] *Noise Element of the City of Huntington Beach General Plan, adopted 1996.*

- Objective N 1.2- Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise sensitive uses of Huntington Beach.
  - Policy N 1.2.1- Require, in areas where noise levels exceed an exterior L_{dn} of 60 dB(A) and an interior L_{dn} of 45dB(A), that all new development of "noise sensitive" land uses such as housing health care facilities, schools, libraries, and religious facilities, include appropriate buffering and/or construction mitigation measures that will reduce noise exposure to levels within acceptable limits.
  - Policy N.1.2.3- Require development, in all areas where the ambient noise level exceeds an L_{dn} of 60 dB(A), to conduct an acoustical analysis and incorporate special design measures in their construction, thereby, reducing interior noise levels to the 45dB(A) L_{dn} level.
  - Policy N 1.2.5—Require development that generates increased traffic and subsequent increase in the ambient noise levels adjacent to noise sensitive land uses to provide for appropriate mitigation measures in accordance with the acceptable limits of the City noise ordinance.
- Objective N 1.3- Minimize the adverse impacts of traffic-generated noise on residential and other "noise sensitive" uses.
  - Policy N 1.3.7- Provide for the development of alternative transportation modes such as bicycle paths and pedestrian walkways to minimize the number of noise generating automobile trips.
  - Policy N 1.3.10- Require that mechanical equipment, such as air conditioning units or pool equipment, comply with the City's Noise Ordinance and Zoning and Subdivision Ordinance
- Objective N 1.4- Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or "noise-sensitive" uses.
  - Policy N 1.4.2- Require that the loading and shipping facilities of commercial and industrial land uses abutting residential parcels to be located and designed to minimize the potential noise impacts upon residential parcels.
  - Policy N. 1.4.3- Require that the parking areas of all commercial and industrial land uses, which abut residential areas, to be buffered and shielded by walls, fences, or adequate landscaping.
  - Policy N.1.4.4- Require that the parking structures of commercial or industrial land uses be designed to minimize the potential noise impacts of vehicles on the site as well as on adjacent land uses.
- Objective N 1.5- Minimize the potentially adverse noise impacts associated with the development of mixed-use structures where residential units are located above or adjacent to commercial uses.
  - Policy N.1.5.1- Require that commercial and residential mixed-use structures minimize the transfer or transmission of noise and vibration from the commercial land use to the residential land use. The design measures may include: (1) the use of materials which mitigate sound transmission: or (2) the configuration of interior spaces to minimize sound amplification and transmission.

- Objective N 1.6- Minimize the impacts of construction noise on adjacent uses.
  - Policy N 1.6.1- Ensure that construction activities be regulated to establish hours of operation, to prevent and/or mitigate the generation of excessive or adverse noise impacts though the implementation of the existing Noise Ordinance and/or any future revisions to the Noise Ordinance.
- Objective N.1.7- Ensure that buildings are constructed to prevent adverse noise transmission between differing uses or tenants located in the same commercial structure and individual dwelling units in multi-family residential structures.
  - Policy N 1.7.1- Rigorously enforce the applicable provisions of the Uniform Building Code and City of Huntington Beach Municipal Code which prevent the transmission of excessive and unacceptable noise levels between individual tenants and businesses in commercial structures and between individual dwelling units in multi-family residential structures.

(b) City of Huntington Beach Noise Regulations

The City of Huntington Beach Noise Regulation is provided in Chapter 8.40 of the Huntington Beach Municipal Code (HBMC). Section 8.40.030 of the HBMC provides procedures for the measurement of the sound level of noise sources. The HBMC provides exterior/interior noise standards and specific noise restrictions, exemptions, variances for noise sources. **Table 4.F-2**, *City of Huntington Beach Exterior Noise Standards*, summarizes the City's exterior noise standards. Several of these requirements are applicable to the proposed project and are discussed below.

Table 4.F-2

City of Huntington Beach Exterior Noise Standards

Noise Zone	Daytime Hours (7 A.M. to 10 P.M.) dBA (Leq)	Nighttime Hours (10 P.M. to 7 A.M.) dBA (Leq)
1 All residential properties	55	50
2 All professional office and public institutional properties	55	55
3 All commercial properties with the exception of professional office properties	60	60
4 All industrial properties	70	70

Source: Huntington Beach Municipal Code, Chapter 8.40, Section 8.40.050.

(i) Section 8.40.050 – Exterior Noise Standards

a. As specified in Table 4.F-2, the following noise standards, unless otherwise specifically indicated, shall apply to all residential properties within a designated noise zone.

b. In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) db(A).

(ii) Section 8.40.060, Exterior Noise Levels Prohibited.

It shall be unlawful for any person at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured on any residential, public institutional, professional, commercial or industrial property, either within or without the City, to exceed the applicable noise standards:

a. For a cumulative period of more than thirty (30) minutes in any hour;

b. Plus 5 db(A) for a cumulative period of more than fifteen (15) minutes in any hour;

c. Plus 10 db(A) for a cumulative period of more than five (5) minutes in any hour;

d. Plus 15 db(A) for a cumulative period of more than one (1) minute in any hour; or

e. Plus 20 db(A) for any period of time.

In the event the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(iii) Section 8.40.090, Special Provisions

The following activities shall be exempt from the provisions of this chapter:

(b) Activities otherwise lawfully conducted in public parks, public playgrounds and public or private school grounds;

(d) Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City; and provided said activities do not take place between the hours of 8 P.M. and 7 A.M. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

Sections (a), (c), and (e) through (j) of the City code are not described here since they are not relevant to the project implementation.

(c) City of Westminster Noise Regulations

It should be noted that the uses to the north of the project site across McFadden Avenue are located within the City of Westminster. Per Section 8.28.030 of the Westminster Municipal Code (WMC), the uses to the north of the project site are located within "Noise Zone 1" per the City's noise standards. Exterior noise standards within Noise Zone 1, per Section 8.28.040 of the WMC, are less stringent than those of the City of Huntington Beach. Therefore, only the City of Huntington Beach's noise standards are utilized in this section.

c. Existing Conditions

(1) Noise-Sensitive Receptor Locations

Some land uses, such as residences, schools, motels and hotels, libraries, and hospitals, are considered more sensitive to intrusive noise than others due to the types of activities typically involved at the receptor location. There are residential uses located north and east of the project site. School uses are located west of the project site. Existing noise sensitive uses in the project vicinity are described below:

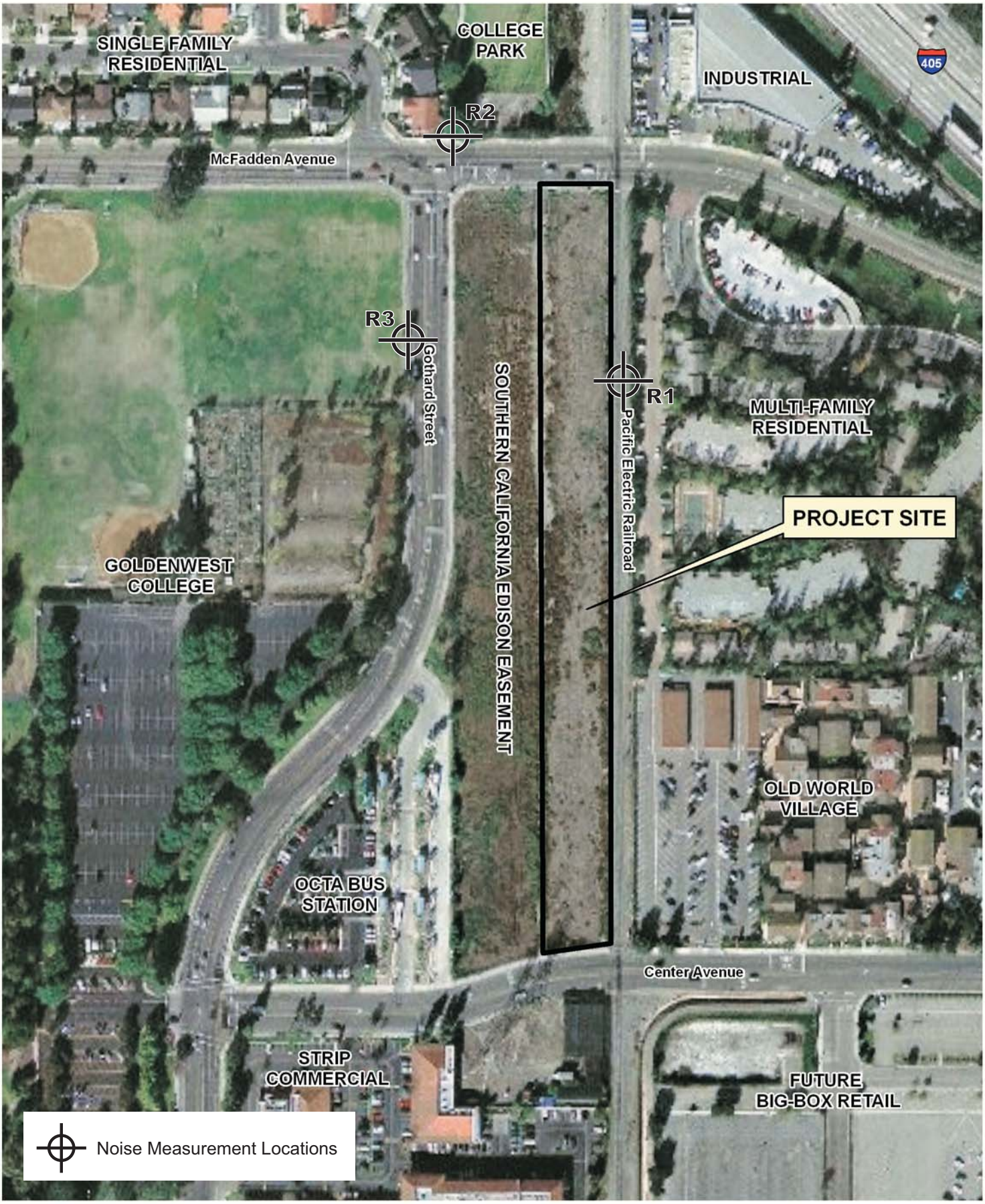
- Multi-family residential uses are located approximately 35 feet (at the property line) to the east of the project site.
- Single-family residential uses are located approximately 150 feet (at the property line) to the northwest of the project site.
- Golden West College is located approximately 200 feet (at the property line) west of the project site.

(2) Ambient Noise Levels

The existing noise environment at the proposed project site is comprised primarily of auto traffic on McFadden Avenue, Gothard Street, and Center Avenue. Other community noise sources include incidental noise from Golden West College, commercial/retail-related activities, such as loading dock/delivery truck activities, trash compaction, parking garage, and refuse services activities, ambulance and police sirens, aircraft over-flights, and landscaping maintenance at nearby residential and office uses. To quantify existing noise levels in the project area, long-term (72-hour) measurements were conducted at one location, identified as R1, and two short-term (15-minute) measurements were conducted at two other locations, identified as R2 and R3 in **Figure 4.F-1**, *Noise Measurement Locations*. The long-term ambient noise measurements were conducted from Thursday, May 12, through Sunday, May 15, 2011 as described below:

- Measurement Location R1: The noise measuring device (sound level meter) was placed on the eastern boundary of the project site. Location R1 represents the existing general noise environment at the property line of the nearest multi-family residential uses located approximately 35 feet east of the project site (at the residential property line), with the closest residential structure located approximately 80 feet east of the project site boundary.
- Measurement Location R2: The sound level meter was placed on the northwest corner of McFadden Avenue and Vermont Street near a single-family residential use. This measurement location represents the existing noise environment of the single-family residential uses along McFadden Avenue.
- Noise Sensitive Location R3: The sound level meter was placed along Gothard Street across the project site. This measurement location represents the existing noise environment of Golden West College.

Noise measurements were conducted using Larson-Davis 820 Precision Integrated Sound Level Meters (SLM). The Larson-Davis 820 SLM is a Type 1 standard instrument as defined in the American National Standard Institute (ANSI) S1.4. All instruments were calibrated and operated according to the applicable manufacturer specification. The recording microphones were placed at a height of 5 feet above the local grade elevation. The sound level meters were set up to collect the hourly average noise level, L_{eq}.



PCR

N

0 200 Feet

Noise Measurement Locations

Center Avenue Skate Park Project
Source: PCR Services Corporation, 2011.

FIGURE
4.F-1

Table 4.F-3, *Summary of Ambient Noise Measurements,* presents the existing noise levels in the vicinity of the project site. Based on field observation and measured sound data, the existing noise environment in the vicinity of the project site is dominated mainly by auto traffic noise. As indicated on Table 4.F-3, the project site is currently exposed to exterior noise level range from 51 to 59 dBA at the project site's eastern boundary (Location R1) and from 68 to 70 dBA at the project site's western and northern boundaries (Location R2 and R3) during daytime.

To further characterize the area's noise environment, the CNEL noise levels generated by existing traffic on local roadways were calculated using a noise prediction model developed based on calculation methodologies provided in the Caltrans Technical Noise Supplement (TeNS) document and traffic data provided in the project Traffic Impact Analysis Report (TIA). The roadway noise calculation procedures provided in the Caltrans TeNS are consistent with Federal Highway Administration RD-77-108 roadway noise prediction methodologies. This methodology allows for the definition of roadway configurations, barrier information (if any), and receiver locations. Consistent with the amount of project-related technical information currently available, the noise model assumes a "hard" site condition (i.e., this is a conservative assumption which limits sound attenuation due to ground condition to a maximum of 3 dBA per doubling of distance whereas the "soft" ground condition would provide sound attenuation of 4.5 dBA per doubling of distance) and no barriers between the roadway and receivers.

A model calibration test was performed to establish the noise prediction model's accuracy. The road segment included in the calibration test was McFadden Avenue and Gothard Street. At the noted locations, a 15-minute noise recording was made concurrent with logging of actual traffic volumes and auto fleet mix (i.e., standard automobile, medium duty truck, or heavy duty truck). The traffic counts were entered into the noise model along with the observed speed, lane configuration, and distance to the roadway to calculate the traffic noise levels. The noise model results are within 1 dBA of the measured noise levels, which are within the industry standard tolerance of the noise model (i.e., +/- 1 dBA). Therefore, the project specific traffic noise prediction model is considered accurate and specific to the project conditions.

Table 4.F-3

Summary of Ambient Noise Measurements [a]

Measurement Location and Date/ Day of Week	Measured Ambient Noise Levels, dBA (L_{eq})		
	Daytime (7 A.M. to 10 P.M.) Hourly L_{eq}	Nighttime (10 P.M. to 7 A.M.) Hourly L_{eq}	24-Hour Average, CNEL
R1			
5/12/11 (partial 17 hours)/ Thursday	54 – 57	50 – 51	N/A
5/13/11 (full 24 hours)/ Friday	51 – 56	44 – 53	58
5/14/11 (full 24 hours)/ Saturday	53 – 57	48 – 55	59
5/15/11 (full 24 hours)/ Sunday	52 – 59	45 – 54	59
R2			
5/12/11 (9:02 A.M.)/ Thursday	70	N/A	N/A
R3			
5/12/11 (9:19 A.M.)/ Thursday	68	N/A	N/A

[a] *Detailed measured noise data, including hourly L_{eq} levels, are included in Appendix D*

Source: PCR Services, 2011.

The existing CNEL from roadway traffic was calculated using the average daily traffic (ADT) volume, as provided by Austin-Foust Associates. According to the project's traffic engineer, the peak hour traffic volume was estimated to be nine percent of the average daily traffic (ADT) volume.[7] Furthermore, the traffic volume split during the day-time, evening-time, and night-time hours was estimated to be 77.7%, 12.7% and 9.6% of the ADT, respectively. The roadway configuration, the traffic volume and vehicle mix (percentage of automobile and trucks), posted vehicle speed, and right-of-way distance (property line) were entered into the traffic noise prediction model. Noise calculation worksheets are included in Appendix D. The calculated existing traffic noise levels in terms of CNEL along roadway segments in the close proximity of the project site are provided in **Table 4.F-4**, *Predicted Existing Vehicular Traffic Noise Levels*. As indicated therein, the calculated CNEL for the analyzed roadway segments as a result of existing traffic volumes ranged from 66.6 dBA CNEL to 74.8 dBA CNEL at 25 feet from the roadway right-of-way based on surface-street traffic volumes only. As shown therein, the existing traffic noise levels at the nearest sensitive receptors to each analyzed roadway segment exceed the California Department of Health Services land use compatibility category of "normally acceptable" noise levels (i.e., 65 dBA or lower for multi-family residential).

2. ENVIRONMENTAL IMPACTS

The following thresholds of significance were developed based on industry standards and the City of Huntington Beach Noise Ordinance and guidelines described above.

a. Significance Thresholds

Appendix G of the *CEQA Guidelines* contains the Initial Study Environmental Checklist form used during preparation of the project Initial Study, which is contained in Appendix A of this EIR. The Initial Study Environmental Checklist questions relating to noise have been utilized as the thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it would result in one or more of the following:

Threshold 1: Exposure of persons to or generation of noise levels in excess of standards presumed in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statements 4.F-1 and 4.F-3).

Threshold 2: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (refer to Impact Statements 4.F-2 and 4.F-4)

Threshold 3: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statement 4.F-3).

Threshold 4: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statements 4.F-1 and 4.F-3).

Threshold 5: 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, the project would expose

[7] *Traffic engineer is Crain and Associates.*

Table 4.F-4

Predicted Existing Vehicular Traffic Noise Levels

Roadway Segment	Existing CNEL (dBA) at Referenced Distances from Roadway Right-of-Way	
	25 Feet	50 Feet
Goldenwest Street		
Between Bolsa Avenue and McFadden Avenue	70.8	69.1
Between McFadden Avenue and Edinger Avenue	70.0	68.4
South of Edinger Avenue	69.5	67.9
Edinger Avenue		
West of Goldenwest Street	68.1	66.5
Beach Boulevard		
North of McFadden Avenue	74.8	72.3
McFadden Avenue		
West of Goldenwest Street	67.4	65.7
Between Goldenwest Street and Gothard Street	66.6	64.9
Between Gothard Street and Beach Boulevard	68.1	66.0
East of Beach Boulevard	68.6	64.8
Gothard Street		
Between McFadden Avenue and Center Avenue	66.6	64.8

Source: PCR Services Corporation, 2011.

people residing or working in the project area to excessive noise levels (refer to the project's Initial Study contained in Appendix A. No impact would occur in this regard).

Threshold 6: For a project within the vicinity of a private airstrip, the project would expose people residing or working in the project area to excessive noise levels (refer to the project's Initial Study contained in Appendix A. No impact would occur in this regard).

b. City of Huntington Beach Noise Standards

Based on the City's regulations described above the project would result in a significant noise impact if:

(1) Construction Noise

- Criterion 1– Construction activities would occur outside the hours of 7:00 A.M. to 8:00 P.M. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

(2) Construction Vibration

As previously described, the City of Huntington Beach does not have a significance threshold to assess vibration impacts during construction. Thus, the FTA and Caltrans standards described above are used to evaluate potential impacts related to project construction.

- Criterion 2a– project construction activities cause a PPV ground-borne vibration level to exceed 0.5 inches per second at any off-site residential structures; or
- Criterion 2b– project construction activities cause a PPV ground-borne vibration level to exceed 0.2 inches per second at any off-site historical structures.
- Criterion 2c– Potential Human Annoyance - project construction and operation activities cause ground-borne vibration levels to exceed 0.04 inches per second PPV at off-site vibration sensitive receptors.

(3) Operational Noise

- Criterion 3a – project-related operation (i.e., any air-conditioning or air refrigerating equipment, generator, event related amplified speaker system, and public address system) noise sources generate noise levels that would exceed 55 dBA at a residential use or 68 dBA at a school use between 7:00 A.M. to 10:00 P.M.
- Criterion 3b – The maximum noise (L_{max}) generated from the operation of the parking areas (i.e., a car alarm) exceed the presumed noise level of 55 dBA by 10 dBA.
- Criterion 3c – The proposed project would cause ambient noise levels to increase by 5 dBA CNEL or more and the resulting noise falls on a land use within an area categorized as either "normally acceptable" or "conditionally acceptable" (see Table 4.F-1 for description of these categories); or
- Criterion 3d – The proposed project would cause ambient noise levels to increase by 3 dBA CNEL or more and the resulting noise falls on a land use within an area categorized as either "normally unacceptable" or "clearly unacceptable."

(4) Operational Vibrations

As previously described, the City of Huntington Beach does not have a significance threshold to assess vibration impacts during operation. Thus, the FTA and Caltrans standards described above are used to evaluate potential impacts related to project operation.

- Criterion 4 – Potential Human Annoyance - project construction and operation activities cause ground-borne vibration levels to exceed 0.01 inches per second PPV at off-site vibration sensitive receptors.

c. Methodology

(1) Construction Noise and Vibration

On-site construction and construction trucks staging and hauling route noise impacts are evaluated by determining the noise levels generated by the different types of construction activity, calculating the construction-related noise level at nearby sensitive receptor locations, and comparing these construction-related noise levels to existing ambient noise levels (i.e., noise levels without construction noise). More specifically, the following steps were undertaken to calculate construction-period noise impacts:

1. Ambient noise levels at surrounding sensitive receptor locations were estimated based on field measurement data (refer to Table 2) and/or presumed noise level as stated in the HBMC, Section8.40.050;

2. Typical noise levels for each type of construction equipment were obtained from the Federal Highway Administration's (FHWA) Roadway Construction Noise Model;

3. Distances between construction site locations (noise source) and surrounding sensitive receptors were measured using project architectural drawings, Google Earth, and site plans;

4. The construction noise level was then calculated for sensitive receptor locations based on the conventional standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance; and

The resulting noise level was compared to the construction noise significance thresholds identified below.

(2) Off-Site Roadway Noise (During Construction and Project Operations)

Roadway noise impacts were evaluated using the Caltrans TeNS methodology with the roadway traffic volume data provided in the project's Traffic Study. This methodology allows for the definition of roadway configurations, barrier information (if any), and receiver locations. Roadway-noise attributable to project development "future with project" is calculated and compared to baseline noise levels that would occur under the "future without project" condition to determine significance.

(3) Stationary Point-Source and Skate Related Activity Noise (During Project Operations)

Stationary point-source noise impacts are evaluated by identifying the noise levels generated by outdoor stationary noise sources, such as mechanical equipment and skate related activity, calculating the hourly L_{eq} noise level from each noise source at surrounding sensitive receiver property line locations, and comparing such noise levels to existing ambient noise levels. More specifically, the following steps were undertaken to calculate outdoor stationary point-source noise impacts:

1. Ambient noise levels at surrounding sensitive receptor locations were estimated based on field measurement data (refer to Table F-2) and/or presumed noise level as stated in HBMC, Section 8.40.050 (refer to Table 1);

2. Parking facility operation noise levels were estimated based on actual data obtained at a similar parking facility;

3. Skating-related noise levels were estimated based on actual data obtained at a similar skate park facility;

4. Distances between stationary noise sources and surrounding sensitive receptor locations were measured using project architectural drawings, Google Earth and site plans;

5. Stationary-source noise levels were then calculated for each sensitive receptor location based on the conventional standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance;

6. Noise level increases were compared to the stationary source noise significance thresholds identified below; and

7. With regard to outdoor mechanical equipment, such outdoor mechanical equipment is specified, as part of the project design features, to comply with the HBMC noise ordinance standards.

(4) Ground-Borne Vibration (During Project Construction and Operations)

Ground-borne vibration impacts were evaluated by identifying potential vibration sources, measuring the distance between vibration sources and surrounding structure locations, and making a significance determination based on the thresholds discussed above.

d. Effects Found Not To Be Significant

Threshold	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?

The project site is not located within the boundaries of an airport land use plan and no airports are located within two miles of the site. As such, no impacts would occur and further evaluation of this issue in an EIR is not required.

Threshold	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?

No private airstrips are located in the vicinity of the project site. No impacts would occur and further evaluation of this issue in an EIR is not required.

e. Analysis of Project Impacts

The proceeding analysis of project impacts includes five "Impacts Statements": 4.F-1 through 4.F-5.

(1) Construction Activities

(a) On-site Construction Noise

Threshold	Would the project expose persons to or generate noise levels in excess of standards presumed in the local general plan or noise ordinance, or applicable standards of other agencies?
Threshold	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

4.F-1 Construction activities associated with project implementation would be conducted within the daytime hours specified in the City's Noise Ordinance. Given the temporary nature of construction noise associated with the proposed project, impacts would be less than significant.

Noise from construction activities would be generated by vehicles and equipment involved during various stages of construction operations: excavation, site grading, building construction, and paving. The noise levels created by construction equipment would vary depending on factors such as the type of equipment, the specific model, the operation being performed and the condition of the equipment. Construction noise associated with the proposed project was analyzed using a mix of typical construction equipment, estimated

durations and construction phasing. The project construction noise model is based on construction equipment noise levels as published by the Federal Highway Administration (FHWA)[8].

In an outdoor environment, sound levels attenuate through the air as a function of distance. Such attenuation is called "distance loss" or "geometric spreading" and is based on the source configuration, point source or line source. For a point source such as construction equipment, the rate of sound attenuation is 6 dB per doubling of distance from the noise source. For example, a noise level of 85 dBA at a reference distance of 50 feet from the equipment would attenuate to 79 dBA at 100 feet, and 73 dBA at 200 feet**. Table** 4.F-5, *Estimate of Construction Noise Levels (L_{eq}) at Off-Site Sensitive Receiver Locations,* provides the estimated construction noise levels at nearby noise sensitive receptors where current sound ambient noise levels were recorded and a comparison with the noise impact criteria.

These noise levels account for the project contractor(s) equipping construction equipment, fixed or mobile, with properly operating and maintained noise mufflers, consistent with manufacturers' standards. The estimated noise levels represent a conservative scenario because construction activities are analyzed as if some of them were occurring along the perimeter of the construction area, whereas construction would typically occur throughout the site, further from noise-sensitive receptors. A summary of the construction noise impacts at the nearby sensitive receptors is provided in Table 4.F-5. Detailed noise calculations for construction activities are provided in Appendix D. As shown therein, construction-related noise would exceed ambient noise levels at the nearest multi-family residential uses, R1 and single-family residential uses, R2. The highest construction noise level would be 87 dBA during the building construction phase at the noise sensitive receptor location R1. Noise levels usually diminish at a rate of approximately 6 dBA per doubling of distance. Thus, as heavy equipment passes near the boundary of the project site, the peak construction noise level at a given moment in time could reach 87 dBA; however, as the equipment travels near the center of the project site, it would be approximately 70 feet from the closest residential uses to the east and generate a lower noise level of approximately 81 dBA. Construction activities would temporarily increase the existing ambient noise in close proximity of the construction site. Construction activities would be required to comply with the City's allowable hours as described above and would be temporary in nature. Since temporary construction noise is exempt from the City's noise ordinance requirements, construction related noise would result in a less than significant noise impact. Although no significant impacts were identified related to project construction activities, the following applicable mitigation measures from the BECSP are recommended to ensure that the noise impacts associated with the project construction activities would be reduced to the maximum extent feasible.

BECSP MM4.9-1 Project applicants shall require by contract specifications that the following construction best management practices (BMPs) be implemented by contractors to reduce construction noise levels:

- Two weeks prior to the commencement of construction, notification must be provided to surrounding land uses within 300 feet of a project site disclosing the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period
- Ensure that construction equipment is properly muffled according to industry standards and be in good working condition

[8] *Roadway Construction Noise Model, Federal Highway Administration, 2006*

Table 4.F-5

Estimate of Construction Noise Levels (L_{eq}) at Off-Site Sensitive Receiver Locations

Receptor	Construction Equipment	Nearest Distance between Receptor and Construction Site, feet	Estimated Construction Noise Levels at the Noise Sensitive Receptor by Construction Equipment Hourly L_{eq} (dBA)
R1	Excavation	35	85
	Site Grading	35	86
	Building Construction	35	87
	Paving	35	82
R2 [a]	Excavation	150	67
	Site Grading	150	68
	Building Construction	150	69
	Paving	150	64
R3	Excavation	200	70
	Site Grading	200	71
	Building Construction	200	72
	Paving	200	67

[a] *Partially Shielded from the construction site by existing walls of single-family residential uses.*
[b] *Detailed construction noise data and calculations are included in Appendix D.*

Source: PCR Services Corporation, 2011.

- Place noise-generating construction equipment and locate construction staging areas away from sensitive uses, where feasible
- Schedule high noise-producing activities between the hours of 8:00 A.M. and 5:00 P.M. to minimize disruption on sensitive uses, Monday through Saturday. Schedule pile-driving activities between the hours of 8:00 A.M. and 4:00 P.M. on Mondays through Fridays only.
- Implement noise attenuation measures, which may include, but are not limited to, temporary noise barriers or noise blankets around stationary construction noise sources
- Use electric air compressors and similar power tools rather than diesel equipment, where feasible
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 10 minutes
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow for surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action, and report the action taken to the reporting party.

Contract specifications shall be included in the proposed project construction documents, which shall be reviewed by the City prior to issuance of a grading permit.

BECSP MM4.9-2 Project applicants shall require by contract specifications that construction staging areas along with the operation of earthmoving equipment within the project area would be

located as far away from vibration and noise sensitive sites as possible. Contract specifications shall be included in the proposed project construction documents, which shall be reviewed by the City prior to issuance of a grading permit.

BECSP MM4.9-3 Project applicants shall require by contract specifications that heavily loaded trucks used during construction would be routed away from residential streets. Contract specifications shall be included in the proposed project construction documents, which shall be reviewed by the City prior to issuance of a grading permit.

(b) Off-Site Construction Noise

Delivery and haul trucks would enter the project site at the northern entrance off of westbound McFadden Avenue and leave the site via the same driveway and continue westbound away from the site. For off-site disposal of materials, haul trucks would leave the site and head westbound on McFadden Avenue, then southbound on Gothard Street, then eastbound on Warner Avenue to the disposal facility located approximately 1.9 miles away from the project site. It is estimated that during the foundation phase there would be a maximum of 20 concrete-mixer truck trips per day. The project's concrete-mix trucks would generate approximately 51 dBA (Leq) at 25 feet distance along McFadden Avenue and Gothard Street (delivery truck route), which would be below the existing ambient noise level of 68 to 70 dBA (Leq) along the roadways. Therefore, noise impacts from off-site construction traffic would be less than significant and no mitigation measures are required.

(c) Construction-Related Vibration

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

4.F-2 Construction activities would have a minimal effect on the existing vibration environment within and adjacent to the project area. Thus, construction vibration impacts would be less than significant.

The proposed project would be constructed using typical construction techniques. As such, it is anticipated that the equipment to be used during construction would not cause excessive groundborne noise or vibration. Post-construction on-site activities would be limited to skate park uses that would not generate excessive groundborne noise or vibration.

The City of Huntington Beach does not address vibration in the HBMC. According to the Federal Transit Administration (FTA), ground vibrations from construction activities very rarely reach the level that can damage structures.[9] A possible exception is the case of old, fragile buildings of historical significance where special care must be taken to avoid damage. The construction activities that typically generate the most severe vibrations are blasting and impact pile driving, which would not be utilized for the proposed project. The proposed project would utilize typical construction equipment and methods such as the use of bulldozers and excavators, which would generate limited ground-borne vibration during excavation and foundation activities. Based on the vibration data by the FTA, the typical vibration velocity from the operation of a large bulldozer would be approximately 0.089 inches per second PPV at 25 feet from the source of activity. The nearest residential building (multi-family residential uses, R1), which is approximately 80 feet from the project construction site, would be exposed to a vibration velocity of

[9] *U.S. Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 1995*

0.016 inches per second PPV. As this value is considerably lower than the 0.5 inches per second PPV significance threshold (potential building damage for older residential building) and 0.04 inches per second PPV significance threshold for potential human annoyance, vibration impacts associated with construction would be less than significant at the nearest residential building and residences.

(2) Operation

(a) Operational Noise

Threshold	Would the project expose persons to or generate noise levels in excess of standards presumed in the local general plan or noise ordinance, or applicable standards of other agencies?
Threshold	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

4.F-3 Project implementation would have a minimal effect on the existing noise environment within and adjacent to the Project Area during normal skate park and retail operations. Thus, long-term noise impacts under normal operation would be less than significant. However, periodic special events would temporarily exceed the allowable noise thresholds at adjacent noise-sensitive residential uses. Thus, operational noise impacts are considered significant and unavoidable.

The existing noise environment in the project vicinity is dominated by traffic noise from nearby roadways, as well as nearby commercial and residential activities. Long-term operation of the proposed project would have a minimal effect on the noise environment in proximity to the project site. Noise generated by the proposed project would result primarily from skate park related activities, parking activities, normal operation of the building mechanical equipment, refuse collection area, and off-site traffic.

(i) Off-site Traffic Noise

As shown in **Table 4.F-6**, *Off-Site Weekday Traffic Noise Impacts*, for the typical operating day, the off-site roadway traffic volumes associated with the proposed project would result in a maximum increase in CNEL of 0.1 dBA along one roadway segment, which is predicted to occur along McFadden Avenue between Goldenwest Street and Gothard Street. The largest cumulative (project plus ambient growth plus other known related projects in the vicinity of the project site) roadway noise impact would be 0.6 dBA CNEL, which is predicted to occur along Gothard Street between McFadden Avenue and Center Avenue. Since noise level increases would not exceed the 3 dBA CNEL threshold, impacts would be less than significant and no mitigation measures are necessary.

During a special event, visitors would be required to park at the Huntington Beach Sports Complex and ride shuttles to and from the Skate Park. As shown in **Table 4.F-7**, *Off-Site Weekend Special Event Traffic Noise Impacts*, the roadway traffic volumes resulting from the proposed off-site parking arrangement during special events would result in a maximum increase in CNEL of 0.1 dBA along Goldenwest Street north of McFadden Avenue, Goldenwest Street between McFadden Avenue and Edinger Avenue, Goldenwest Street south of Edinger Avenue, and McFadden Avenue west of Goldenwest Street.

Table 4.F-6

Off-Site Weekday Traffic Noise Impacts

Roadway Segment	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA) Weekday: Existing (A)	Existing with Project [a] (B)	Future No Project [b] (C)	Future with Project [c] (D)	Existing Project Increment [d] (B - A)	Future Project Increment [e] (D – C)	Cumulative Increment [f] (D – B)
Goldenwest Street							
Between Bolsa Avenue and McFadden Avenue	70.8	70.8	71.1	71.1	0.0	0.0	0.3
Between McFadden Avenue and Edinger Avenue	70.0	70.0	70.4	70.4	0.0	0.0	0.4
South of Edinger Avenue	69.5	69.5	69.8	69.8	0.0	0.0	0.3
Edinger Avenue							
West of Goldenwest Street	68.1	68.1	68.6	68.6	0.0	0.0	0.5
Beach Boulevard							
North of McFadden Avenue	74.8	74.8	75.2	75.2	0.0	0.0	0.4
McFadden Avenue							
West of Goldenwest Street	67.4	67.4	67.6	67.6	0.0	0.0	0.2
Between Goldenwest Street and Gothard Street	66.6	66.6	66.7	66.8	0.0	0.1	0.2
Between Gothard Street and Beach Boulevard	68.1	68.1	68.4	68.4	0.0	0.0	0.3
East of Beach Boulevard	68.6	68.6	68.9	68.9	0.0	0.0	0.3
Gothard Street							
Between McFadden Avenue and Center Avenue	66.6	66.6	67.2	67.2	0.0	0.0	0.6

[a] *Include existing plus proposed project traffic.*
[b] *Include future growth plus related (cumulative) projects identified in the traffic study .*
[c] *Include future growth plus related (cumulative) projects and proposed project traffic.*
[d] *Increase due to project-related traffic only at existing.*
[e] *Increase due to project-related traffic only at project build-out.*
[f] *Increase due to future growth, related (cumulative) projects, and project traffic.*

Source: PCR Services Corporation, 2011.

Table 4.F-7

Off-Site Weekend Special Event Traffic Noise Impacts

Roadway Segment	Calculated Traffic Noise Levels at 25 feet from Roadway, CNEL (dBA) Weekend: Existing (A)	Future No Project [a] (B)	Future with Project Special Event [b] (C)	Future Special Event Increment [c] (C – B)	Cumulative Increment [d] (C – A)
Goldenwest Street					
North of McFadden Avenue	70.5	71.0	71.1	0.1	0.6
Between McFadden Avenue and Edinger Avenue	70.3	71.0	71.1	0.1	0.8
South of Edinger Avenue	70.1	70.4	70.5	0.1	0.4
Edinger Avenue					
West of Goldenwest Street	68.9	69.2	69.2	0.0	0.3
Between Goldenwest Street and Gothard Street	69.2	69.3	69.3	0.0	0.1
McFadden Avenue					
West of Goldenwest Street	66.2	66.2	66.3	0.1	0.1
Between Goldenwest Street and Gothard Street	67.6	67.0	67.0	0.0	-0.6
Gothard Street					
Between McFadden Avenue and Center Avenue	65.6	66.6	66.6	0.0	1.0
Between Center Avenue and Edinger Avenue	66.5	65.8	65.8	0.0	-0.7

[a] *Include future growth plus related (cumulative) projects and proposed project without special event traffic.*
[b] *Include future growth plus related (cumulative) projects and proposed project with special event traffic.*
[c] *Increase due to special event-related traffic only at project build-out.*
[d] *Increase due to future growth, related (cumulative) projects, and project special event-related traffic*

Source: PCR Services Corporation, 2011.

The largest cumulative (project plus ambient growth plus other known related projects in the vicinity of the project site) roadway noise impact would be 1.0 dBA CNEL, which is predicted to occur also along Gothard Street between McFadden Avenue and Center Avenue. It should be noted that traffic control measures that would be put in place during special events results in a redistribution of traffic throughout the vicinity, resulting in a reduction in traffic volumes along McFadden Avenue between Goldenwest Street and Gothard Street, and along Gothard Street between Center Avenue and Edinger Avenue, thus corresponding to the negative values shown in Table 4.F-7. Since noise level increases would not exceed the 3 dBA CNEL threshold, impacts would be less than significant and no mitigation measures are necessary.

(ii) Fixed Mechanical Equipment

The operation of mechanical equipment such as air conditioners, fans, generators, and related equipment may generate audible noise levels. These types of equipment would likely be used within the project site. Mechanical equipment would typically be located on rooftops or within buildings, shielded from nearby land uses to attenuate noise and avoid conflicts with adjacent uses. In addition, all mechanical equipment would be designed with appropriate noise control devices, such as sound attenuators, acoustics louvers, or sound screen/ parapet walls, to comply with noise limitation requirements provided in the HBMC. Therefore, operation of mechanical equipment would not exceed the project thresholds of significance and impacts would be less than significant. As such, no mitigation measures are required.

Generators for events would be located in vender areas near the secondary parking lot approximately 100 feet from the nearest residential uses (R1) and 200 feet from the nearest school use (R3). Generators will generate sound levels as high as 78 dBA at a distance of 44 feet.[10] Based on a noise levels source strength of 78 dBA at a reference distance of 44 feet, and accounting for barrier-insertion loss for walls of multi-family residential uses (minimum 5 dBA insertion loss) and distance attenuation (minimum 7 dBA insertion loss for the residential uses and minimum 13 dBA insertion loss for the school uses), generator noise would be reduced to 66 dBA at R1 and 60 dBA at R3 during special events. Generator noise would exceed the 55 dBA significance threshold at the nearest multi-family residential uses (R1) but would not exceed 68 dBA significance threshold at the school use (R3). Therefore, generator noise would result in a potentially significant impact during special events at R1. However, implementation of Mitigation Measure F-1, which requires a radiator silencer on the generators, would reduce generator noise levels at the multi-family residential uses (R1) to 54 dBA below the significance threshold. Thus, generator noise impacts would be less than significant with implementation of Mitigation Measure F-1.

(iii) Refuse Collection Area

The refuse collection area would be located at the north end of the main parking lot. The refuse collection area would have an enclosure and the multi-family residential uses would be partially shielded by the enclosure. Refuse service-related activities such as truck movements/idling and loading/unloading operations would generate noise levels that could potentially adversely impact nearby land uses during long-term project operations. Based on measured noise levels, trash compactors would generate noise levels of approximately 66 dBA (L^{eq}) at 50 feet distance. The nearest noise sensitive receptor R1 (multi-family residential uses west of the project site) is approximately 150 feet from the project's refuse collection area. Accounting for distance attenuation (minimum 10 dBA insertion loss) and barrier-insertion loss by enclosure (minimum 5 dBA insertion loss), refuse collection noise would be 51 dBA (L^{eq}) at the nearest

[10] *Noise measurements conducted for generators, PCR, November 2000.*

residential uses R1. Therefore, noise levels would not exceed the 55 dBA significance threshold at the closest or any other off-site noise-sensitive receptor locations. As such, impacts would be less than significant.

(iv) Parking Area

On-site parking would be provided in the main parking lot near the primary site access fronting Center Avenue, and a secondary parking area off McFadden Ave to be used only for special events. Automobile movements would comprise the most continuous noise source and would generate a noise level of approximately 65 dBA at a distance of 25 feet. Car alarm and horn noise events generate sound levels as high as 83 dBA at a reference distance of 25 feet.[11]

The nearest multi-family residential uses (R1) are approximately 35 feet and 140 feet from the secondary parking lot and the main parking area, respectively. The nearest school use is approximately 200 feet from the secondary parking lot. Based on a noise levels source strength of 83 dBA at a reference distance of 25 feet and accounting for barrier-insertion loss for walls of multi-family residential uses (minimum 5 dBA insertion loss) and distance attenuation (minimum 15 dBA insertion loss from the main parking lot, minimum 3 dBA insertion loss from the secondary parking area, and minimum 18 dBA insertion loss for the school uses from the secondary parking lot), parking related noise would be reduced to 63 dBA from the main parking lot and 75 dBA (L_{max}) from the secondary parking lot during special events at R1 and 65 dBA at the school use at R3. Car alarm and horn related noise from the secondary parking lot during special events would exceed the 65 dBA significance threshold at R1. Car alarm and horn related noise during special events would not exceed the 68 dBA significance threshold at R3. Therefore, as there is no feasible mitigation to effectively reduce car alarm and horn noise, parking area-related car alarm noise would be significant and unavoidable at location R1 during special events.

As discussed above, the skate park facilities would host several special events per year, comprising up to approximately 15 event days, which would substantially increase park visitation and associated traffic on special event days. Guests arriving by vehicle would be diverted to the surface parking lots at the Huntington Beach Sports Complex, located approximately 2.8 miles south of the project site, which has a total of 850 parking stalls, and is commonly used for off-site parking needs during various events held intermittently throughout the City of Huntington Beach. Guests would access this parking area via the Sports Complex's eastern entrance off Gothard Street at Talbert Avenue and then would be transported to and from the skate park via shuttle buses. Per coordination with the City and the Parking Management Plan (refer to the Traffic Impact Study), events at the Skate Park will be scheduled so as to avoid other uses at the Huntington Beach Sports Complex.

Shuttle buses drop off would be provided along the drive aisle in the secondary parking lot. Based on previous measurements, the noise from shuttle bus idling is approximately 66 dBA, L_{eq} at 50 feet from the bus. If two buses were idling at the same time, as a worst case scenario, the noise levels would be up to 69 dBA. The nearest residential uses (R1) to the proposed bus parking area are approximately 130 feet east of the drive aisle with existing intervening walls along the residential uses acting as a noise barrier partially shielding nearest residential homes from the drive aisle in the secondary parking lot. Based on a noise level source strength of 69 dBA at a reference distance of 50 feet, and accounting for barrier-insertion loss by existing buildings (minimum 5 dBA insertion loss) and distance attenuation (minimum 8 dBA loss for a

[11] *Noise measurements conducted for a moving automobile in a parking lot, PCR, May 1998.*

distance of 130 feet), bus idling noise would be reduce to a maximum of 56 dBA and would not increase the existing ambient noise environments at the nearest residential uses (R1). As this would not exceed the 65 dBA significance threshold at the nearest residential uses (R1), impacts to surrounding uses from special event traffic would be less than significant.

(v) Skate Park Activities

The skate park would be open to the public and operate seven days a week, from 10 A.M. to 10 P.M., and would be supervised during these business hours. Based on empirical data from similar skate park projects in Southern California, it is anticipated that the skate park would have an average of approximately 75 visitors daily, with a peak of approximately 130 visitors.

Skating-related activity noise levels were measured at two skate parks located in Fullerton and Venice Beach. Noise measurements were conducted on Saturday, July 9th, 2011. A microphone was placed at approximately 10 feet of the edge of the skate bowls. Approximately 10 to 20 skaters were using the skate bowls. Noise levels at the skate bowls of Independence Park of Fullerton ranged from 55 to 58 dBA when approximately 10 skaters were using the skate bowl. At the skate bowls of Venice Beach Skate Park, noise levels ranged from 62 to 67 dBA when approximately 20 skaters were using the skate bowl. Skate related activity noise level of 67 dBA at 10 feet from the skate bowl would be reduced to 54 dBA at the nearest residential uses, R1. As such, impacts would be less than significant with regard to normal skate park activities.

The proposed project would include a Public Address (PA) system used periodically for announcements during normal daily operations. However, during special events, amplified music and announcements from the event host could continue through the duration of the event. The PA system could be used throughout the operating hours, between 10:00 A.M. to 10:00 P.M. The PA system volume would be limited to the extent necessary for skate park users to hear announcements, so as to minimize off-site noise from the PA system. However, the sound levels of the PA system would be up to 94 dBA at 4 feet from PA system speakers.[12] The sound level of 94 dBA would be reduced to 65 dBA at the nearest residential uses (R1). The sound level of 94 dBA would be reduced to 60 dBA at the school use (R3), which is below the significance threshold of 68 dBA for the school use, R3. In addition to announcements from the PA system, amplified music may be broadcast continuously or intermittently throughout the duration of the event. Noise levels of amplified music and announcements from the event host would exceed the significance threshold of 55 dBA at R1. Therefore, the PA system-related noise impacts would be potentially significant at the nearest noise sensitive receptor location R1.

The proposed project would host up to 15 event days throughout the year. Twelve event days would be held on weekends and are generally expected to draw 300 to 500 spectators per event day, with event hours between 10 A.M. and 10 P.M., as under normal Skate Park operations. The remaining three event days would consist of one major event held annually which is expected to draw up to 2,500 spectators per event day, starting on a Friday and ending on a Sunday. Noise levels generated by approximately 450 crowd members (applause and cheer) could be as high as 86 dBA (maximum sound level) at the back row.[13] With the maximum audience of up to 2,500 people with temporary grandstand seating for a major event, noise levels

[12] *Bay Area Rapid Transit (BART), BART Facilities Standards, September 2008.*

[13] *Noise measurements conducted for amphitheater events, PCR, August 2008.*

from audience applause and cheers would be approximately 93 dBA. This noise level would be reduced to 79 dBA at the nearest multi-family residential uses (R1) with the temporary grandstand seating at a turf area approximately 50 feet from the multi-family residential uses and 67 dBA at the school use R3. Noise from 2,500 guests at the event would exceed the significance threshold of 55 dBA at R1 but would not exceed the significance threshold of 68 dBA at R3. Therefore, the event-related noise impacts would be significant and unavoidable at the nearest noise sensitive receptor location R1 for all 15 event days.

No mitigation measures are necessary to address noise and vibration impacts from normal skate park and retail operations, as impacts are less than significant. However, the following mitigation measure is recommended to address operational generator-related noise associated with special events:

Mitigation Measure F-1: Generators shall be equipped with a radiator silencer to minimize noise.

(b) Operational Vibration

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

4.F-4 Project implementation would not generate excessive vibration levels to nearby sensitive receptors. Thus, long-term vibration impacts would be less than significant.

The proposed project would include typical commercial-grade stationary mechanical and electrical equipment such as air handling units, condenser units, exhaust fans, and generator, which would produce vibration. In addition, the primary sources of transient vibration would include passenger vehicle circulation within the proposed parking area activity. Ground-borne vibration generated by each of the above-mentioned activities would be similar to the existing sources (i.e., traffic on adjacent roadways) adjacent to the project site. The potential vibration impacts from all proposed project sources at the closest structure locations would be less than the significance threshold of 0.01 inches per second PPV for perceptibility. As such, vibration impacts associated with operation of the proposed project would be below the significance threshold and impacts would be less than significant.

3. CUMULATIVE IMPACTS

4.F-5 The project combined with cumulative projects would not impact noise-sensitive uses in the vicinity of the project area.

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. For construction impacts, only the immediate area around the proposed project site would be included in the cumulative context. For operational/roadway related impacts, the context is build-out of the City of Huntington Beach General Plan, including existing and future development of cumulative projects within the City of Huntington Beach, as well as adjacent communities that would be potentially impacted. This cumulative impact analysis considers development of the proposed project, in conjunction with ambient growth as discussed in Chapter 3, Basis for Cumulative Analysis, in this EIR, and other development within the vicinity of the proposed project in the City of Huntington Beach and surrounding jurisdictions. Noise is by definition a localized phenomenon, and significantly reduces in magnitude as the distance from the source

increases. As such, only projects and growth due to occur in the immediate project area, including development within the City of Huntington Beach and to a lesser extent within the City of Westminster, would be likely to contribute to cumulative noise impacts.

a. Violation of Noise Standards

Increases in noise at adjacent sensitive uses would occur as a result of construction of the proposed project, along with other construction in the vicinity. As discussed under Impact 4.F-1, construction of the proposed project would not expose nearby sensitive receptors to exterior noise levels above the 55 dBA noise standard identified in the Huntington Beach Municipal Code. Additionally, although this construction noise would be temporary, mitigation measures from the BECSP EIR would be implemented, as appropriate, to reduce the impact of the noise.

Other construction that may occur in the vicinity of the proposed project site would contribute noise levels similar to those generated for the proposed project. Where this development adjoins the proposed project construction, the combined construction noise levels would have a cumulative effect on nearby sensitive uses. Noise is not strictly additive, and a doubling of noise sources would not cause a doubling of noise levels; as such, cumulative construction noise levels are expected to be below the City's Municipal Code exterior standards at nearby sensitive receptors.

Under Section 8.40.090(d) (Special Provisions) of Chapter 8.40 of the City's Municipal Code, noise sources associated with construction are exempt from the requirements of the Municipal Code, provided that construction activities do not occur between the hours of 8:00 PM and 7:00 AM on weekdays, including Saturday, or at any time on Sunday or a federal holiday. Because compliance with this construction time limit is required by the Huntington Beach Municipal Code, the proposed project and all other cumulative development would be exempt, and the cumulative impact associated with construction noise in the Huntington Beach area would be considered less than significant. Similarly, because construction-related noise generated under the proposed project would be exempt from established noise standards, the cumulative impact of the proposed project would also be less than significant.

With regards to stationary sources, noise would be generated by sources at the proposed project and other projects in the vicinity, including the operation of existing commercial uses located along Center Avenue. The major stationary source of noise that will be introduced into the project area would likely be HVAC equipment located on the rooftops of new commercial developments. This HVAC equipment generally produces noise levels of around 50 and 65 dBA Leq at 50 feet from the equipment. Shielding, which is required by mitigation for the proposed project, could reduce these noise levels by up to 15 dBA, to about 35 to 50 dBA Leq at 50 feet, depending on whether the equipment serves residential or commercial uses. Because shielding would be required for all mixed-use and residential development under the BECSP, noise levels from individual stationary sources would not exceed the applicable City noise standard, and because this shielding would be expected to be installed on all new development in the BECSP boundaries, it is expected that all rooftop stationary sources in the project area would similarly generate less than significant noise levels. Despite the periodic project-level significant noise impacts associated with special events on-site, the proposed project would not contribute to a significant cumulative operational noise impact from stationary sources.

b. Groundborne Noise and Vibration

Construction of the proposed project would produce temporary vibration impacts that would be less than significant. Cumulative development in the Huntington Beach area is not considered likely to result in the exposure of on-site or off-site receptors to excessive groundborne vibration, due to the localized nature of vibration impacts, the fact that all construction would not occur at the same time and at the same location, and the largely built-out nature of the City, which would usually preclude the use of heavy equipment such as bulldozers. No other projects are proposed in close enough proximity to affect the same receptors as the proposed project. Only receptors located in close proximity to each construction site would be potentially affected by both activities. For the combined vibration impact from any two projects to reach cumulatively significant levels, heavy construction activity from both projects would have to occur simultaneously within 50 feet of any receptor. It is unlikely that construction activities from the proposed project and cumulative projects would be located within 50 feet of the same receptor. Therefore, vibration from future development would not combine with construction vibration of the proposed project to result in a significant cumulative impact. The contribution of the proposed project to such an impact would not be cumulatively considerable because the proposed project would not result in excessive vibration effects and all potential development in the project area would occur at least 50 feet from the project site and the nearest sensitive receptors. Therefore, the cumulative vibration impact of the project would be less than significant.

c. Long-Term Operational Noise Increases

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and other projects within the project site. Therefore, cumulative traffic-generated noise impacts have been assessed based on the contribution of the proposed project to the future cumulative base traffic volumes in the project vicinity. The noise levels associated with cumulative base traffic volumes without the project, and cumulative base traffic volumes with the project are identified in Table F-6. Noise level increases in the project area during normal skate park and retail operations would reach a maximum of 0.6 dBA CNEL on Gothard Street between McFadden Avenue and Center Avenue, which is imperceptible to most people. The contribution of the proposed project would range from 0.2 to 0.6 dBA across all project area intersections studied. No study roadway segments would increase by 3.0 dBA CNEL or more established threshold. The 0.2 to 0.6 dBA contribution of the proposed project to future roadway noise levels would not exceed the identified thresholds of significance and, therefore, would not be cumulatively considerable.

As discussed above, noise is not strictly additive; a doubling of noise sources does not create a doubling of noise levels. Because all rooftop equipment for mixed-use and residential uses within the BECSP area would be shielded, no source would generate maximum noise levels of greater than 57 dBA Leq at 50 feet. Consequently, multiple units would have to be located within 50 feet of a receptor to generate noise levels that would exceed the City standards. The development associated with the proposed project and other nearby projects are not so dense that multiple stationary units would be so closely spaced, either on site or off site. Consequently, the cumulative effect of multiple HVAC units, mechanical equipment, and parking structures would be less than significant.

d. Periodic or Temporary Noise Increases

Periodic and temporary noise levels would be generated by construction of the proposed project along with other construction in the vicinity, and sensitive uses on or in the immediate vicinity of the proposed project

site may be exposed to two or more sources of construction related noise simultaneously. As discussed in Impact 4.F-1, the proposed project by itself would not expose sensitive receptors to noise levels in excess of acceptable City standards. Thus, while the possibility exists that a cumulative increase in construction noise levels could result from construction associated with the proposed project combined with other nearby projects, such an increase is not expected to be substantial given the limited intensity of proposed construction activities on-site and the relative distance of the site from other development projects within the BECSP area. The cumulative impact of the proposed project and the related projects, therefore, would be less than significant. Nonetheless, as discussed previously, the City exempts construction noise from the provisions of the Municipal Code as long as construction occurs within permitted hours of the day. Any potential the project analyzed in the cumulative context would be required to comply with the same provisions of the Municipal Code described above. Additionally, construction noise impacts are localized in nature and decrease substantially with distance. Consequently, all projects analyzed in the cumulative context would fall under the Municipal Code exemption, and the proposed project would comply with the noise-reducing requirements of mitigation measures BECSP MM4.9-1 through BECSP MM4.9-3. Therefore, the cumulative construction-related impact of the proposed project would be less than significant.

Additionally, the proposed project would result in temporary noise increases associated with periodic special events on-site, during which noise levels would exceed established thresholds at nearby sensitive receptors. While this project-level noise increase would be considered a significant unavoidable impact, cumulative periodic operational noise impacts would be less than significant. This is due to the fact that surrounding cumulative development within the BECSP area would not generate substantial operational noise with implementation of BECSP MM4.9-4 and given the nature, intensity, and location of these uses relative to the project site. Therefore, it is unlikely that a significant cumulative noise impact could occur at any of the various sensitive receptor locations in the project vicinity, and cumulative operational noise impacts would be less than significant.