3.9 - Noise

3.9.1 - Introduction

This section describes the existing noise setting and potential onsite and surrounding area effects from implementation of the proposed project. The analysis for the proposed project includes construction and operational noise modeling performed by MBA. The following is a list of information that has been used in the preparation of this section.

- Noise Measurements taken on November 12, 2011. This information is located in Appendix G of this Draft EIR.
- Photographs of noise measurement sites. This information is located in Appendix G of this Draft EIR.
- California Department of Transportation (Caltrans). 2009. Technical Noise Supplement, November. This document is available for review at http://www.dot.ca.gov/hq/env /noise/pub/tens_complete.pdf.
- California Department of Transportation (Caltrans). 2010. 2010 Annual Average Daily Traffic on the California Highway System. December. This document is available for review at http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm.
- U.S. Department of Transportation. 2006. FHWA Roadway Construction Noise Model User's Guide. January. This document is available for review at http://www.fhwa.dot.gov /environment/noise/rcnm/rcnm.pdf.
- City of Vallejo. 1999 Vallejo General Plan. This document is available for review at http://www.ci.vallejo.ca.us/uploads/89/724.pdf.
- City of Vallejo. ND. Noise Element. This document is available for review at http://www.ci.vallejo.ca.us/uploads/89/2567.pdf.
- City of Vallejo. Municipal Code. This document is available for review at http://library.municode.com/HTML/16106/level3/TIT16ZO_PTIVGERE_CH16.72PESTRE.html#TOPTITLE.
- Transportation/Traffic section of this Draft EIR prepared by Fehr and Peers, 2012.
- Wieland Associates, Inc. 2007. Environmental Noise Study for the Proposed City Place Sky Lofts in the City of Santa Ana. This document is available for review at http://www.santa-ana.org/pba/documents/G-NoiseStudy.pdf.

3.9.2 - Environmental Setting

Noise Character

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of sound pressure, a ratio of the faintest sound detectable by a keen human ear, is called a decibel (dB).

A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. The zero point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or fewer are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness.

Because sound or noise can vary in intensity by over 1 million times within the range of human hearing, a logarithmic loudness scale similar to the Richter scale used for earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called A-weighting, written as dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Any further reference to decibels in this report written as dB should be understood to be A-weighted values.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time-varying period (called L_{eq}), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet-time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

Many methods have been developed for evaluating community noise to account for, among other things:

- Variation in noise levels over time
- Influence of periodic individual loud events

- Community response to changes in the community noise environment

Several methods have been developed to measure sound over a period of time, including:

- Equivalent Sound Level (L_{eq})
- Community Noise Equivalent Level (CNEL)
- Day/Night Average Sound Level (L_{dn})

These methods are described and defined below.

L_{eq}

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time-varying period (called L_{eq}), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. The peak traffic hour L_{eq} is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses. The sound level exceeded over a specified time can be expressed as L_n (e.g., L_{90}, L_{50}, L_{10}, etc.). L_{50} equals the level exceeded 50 percent of the time, L_{10} equals the level exceeded 10 percent of the time, etc.

L_{dn}

A commonly used noise metric is the day/night average level or L_{dn}. The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period, called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq} for each hour of the day at a given location after penalizing the sleeping hours (defined as 10:00 p.m. to 7:00 a.m.) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.

CNEL

Another commonly used noise metric is the Community Noise Equivalent Level (CNEL). The CNEL has the same nighttime penalty as the L_{dn}, as well as another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these periods because, compared with daytime hours, there is a decrease in the ambient noise levels during the evening and nighttime hours, which creates an increased sensitivity to sounds. For this reason, the sound seems louder in the evening and nighttime hours and is weighted accordingly. Because of the additional evening penalty, CNEL values are always higher than L_{dn} values; however, the difference is usually within 1 dB. However, since the CNEL is more conservative, the CNEL standard has been used in this analysis to assess noise impacts onto sensitive land uses.

L_{max}

The maximum noise level recorded during a noise event is typically expressed as L_{max}. The L_{max} is typically measured by taking the maximum noise level recorded with the slow meter response, which is based on noise levels measured at 1-second intervals.

SEL

Another noise descriptor that is used primarily for the assessment of aircraft noise impacts is the Sound Exposure Level, which is also called the Single Event Level (SEL). The SEL descriptor represents the acoustic energy of a single event (e.g., an aircraft overflight) normalized to a 1-second event duration. This is useful for comparing the acoustical energy of different events involving different durations of the noise sources. The SEL is based on an integration of the noise during the period when the noise first rises within 10 dBA of its maximum value and last falls below 10 dBA of its maximum value. The SEL is often 10 or more dBA greater than the L_{max}, since the SEL logarithmically adds the L_{eq} for each second of the duration of the noise.

Noise Perception

As previously mentioned, people respond to changes in sound pressure, which are measured on a noise scale in a logarithmic manner. In general, a 3-dB change in sound pressure level is considered a just detectable difference in most situations. A 5-dB change is readily noticeable, and a 10-dB change is considered a doubling (or halving) of the subjective loudness. Note that a 3-dB increase or decrease in the average traffic nose level is realized by a doubling or halving of the traffic volume, or by about a 7-mile-per-hour increase or decrease in speed.

Noise Propagation

For each doubling of distance from a point noise source, the sound level will decrease by 6 dB. In other words, if a person is 100 feet from a machine and moves 200 feet from that source, sound levels will drop by approximately 6 dB. Moving 400 feet away, sound levels will drop approximately another 6 dB. For each doubling of distance from a line source, such as a roadway, noise levels are reduced 3 to 5 decibels, depending on the ground cover between the source and the receiver.

Noise Exposure

The California Noise Insulation Standards (Title 24, Chapter 1, Article 4 of the California Administrative Code) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When structures that are proposed for construction are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship that are proposed for construction shall have an interior CNEL of 45 dB or less due to aircraft noise.

Normal noise attenuation within residential structures with closed windows is about 20 dB without any specialized structural attenuation (e.g., dual-paned windows). When dual-paned windows are used, which are typically required in order to meet the current Title 24 Building Standards, the exterior to interior attenuation is increased to 25 dB or higher. A noise level of 65 dB begins to interfere with one's ability to carry on a normal conversation at reasonable separation without raising one's voice. Table 3.9-1 summarizes typical noise sources, levels, and responses.

Table 3.9-1: Noise Levels and Human Response

Noise Source	Noise Level (dBA)	Response
Library	30	Very quiet
Refrigerator humming	40	Quiet
Quiet office	50	Quiet
Normal conversation	60	Intrusive
Vacuum cleaner	70	Telephone use difficult
Freight train at 50 feet	80	Interferes with conversation
Heavy-duty truck at 50 feet	90	Annoying
Jet takeoff at 2,000 feet	100	Very annoying; hearing damage at sustained exposure levels
Unmuffled motorcycle	110	Maximum vocal effect; physical discomfort
Jet takeoff at 200 feet	120	Regular exposure over one minute risks permanent hearing loss
Shotgun firing	130	Pain threshold
Carrier jet operation	140	Harmfully loud
Source: Melville C. Branch and R. Dale Beland, 1970.		

Setting

The 149.11-acre Solano County Fairgrounds site is located immediately southwest of the Interstate 80 (I-80) and State Route 37 (SR-37) interchange in the City of Vallejo, California, adjacent to the Six Flags Discovery Kingdom theme park and Lake Chabot (Exhibit 3.9-1)

With excellent freeway visibility and easy access to both the San Francisco Bay Area and Sacramento Valley region, the Solano County Fairgrounds enjoys a central, accessible location within the region. The presence of Six Flags Discovery Kingdom, the Solano County Fair, and hotel uses has already established this site as a venue for entertainment and special events.

Project Site

The plan area has elevations ranging between 82 to 105 feet above mean sea level and slopes gently towards the southwest. The project site consists of the existing Solano County fairgrounds that include administration and exposition buildings, a horse track, grandstands, equestrian buildings,

horse barns, and several parking areas. Existing fair facilities include 134,200 square feet of building area, 28,000 square feet of shaded plaza area, 45,000 square feet of paved venue area, 110,300 square feet of lawn venue area, 26,000 square feet of other open space (arena), 105,000 square feet of carnival/midway area, and 83,300 square feet of concourse space. The entertainment and open space area contains large existing parking areas as well. Areas of the vacant land are used for informal parking by Six Flags Discovery Kingdom. Four existing creeks including North, Center, and South Rindler Creek and Blue Rock Springs have been diverted into a combination of underground pipes and open channels at the site. Refer to Section 3.1, Aesthetics—Exhibits 3.1-1 through Exhibit 3.1-5 of this Draft EIR—for site photographs.

Surrounding Area

As shown in this Draft EIR's Section 2, Project Description, Exhibit 2-3, the project site is currently designated Community Park in Vallejo's General Plan.

North

A hotel, Courtyard by Marriott, and SR-37 lie to the north of the project site. The Country Club Crest residential subdivision is located beyond the hotel and SR-37

East

East of the project lies I-80. A retail center is located beyond I-80. Views of the retail buildings can be seen from the project site.

South

The proposed development is bordered on the south by Newell Mobile Homes, a mobile home park, beyond which a motel is located. The nearest mobile home is approximately 85 feet from the project site.

West

Fairgrounds Drive is located to the west of the project site. West of Fairgrounds Drive lie Six Flags Discovery Kingdom, Lake Chabot and a Six Flags Discovery Kingdom parking lot. Dan Foley Park is located to the north of the Six Flags parking lot.

3.9.3 - Regulatory Framework

Federal

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce;
- Assisting state and local abatement efforts; and
- Promoting noise education and research.

Source: Solano County NAIP, 2009. MBA Field Survey and GIS Data, 2011.

Michael Brandman Associates

NORTH

640 320 0 640

Feet

Exhibit 3.9-1
Noise Monitoring Locations

The Federal Office of Noise Abatement and Control was initially tasked with implementing the Noise Control Act. However, the Office of Noise Abatement and Control has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration prohibits exposure of workers to excessive sound levels. The United States Department of Transportation assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by FTA, while freeways that are part of the interstate highway system are regulated by FHWA. Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately, that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

State

Noise Standards

Established in 1973, the California Department of Health Services Office of Noise Control was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When structures that are proposed for construction are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship that are proposed for construction shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

Single-Event Noise Descriptors

Noise is rarely regulated by SEL descriptors. As previously discussed, the SEL descriptor represents the acoustic energy of a single event normalized to a 1-second event duration, while L_{dn} and CNEL represent the weighted average of the intensity of noise over a 24-hour period, with adjustments for nighttime noise sensitivity. The use of SEL descriptor in considering sleep disturbance is complicated by the high degree of variability that exists based on personal perception. For these reasons, the Federal Interagency Committee on Noise and the California Airport and Land Use Planning Handbook continue to use L_{dn} or CNEL as the primary tool for land use compatibility planning and do not establish SEL standards. Since the L_{dn} and CNEL represent the cumulative exposure to all single events—that is, the exposure of all SELs taken together, weighed to add penalties for nighttime occurrences and averaged over a 24-hour period—the L_{dn}—and CNEL-based standards already account for the individual impacts associated with SELs.

CEQA

CEQA applies to projects proposed to be undertaken or requiring approval by state and local government agencies. "Projects" are public agency actions with potential to have a physical impact on the environment. Thresholds for significant effects regarding noise impacts are addressed in the applicable parts of the Appendix G and Section 15065 of the State CEQA Guidelines. Under these guidelines, a project would result in a significant impact if it would cause:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above 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, would the project expose people residing or working in the project area to excessive noise levels?

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

CEQA directs public agencies not to approve projects as proposed if there are feasible alternatives available that would substantially lessen the significant environmental effects of such projects, or unless feasible mitigation measures are implemented to reduce effects to a less than significant level.

Local

Since the state and federal government have preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning. The applicable sections of the General Plan and Municipal code are provided below.

City of Vallejo

General Plan

The City of Vallejo General Plan establishes the following goals and policies that are relevant to noise associated with the proposed project:

Goal: Maintain noise compatibility in a manner that is acceptable to residents and reasonable for commercial and industrial land uses.

- **Policy 1.** Apply the noise guidelines shown in Table 2 (of the General Plan) to land use decisions and other City actions.
  - 1a: The exterior noise level at primary outdoor use areas for residences should not exceed the maximum "normally acceptable" level in Table 2 (of the General Plan [L_{dn} of 60 dB for residences]). Small decks and entry porches do not need to meet this goal. Noise levels up to L_{dn} of 65dB may be allowed at the discretion of the City where it is not economically or aesthetically reasonable to meet the more restrictive outdoor goal.
  - 1b: The interior noise standard shall be 45 dB-L_{dn} for all residential uses, including single- and multi-family housing, hotels/motels, and residential healthcare facilities.
- **Policy 2.** Avoid adverse effects of noise-producing activities on existing land uses by implementing noise reduction measures, limiting hours of operation, or by limiting increases in noise.
  - 2a: Continue to enforce the noise regulations within the Vallejo Municipal Code, including Chapter 7.84 "Regulation of Noise Disturbances" and Chapter 16.72 "Performance Standards Regulations."
  - 2b: Where appropriate, limit noise generating activities (for example, construction and maintenance activities and loading and unloading activities) to the hours of 7:00 a.m. and 9:00 p.m.
  - 2c: When approving new development limit project-related noise increases to no more than 10 dB in non-residential areas and 5 dB in residential areas where the with-project noise level is less than the maximum "normally acceptable" level in Table 2. Limit project-related increases in all areas to no more than 3 dB where the with-project noise level exceeds the "normally acceptable" level in Table 2 (of the General Plan).

City of Vallejo Municipal Code

The City of Vallejo Municipal Code establishes the following ordinances that are relevant to noise associated with the proposed project.

7.84.010 - General Prohibition: Loud Unnecessary and Unusual Noise

Notwithstanding any other provisions of the Vallejo Municipal Code and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standard which may be considered in determining whether a violation of the provisions of this chapter exist may include, but not be limited to, the following:

A. The level of noise;
B. Whether the nature of the noise is usual or unusual;
C. Whether the origin of the noise is natural or unnatural;
D. The level and intensity of the background noise, if any;
E. The proximity of the noise to residential sleeping facilities;
F. The nature and zoning of the area within which the noise emanates;
G. The density of the inhabitation of the area within which the noise emanates;
H. The time of the day and night the noise occurs;
I. The duration of the noise;
J. Whether the noise is recurrent, intermittent, or constant; and
K. Whether the noise is produced by a commercial or noncommercial activity.

7.84.020 - Specific Prohibitions

In addition to and separate from the prohibition set forth in Section 7.84.010 above, the following acts, and the causing or permitting thereof, are hereby declared to be in violation of this ordinance. As used in this section, the term "noise disturbance" means any sound which (1) endangers or injures the safety or health of humans or animals; (2) annoys or disturbs a reasonable person of normal sensitiveness; or (3) endangers or injures personal or real property. The listing of specific prohibited activities in this section is not intended to limit the city's authority to regulate any and all loud, unnecessary and unusual noise pursuant to Section 7.84.010. Any noise not falling within the specific prohibitions set forth in this section is subject to regulation under the provisions of Section 7.84.010 above.

F. Loading and Unloading. It shall be unlawful to load, unload, open, close, or to do other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of nine p.m. and seven a.m. in such a manner as to cause a noise disturbance across a residential real property boundary. This subsection shall not apply to the collection and disposal of garbage and recyclable materials by the city's franchises.

G. Domestic Power Tools. It shall be unlawful to operate or permit the operation of any mechanically powered saw, drill, sander, grinder, lawn, or garden tool, lawnmower, or other similar device between nine p.m. and seven a.m. so as to create a noise disturbance across a residential real property boundary.
H. Sensitive Uses. It shall be unlawful to create or permit to be created within the city any noise disturbance in the vicinity of any hospital, church during hours of worship services, court house during hours of operation, or school during school hours.

16.72.030 - Noise Performance Standards

No land use shall generate sound exceeding the maximum levels permitted in the following table when such sounds are measured in any of the zoning districts listed in this table:

- Resource Conservation, Rural Residential, and Medical Districts: 55 dB
- Low, Medium, and High Density Residential Districts: 60 dB
- Professional Offices, Neighborhood, Pedestrian, and Waterfront Shopping and Services Districts: 70 dB
- Freeway Shopping and Service, Linear Commercial and Intensive Use Districts: 75 dB

16.72.040 - Noise Performance Standards: Correction Factors

The following correction factors, when applicable, shall be applied to the maximum sound pressure levels given in Section 16.72.030:

- Emission only between 7 a.m. and 10 p.m.: Plus 5
- Noise of unusual impulsive character such as hammering or drill pressing: Minus 5
- Noise of unusual periodic character such as hammering or screeching: Minus 5

16.72.050 - Noise Performance Standards: Exceptions

The following sounds, upon compliance with state conditions, may exceed the maximum sound pressure levels given in Section 16.72.030:

A. Time signals produced by places of employment or worship and school recess signals providing no one sound exceeds five seconds in duration and no one series of sounds exceeds twenty-four seconds in duration;
B. Devotional and patriotic music of worship provided such music is emitted only between hours of 7 and 10 p.m.;
C. Sounds from transportation equipment used exclusively in the movement of goods and people to and from a given premises, temporary construction or demolition work; and
D. Sounds made in the interest of public safety.

16.72.060 - Noise Level Measurement

The following provisions shall determine means for measuring noise levels. Where these provisions conflict with other provisions of the Vallejo Municipal Code, the following shall remain applicable for purposes of this title:

A. Setting of Meter. Any sound or noise level measurement made pursuant to the provisions of this title shall be measured with a sound level meter using an A-weighting and "slow" response pursuant to applicable manufacturer's instructions, except that for sounds of a duration of two seconds or less, the "fast" response shall be used and the average level during the occurrence of the sound reported.
B. Calibration of Meter. The sound level meter shall be approximately calibrated and adjusted as necessary by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances set forth in American National Standards ANSI-SI.4-1971.
C. Location of Microphone. All measurements shall be taken at any lot line of a lot within the applicable zoning district. The measuring microphone shall not be less than four feet above the ground, at least four feet distant from walls or other large reflecting surfaces and shall be protected from the effects of wind noises by the use of appropriate wind screens. In cases when the microphone must be located within ten feet of walls or similar large reflecting surfaces, the actual measured distances and orientation of sources, microphone and reflecting surfaces shall be noted and recorded. In no case shall a noise measurement be taken within five feet of the noise source.
D. Measured Sound Levels. The measurement of sound level limits shall be the average sound level for a period of one hour.

3.9.4 - Methodology

The proposed project's noise impacts were evaluated through noise measurements and modeling of potential noise impacts. The analysis is described below.

Measurement Procedure and Criteria

To ascertain the existing noise at and adjacent to the project site, field monitoring was conducted on November 12, 2011. The field survey noted that noise within the area of the proposed project is generally characterized by vehicle traffic on the local roadways. Aircraft overflights were observed during the noise measurements. Six Flags Discovery Kingdom was not open at the time the noise readings were taken. Therefore, the noise readings the area would likely show quieter ambient readings (lower maximum [L_{max}], average [L_{eq}], and minimum [L_{min}] noise levels without the addition of operational noise and traffic from Six Flags). As the measurements will show, lower ambient noise levels—the noise generated by equipment used to construct the project and sources of onsite noise—would have the potential for a greater difference in noise levels from the existing (ambient) condition, which would be considered to be a worst-case scenario. Noise is most intrusive when surroundings are quieter. Therefore, as the noise readings were taken when the site and surroundings

were relatively quiet, the difference between noise generated by construction equipment and onsite sources would be greater, thus more worst-case.

The noise measurements were taken using an Extech Model 407780 Type 2 integrating sound level meter programmed in "slow" mode to record the sound pressure level at 1-second intervals in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time, L_{min} and L_{max} were recorded. The sound level meter and microphone was mounted on a tripod 5 feet above the ground and was equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using an Extech calibrator, Model 407766. All noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Locations

The noise monitoring locations were selected to obtain noise measurements of the current noise levels in project study area and to provide a baseline for any potential noise impacts that may be created by development of the proposed project. The noise measurement sites were selected to provide a representative sampling of the noise levels experienced by nearby sensitive receptors. The sites are shown in Exhibit 3.9-2, Exhibit 3.9-3, Exhibit 3.9-4, and Exhibit 3.9-5.

Noise Measurement Timing and Climate

The noise measurements were recorded between 12:17 p.m. and 3:15 pm on November 12, 2011. When the noise measurements were started, it was partly cloudy, the temperature was 61 degrees Fahrenheit (°F) and the wind was around 3 miles per hour.

Table 3.9-2: Existing Noise Level Measurements (dBA)

Site Location	Description	L_{eq}	L_{MAX}	L_{MIN}
Site 1	Marriott southwest corner in parking lot	55.9	68.6	51.0
Site 2	North side of fairgrounds by existing Admin building	67.8	73.0	61.5
Site 3	West side of fairgrounds north of main inference in field	51.7	57.5	46.9
Site 4	Center of fairgrounds by track	48.0	53.2	44.5
Site 5	Southwest corner of main parking lot	56.4	69.2	44.7
Site 7	South corner of Fairgrounds Drive and Coach Lane	65.2	83.8	41.5
Site 8	Adjacent to mobile home park, Westside of Fairgrounds Drive	59.3	72.4	51.5
Note: Site 6 noise reading was incomplete.				

Traffic Noise Modeling Methodology

Noise impacts related to vehicular traffic were modeled using a version of the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108), as modified for CNEL and the "Calveno" energy curves. Site-specific information is entered, such as roadway traffic volumes, roadway active width, source-to-receiver distances, travel speed, noise source and receiver heights, and the percentages of automobiles, medium trucks, and heavy trucks that the traffic is made up of throughout the day, amongst other variables.

Roadway Assumptions

Table 3.9-3 presents the hourly traffic flow distribution (vehicle mix) used in this analysis. The vehicle distribution represents a statewide mix, obtained from Caltrans and from field observations of similar arterial and collector roads. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA Model.

Table 3.9-3: Roadway Vehicle Mix

Roadway Classification	Vehicle Type	Percent of Hourly Distribution			
		Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	Overall
Statewide Mix	Automobiles	77.50	12.90	9.59	97.42
	Medium Trucks	84.78	4.89	10.33	1.84
	Heavy Trucks	86.49	2.70	10.81	0.74
Source: California Department of Transportation, 2010; Michael Brandman Associates, 2012.					

Source Assumptions

Noise is a function of both speed and average daily traffic volumes (ADTs). An average speed of 40 miles per hour was used to assess the impacts from project-related traffic along the roads within the project vicinity. To assess the roadway noise generation in a uniform manner, all vehicles were analyzed at the single-lane-equivalent acoustic center of the roadway being analyzed, which means they all lanes were analyzed as one lane located at the centerline of the roadway, instead of analyzing each lane in the roadway as a separate noise source. The width of each single-lane equivalent was based on the right-of-way and near-far lane lengths (i.e., the distance between the middle lines of each outside lane) as determined by the General Plan Roadway Classification. In order to determine the height above the road grade from where the noise is being emitted, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires, and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

Photograph 1: Reading from northwest edge of project site in Mariott parking lot; facing towards Six Flags Discovery Kingdom.

Photograph 2: Reading located north edge of project site, by fairgrounds administration buildings.

Source: Michael Brandman Associates 2012.

Michael Brandman Associates

20850018 • 8/2012 | 3.9-2_noise_monitoring_photos1and2.mxd

Exhibit 3.9-2
Noise Monitoring Photographs 1 and 2

Photograph 3: Reading from west side of project site, facing towards Six Flags Discovery Kingdom.

Photograph 4: Reading from center of fairgrounds west of the race track; facing west.

Source: Michael Brandman Associates 2012.

Michael Brandman Associates

20850018 • 8/2012 | 3.9-3_noise_monitoring_photos3and4.mxd

Exhibit 3.9-3
Noise Monitoring Photographs 3 and 4

Photograph 5: Reading from southwest corner of main parking area; facing west.

Photograph 6: Reading from east end of Coach Lane, south of project site; facing east towards Interstate 80.

Source: Michael Brandman Associates 2012.

Michael Brandman Associates

20850018 • 8/2012 | 3.9-4_noise_monitoring_photos5and6.mxd

Exhibit 3.9-4
Noise Monitoring Photographs 5 and 6

Photograph 7: Reading from intersection of Fairgrounds Drive and Coach Lane; facing west.

Photograph 8: Reading from hillside, west of mobile home park; facing east.

Source: Michael Brandman Associates 2012.

Michael Brandman Associates

20850018 • 8/2012 | 3.9-5_noise_monitoring_photos7and8.mxd

Exhibit 3.9-5
Noise Monitoring Photographs 7 and 8

Transportation and Stationary Noise Impacts

In addition to the increase of traffic on the nearby roadways, the proposed project may cause potential stationary noise impacts onto the nearby residences from the proposed rooftop mechanical equipment, parking lot areas, and musical/entertainment events. The onsite roads within the project are not anticipated to be significant sources of noise. Noise generated by vehicular and stationary noise sources are analyzed below.

3.9.5 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether noise impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial (10 dBA in non-residential areas and 5 dBA in residential areas) permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial (10 dBA in non-residential areas and 5 dBA in residential areas) 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, would the project expose people residing or working in the project area to excessive noise levels?

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

As stated previously, new developments are to limit project-related noise increases to no more than 10 dB in non-residential areas and 5 dB in residential areas where the with-project noise level is less than the maximum "normally acceptable" level. Limit project-related increases in all areas to no more than 3 dB where the with-project noise level exceeds the "normally acceptable" level. Normally acceptable levels are given below.

- Low, Medium, and High Density Residential Districts: 60 dB
- Professional Offices, Neighborhood, Pedestrian, and Waterfront Shopping and Services Districts: 70 dB

- Freeway Shopping and Service, Linear Commercial and Intensive Use Districts: 75 dB

Because of the temporary nature of construction, construction noise is typically exempt from City noise standards on the condition it does not occur during the noise sensitive nighttime hours, and occurs between the hours of 7:00 a.m. and 9:00 p.m. However, neither the City's General Plan Noise Element nor the Municipal Code provide any direction on how construction noise should be analyzed. Therefore, in order to provide a conservative analysis, construction noise has been analyzed based on the same exterior threshold as described above for operational noise.

3.9.6 - Project Impacts and Mitigation Measures

Noise Levels in Excess of Standards

Impact NOI-1: **The project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

Impact Analysis

Construction-Related Noise

Construction noise represents a short-term increase in ambient noise levels. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The construction activities for the proposed project is anticipated to include grading of the project site, construction of approximately 149,500 square feet of public building space, 327,571 square feet of entertainment/mixed-use building space, paving of internal roadways and parking areas, and landscaping. The Entertainment and Open Space portion of the project is surrounded by commercial and freeway land uses. Noise levels of up to 75 dBA are allowable in these areas.

Table 3.9-4: Construction Equipment Noise Emissions and Usage Factors

Equipment	Acoustical Use Factor (percent)	Actual Measured L_{max} @ 50 feet (dBA, slow)
Auger Drill Rig	20	84
Backhoe	40	78
Bar Bender	20	N/A
Compactor (ground)	20	83
Compressor (air)	40	78
Concrete Batch	15	N/A
Concrete Mixer Truck	40	79
Concrete Pump	20	81
Concrete Saw	20	90

Table 3.9-4 (cont.): Construction Equipment Noise Emissions and Usage Factors

Equipment	Acoustical Use Factor (percent)	Actual Measured L_{max} @ 50 feet (dBA, slow)
Crane	16	81
Dozer	40	82
Dump Truck	40	76
Excavator	40	81
Flat Bed Truck	40	74
Front End Loader	40	79
Generator	50	81
Grader/Scraper	40	84
Jackhammer	20	89
Paver	50	77
Pneumatic Tools	50	85
Pumps	50	81
Roller	20	80
Source: FHWA RCNM User's Guide Table 1.		

Construction noise levels will vary significantly based upon the size and topographical features of the active construction zone, duration of the workday, and types of equipment employed, as indicated in the table above. The combined noise impact generated by one grader, one rubber tired dozer, one water truck, and one tractor/loader/backhoe working together in the same place, at the same time is 89.9 dBA (derived from the equation, $L = 10 \text{ Log } _{10} (10^{8.4} + 10^{8.2} + 10^{7.8} + 10^{7.4})$. Using soft site parameters (a loss of 6 dBA per doubling of distance from the source), the 75 dBA CNEL contour is estimated to occur at a distance of approximately 275 feet. The closest commercial land use is the Marriot Hotel adjacent to the northwestern corner of the site. Therefore, to minimize impacts upon neighboring properties from noise generated by the project during grading (the noisiest construction phase), stationary noise-generating construction equipment shall be placed a minimum of 275 feet from the property line of the Marriot Hotel property line (see Mitigation Measure NOI-1a)

This impact discussion analyzes the potential for construction and operational noise associated with the proposed Project to cause an exposure of persons to or generation of noise levels in excess of established City of Vallejo noise standards of 60 dB CNEL or less at the boundary areas of planned or zoned noise sensitive uses.

Construction noise represents a short-term increase in ambient noise levels. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and

duration of the construction activities. The construction activities for the proposed project is anticipated to include grading of the project site, construction of approximately 149,500 square feet of public building space, 327,571square feet of entertainment/mixed-use building space, paving of internal roadways and parking areas, and landscaping. The closest noise-sensitive receptors are the mobile home residents approximately 85 feet south of the project site.

Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels listed in Table 3.9-4. The greatest noise impacts to the nearby residential uses would be anticipated to occur during the grading of the project site. Construction noise has been modeled on the equipment assumption used in Section 3-2, Air Quality, which assumed the grading of the project site would consist of the simultaneous operation of one grader, one rubber tired dozer, one water truck, and one tractor/loader/backhoe. The equipment was placed along the edge of the project site and 8 feet above ground level. In addition, construction activities associated with the proposed Project would be consistent with the City of Vallejo Municipal Code regarding construction noise.

Using soft site parameters (a loss of 6 dBA per doubling of distance from the source), the 60 dBA CNEL contour under the same conditions is calculated to occur at a distance of approximately 1550 feet. Therefore, to minimize impacts upon neighboring properties from noise generated by the project during grading (the noisiest construction phase), stationary noise-generating construction equipment shall be placed a minimum of 1550 feet from the property line of the closest existing residential property line boundary (adjacent to the southern project boundary) (see Mitigation Measure NOI-1a).

Operational Noise

As stated above, Professional Offices, Neighborhood, Pedestrian, and Waterfront Shopping and Services Districts have an allowable noise level of 70 dB. Freeway Shopping and Service, Linear Commercial and Intensive Use Districts have an allowable level of 75 dB. As discussed in Impact NOI-3, typical noise levels generated by County Fair uses range between 65 and 75 dBA.

The entertainment and open space area would also allow limited residential uses, as described below:

- Residential use of the project site is intended to be subordinate to, and integrated with, the principal and conditionally permitted EC and EMU uses.
- The primary objective of allowing residential dwellings is to provide for live-work and/or workforce housing for entertainment district employees.
- Dwelling units would be primarily above ground-level EMU and EC uses, rather than as single-use structures.
- Residential development would require Conditional Use Permit approval by City of Vallejo.
- A maximum of 50 multi family dwelling units is anticipated.

- Alternatively, residential development beyond 50 units would require additional environmental review.

The residential uses would be required to be attenuated to exterior residential noise standard of 60 dBA. It is unknown at this time where the residential uses would be located within the EMU area. If the residential uses were to be located proximal to Fairgrounds Drive, a sound wall or barrier could potentially be required to reduce traffic noise levels to 60 dBA or less. Therefore, to reduce impacts to residential uses within the project, Mitigation Measure NOI-1b is required.

For the entertainment/commercial uses adjacent to Interstate 80 an earth mound "berm" is proposed, as part of project design, between the amphitheater and the transition from SR-37 to I-80. Earth berms have a very natural appearance and are usually attractive. They also reduce noise by approximately 3 dB more than vertical walls of the same height. Without any attenuation (or any reductions for topography), freeway noise level near the amphitheater would be approximately 74.5 dBA. The freeway is approximately 23 feet higher than the proposed amphitheater area. The effect of the berm (which would completely break the line-of-sight between the freeway and freeway transition) and the topography would reduce noise impacts to a level of approximately 55.8 dBA. This noise level is compatible with the use proposed.

It is unknown what type of concert events would be scheduled at the amphitheater, other than "family" events; therefore, heavy metal and/or punk concerts (which are generally louder than other forms of music) are not anticipated at the venue. The closest existing sensitive receptors would be the residential uses along Griffin Drive, north of SR-37, located approximately 1,470 feet to the north of the amphitheater area. To estimate the potential for open-air concert noise impacts, reference noise levels from a CURE concert at the Pasadena Rose Bowl were used. The Rose Bowl stadium covers approximately 11 acres and can seat 90,000+ fans. The noise levels generated at a distance of 1,100 feet from the stage of a 1992 CURE concert were approximately 66.2 dBA[1]. Without consideration of any attenuation or topography, at a distance of approximately 1,470 feet from the source, the noise level from a similar-sized concert would be approximately 63 dBA. The proposed amphitheater is much smaller than the Rose Bowl and would require less amplification to reach fans in the back rows. Although music would be audible, the concert-related noise would not exceed maximum noise levels already experience in the project vicinity (see Table 3.9-2). Therefore concert-related noise impacts to existing, adjacent residential uses along Griffin Drive are not anticipated.

As stated previously, residential uses can be a part of the EMU. The closest portion of the EMU (north of Entry Road) lies approximately 1,066 feet west of the amphitheater location. Noise levels generated by a concert at the amphitheater are anticipated to be less than 65 dBA at this distance. Furthermore, other fair, mixed-use, or commercial structures are proposed in between the

[1] City of Pasadena Noise Element. December 2002. http://cityofpasadena.net/Planning/CommunityPlanning /General_Plan_Noise_Element/.

amphitheater and the potential residential uses that would block the line-of-sight from the amphitheater to the new sensitive land use and reduce noise levels by 5 to 10 dBA. Therefore, noise impacts from the amphitheater to new residential uses would be around 55 to 60 dBA, which meets the residential exterior noise standard.

The project's operational noise impacts are considered to be less than significant.

Level of Significance Prior to Mitigation

Potentially significant impact.

Mitigation Measures

MM NOI-1a Stationary noise-generating construction equipment shall be placed a minimum of 275 feet from the property line of the Marriot Hotel property and a minimum of 1,550 feet from the property line of the closest existing residential property line (south of the project boundary), when and where feasible.

MM NOI-1b Once precise grading and architectural plans are made available, and prior to building permit issuance, a final acoustical impact analysis shall be performed for all residential planning areas in order to confirm that exterior noise standards of 60 dBA are achieved and interior noise levels are reduced to 45 dBA or less. If the final acoustical analysis determines that noise levels are in excess of these standards, then mitigation in the form of noise barriers to reduce exteriors noise levels and/or higher STC-rated windows and doors to reduce interior noise levels may be required.

Level of Significance After Mitigation

Less than significant impact.

Excessive Groundborne Vibration

Impact NOI-2:	**The project would not result in expose persons to or generation of excessive groundborne vibration or groundborne noise levels.**

Impact Analysis

This impact discussion analyzes the potential for the proposed project to cause an exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Vibration levels in the project area would be influenced by construction activities and from the ongoing operations of the proposed project.

A vibration impact would be generally considered significant if it involves any construction-related or operations-related impacts in excess of 0.05 inch per second RMS vertical velocity at the nearby sensitive receptors (0.035 inch per second is barely perceptible). The construction and operations-related vibration impacts have been analyzed separately below.

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table 3.9-5 gives approximate vibration levels for particular construction activities and provides a reasonable estimate for a wide range of soil conditions.

Table 3.9-5: Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level (L_V) at 25 feet
Pile driver (impact)	1.518 (upper range) 0.644 (typical)	112 104
Pile driver (sonic)	0.734 upper range 0.170 typical	105 93
Clam shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall)	0.008 in soil 0.017 in rock	66 75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58
Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.		

Construction activities can produce vibration that may be felt by adjacent uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary sources of vibration during construction would be from a large bulldozer. From Table 3.9-5, a large bulldozer would produce the largest amount of equipment-related vibration on the project site: 0.089 inch per second PPV at 25 feet with an approximate vibration level of 87.

The closest receptors to the project site are the mobile homes located approximately 85 feet from the southern boundary of the project site. It is anticipated that the vibration levels caused by a large bulldozer operating on the edge of the area to be disturbed during construction of the proposed project at the nearest structure will be less than 0.007 inch per second RMS. This vibration level would not exceed the 0.05 inch per second significance threshold and the impact is considered to be less than significant.

Level of Significance Prior to Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

Permanent Increase in Ambient Noise Levels

Impact NOI-3:	**The project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.**

Impact Analysis

Community noise problems typically occur at levels that are well below the threshold for hearing loss. However, noise at less than hearing loss levels may create a variety of negative effects through loss of sleep, interference with communication, or lack of concentration. Noise-induced stress varies from one person to another and even varies within the same person from one day to the next. Therefore, there are no clear-cut limits that characterize a stress-free noise environment.

Noise analysis methodology is accurate only to the nearest whole decibel and most people only notice a change in the noise environment when the difference in noise levels is greater than 3 dBA. However, it is widely accepted that the average healthy ear can barely perceive changes of 3 dBA and that a change of 5 dBA is readily perceptible.

Proposed Parking Lot and Parking Structure

The predominant noise sources associated with parking garage activities include car doors slamming, cars starting, cars accelerating away from the parking stalls, car alarms being activated, brake squeal, and suspension squeal when vehicles pass over speed bumps. Activities at the parking structure would be sporadic in nature, occurring throughout the day with the highest concentration of activities during the peak morning and afternoon periods. Parking garage activities would generate an average hourly noise level of 57 dBA at a distance of 50 feet (Wieland 2007). This is less than the 60-dBA residential standard.

An uncovered exterior parking lot is also proposed along the northern portion of the project site and would involve similar activities and generate similar noise impacts (approximately 57 dBA) as the parking garage. The noise associated with parking structure/lot activities would be overshadowed by the traffic noise along I-80 and SR-37 and is slightly lower than the noise levels already experienced by residents in this area (65.2 dBA L_{eq} and 83.8 dBA L_{max}).

Proposed Rooftop Mechanical Equipment

In order to determine the noise created by a rooftop HVAC unit, a noise measurement was taken approximately 10 feet from a rooftop HVAC unit on an existing commercial building. The noise

measurement recorded a noise level of 59.5 dBA L_{eq}, while the HVAC unit was operational (MBA 2009). Even if a bank of five HVAC units were to be running simultaneously and side-by-side, the noise generated by these units would be approximately 66.5 dBA at a distance of 10 feet from the source. At a distance of 150 feet, the five HVAC units would generate noise levels of approximately 43 dBA, far below the 60-dBA residential standard.

As there are no sensitive receptors planned within 150 feet of commercial uses, impacts from noise generated by rooftop forced air units (ventilation fans and air conditioning) from any commercial building are considered less than significant.

Entertainment Area

It is unknown at this time what types of entertainment (other than "family" entertainment) would be scheduled at the fairground. The area designated as Fair (in Exhibit 2-6 of this DEIR) would be used for fair or future fair-related uses, including but not limited to fairgrounds and fair-related uses, including thematic rides; exhibition halls; amphitheaters; natural resource areas; water channels; preserves and protective buffer areas; public waterways and trails; public/private utility buildings; structures and facilities (as needed for infrastructure services); recreational facilities, including parks, recreation areas, and buildings for recreational use; picnic facilities; playground apparatus; playing fields and courts; public transit centers; park and ride lots and related parking; surface and/or structured parking; loading and servicing for fair-related events; recreational vehicle parks and storage; and other uses similar in nature as recommended by the Solano County Fair Association and approved by the Solano County Board of Supervisors. The parcels with a Fair designation would be limited to fair and fair-related activities as defined within Section 3.5.1 of the Specific Plan.

Noise sources during fair events include a public address system, carnival rides, and several sound reinforcement systems, which are used for concerts, and carnival rides. Noise levels in the activity areas of a typical fair are in the range of 65 dBA to 75 dBA[2]. According to the City of Vallejo General Plan, commercial uses adjacent to freeways are compatible with noise levels up to 75 dBA.

Project-Related Traffic

Impacts attributable to project-specific traffic increases would be considered significant if they create a 5-dBA or greater increase in noise levels along roadways accessed by project-specific traffic in residential areas (10 dBA in non-residential areas). Offsite noise levels were calculated along roadway segments in the project vicinity for the following scenarios:

- Existing conditions
- Existing plus ambient growth plus phase 1
- Existing plus ambient growth plus phases 1 and 2
- Existing plus ambient growth plus phases 1, 2, and 3
- Year 2035 (cumulative), no project

[2] Costa Mesa General Plan Noise Element. http://www.costamesaca.gov/modules/showdocument.aspx?documentid=6604.

- Year 2035 (cumulative), plus Phase 1
- Year 2035 (cumulative), plus Phases 1 and 2
- Year 2035 (cumulative), plus Phases 1, 2, and 3

Using the traffic noise modeling parameters outlined above, the various scenarios that are described above were modeled to determine project-specific increases in noise levels at a uniform distance of 50 feet from roadway centerline. The uniform distance allows for direct comparisons of potential increases or decreases in noise levels based upon various traffic scenarios; however, at this distance, no specific noise standard necessarily applies. Therefore, the change in a noise level between scenarios is the focus of this portion of the analysis, rather than the resulting independent noise level for any one segment.

Project Traffic Noise Contributions

The Project Traffic Noise roadway noise impacts were calculated by comparing the existing noise levels with the existing plus Phase 1, existing plus Phases 1 and 2, and existing plus Phases 1, 2 and 3. The results are shown below in Table 3.9-6.

Table 3.9-6 shows that the only area that has a 5-dBA or greater increase from the existing scenario is along Admiral Callaghan Lane north of Columbus Parkway. The project traffic-related increase in noise along this road segment can be up to 8.8 dBA; however, this road segment is located within a general plan designated commercial-highway land use. According to the General Plan Noise Element, in order for the project-related increase in noise to be significant in a non-residential area, the increase from levels without the project would have to be greater or equal to 10 dBA. Therefore, the change in noise level from existing conditions for this scenario is also not considered significant.

Cumulative Impact Analysis

Operational Roadway Noise

In order for the proposed project to create a cumulative considerable impact, the proposed project's portion of the cumulative increase in noise would need to increase the noise levels by 5 dBA (10 dBA in non-residential areas). The cumulative roadway noise impacts have been calculated for the year 2035 scenarios.

Table 3.9-6: Project Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline														
Road Segment	Existing		Phase 1 - Project				Phases 1 & 2 - Project				Phases 1, 2 & 3 - Project			
	ADT	dB CNEL	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase
NORTH/SOUTH ROADWAYS														
Fairgrounds Drive														
n/o Whitney Avenue/Taper Avenue	10,360	67.9	170	10,530	67.9	0.0	340	10,700	68.0	0.1	570	10,930	68.1	0.2
s/o Whitney Avenue/Taper Avenue	13,010	68.8	330	13,340	69.0	0.2	700	13,710	69.1	0.3	1,140	14,150	69.2	0.4
n/o SR-37 WB Ramps	13,980	69.2	330	14,310	69.3	0.1	700	14,680	69.4	0.2	1,140	15,120	69.5	0.3
s/o SR-37 WB Ramps	18,780	70.4	2,040	20,820	70.9	0.5	4,750	23,530	71.4	1.0	7,630	26,410	71.9	1.5
n/o SR-37 EB Ramps	18,780	70.4	2,040	20,820	70.9	0.5	4,750	23,530	71.4	1.0	7,630	26,410	71.9	1.5
s/o SR-37 EB Ramps	18,680	70.4	3,480	22,160	71.2	0.8	7,400	26,080	71.9	1.5	11,920	30,600	72.6	2.2
n/o Sage Street/Six Flags Staff Driveway	18,680	70.4	3,480	22,160	71.2	0.8	7,400	26,080	71.9	1.5	11920	30,600	72.6	2.2
s/o Sage Street/Six Flags Staff Driveway	17,000	70.0	3,590	20,590	70.8	0.8	7,300	24,300	71.6	1.6	11,420	28,420	72.2	2.2
n/o Marriott Driveway	17,640	70.2	3,590	21,230	71.0	0.8	7,300	24,940	71.7	1.5	11,420	29,060	72.3	2.1
s/o Marriott Driveway	17,280	70.1	3,590	20,870	70.9	0.8	7,300	24,580	71.6	1.5	11,420	28,700	72.3	2.2
n/o Future Fairgrounds North Driveway	17,260	70.1	3,590	20,850	70.9	0.8	7,300	24,560	71.6	1.5	11,420	28,680	72.3	2.2
s/o Future Fairgrounds South Driveway	17,260	70.1	1,000	18,260	70.3	0.2	3,870	21,130	70.9	0.8	6,690	24,250	71.5	1.4
n/o Six Flags Entrance Ramp	17,330	70.1	1,000	18,330	70.3	0.2	3,870	21,200	71.0	0.9	6,690	24,320	71.6	1.5
s/o Six Flags Entrance Ramp	8,450	67.0	1,000	9,450	67.5	0.5	3,870	12,320	68.6	1.6	6,690	15,440	69.6	2.6

Table 3.9-6 (cont.): Project Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline														
Road Segment	**Existing**		**Phase 1 - Project**				**Phases 1 & 2 - Project**				**Phases 1, 2 & 3 - Project**			
	ADT	**dB CNEL**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**
n/o Six Flags North Exit Driveway/Fairgrounds Driveway	8,440	67.0	1,000	9,440	67.5	0.4	3,870	12,310	68.6	1.6	6,690	15,430	69.6	2.6
s/o Six Flags North Exit Driveway/Fairgrounds Driveway	6,480	65.8	1,900	8,380	66.9	1.1	4,830	11,310	68.2	2.4	8,330	14,810	69.4	3.6
n/o Six Flags South Exit Driveway	6,110	65.6	1,900	8,010	66.7	1.1	4,830	10,940	68.1	2.5	8,330	14,440	69.3	3.7
s/o Six Flags South Exit Driveway	5,950	65.4	1,900	7,850	66.6	1.2	4,830	10,780	68.0	2.6	8,330	14,280	69.2	3.8
n/o Future Fairgrounds South Driveway	5,800	65.3	1,900	7,700	66.6	1.3	4,830	10,630	68.0	2.7	8,330	14,130	69.2	3.9
s/o Future Fairgrounds South Driveway	5,800	65.3	1,900	7,700	66.6	1.3	4,150	9,950	67.7	2.4	6,650	12,450	68.7	3.4
n/o Sereno Drive	5,730	65.3	1,900	7,630	66.5	1.2	4,150	9,880	67.6	2.3	6,650	12,380	68.6	3.3
s/o Sereno Drive	5,390	65.0	1,740	7,130	66.2	1.2	3,790	9,180	67.3	2.3	6,080	11,470	68.3	3.3
n/o Valle Vista Avenue	5,380	65.0	1,740	7,120	66.2	1.2	3,790	9,170	67.3	2.3	6,080	11,460	68.3	3.3
s/o Valle Vista Avenue	5,560	65.2	1,740	7,300	66.3	1.1	3,790	9,350	67.4	2.2	6,080	11,640	68.4	3.2
Fairgrounds Drive/I-80 WB Ramps														
n/o Redwood Street	5,970	65.5	1,740	7,710	66.6	1.1	3,790	9,760	67.6	2.1	6,080	12,050	68.5	3.0
s/o Redwood Street	7,000	66.2	480	7,480	66.4	0.2	830	7,830	66.2	0.4	1,290	8,290	66.9	0.7
Tuolumne Street														
n/o Sereno Drive	5,820	65.3	50	5,870	65.4	0.1	120	5,940	65.4	0.1	200	6,020	65.5	0.2
s/o Sereno Drive	6,890	66.1	0	6,890	66.1	0.0	0	6,890	66.1	0.0	0	6,890	66.1	0.0

Table 3.9-6 (cont.): Project Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline														
Road Segment	**Existing**		**Phase 1 - Project**				**Phases 1 & 2 - Project**				**Phases 1, 2 & 3 - Project**			
	ADT	**dB CNEL**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**
n/o Redwood Street	8,780	67.1	0	8,780	67.1	0.0	0	8,780	67.1	0.0	0	8,780	67.1	0.0
s/o Redwood Street	5,890	65.4	50	5,940	65.4	0.0	120	6,010	65.5	0.1	200	6,090	65.5	0.1
Admiral Callaghan Lane														
n/o Columbus Parkway	30	42.5	50	80	46.7	4.2	120	150	49.5	7.0	200	230	51.3	8.8
s/o Columbus Parkway	15,690	69.7	50	15,740	69.7	0.0	120	15,810	69.7	0.0	200	15,890	69.7	0.0
n/o I-80 EB Ramps/Safeway Driveway	13,540	69.0	110	13,650	69.1	0.1	240	13,780	69.1	0.1	370	13,910	69.1	0.1
s/o I-80 EB Ramps/Safeway Driveway	19,550	70.6	750	20,300	70.8	0.2	1,810	21,360	71.0	0.4	2,930	22,480	71.2	0.6
Admiral Callaghan Lane/I-80 EB Off-Ramp														
n/o Redwood Street	19,550	70.6	750	20,300	70.8	0.2	1,810	21,360	71.0	0.04	2,930	22,480	71.2	0.6
s/o Redwood Street	4,260	64.0	0	4,260	64.0	0.0	0	4,260	64.0	0.0	0	4,260	64.0	0.0
Oakwood Avenue														
n/o Redwood Street	0	—	0	0	—	—	0	0	—	—	0	0	—	—
s/o Redwood Street	4,690	64.4	50	4,740	64.5	0.1	120	4,810	64.5	0.1	200	4,890	64.6	0.2
I-80 WB exit ramps														
n/o Redwood Street	2,920	62.4	30	2,950	62.4	0.0	90	3,010	62.5	0.0	130	3,050	62.5	0.1
EAST/WEST ROADWAYS														
Whitney Avenue/Taper Avenue														
e/o Fairgrounds Drive	2,560	61.8	50	2,610	61.9	0.1	120	2,680	62.0	0.2	200	2,760	62.1	0.3
w/o Fairgrounds Drive	4,290	64.0	110	4,400	64.1	0.1	240	4,530	64.3	0.3	370	4,660	64.4	0.4

Table 3.9-6 (cont.): Project Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline														
Road Segment	Existing		Phase 1 - Project				Phases 1 & 2 - Project				Phases 1, 2 & 3 - Project			
	ADT	dB CNEL	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase
SR-37 WB Ramps														
e/o Fairgrounds Drive	13,790	69.1	1,460	15,250	69.5	0.4	3,630	17,420	70.1	1.0	5,850	19,640	70.6	1.5
w/o Fairgrounds Drive	2,070	60.9	250	2,320	61.4	0.5	420	2,490	61.7	0.8	640	2,710	62.0	1.1
SR-37 EB Ramps														
e/o Fairgrounds Drive	8,540	67.0	1,130	9,670	67.6	0.6	1,880	10,420	67.9	0.9	3,050	11,590	68.3	1.3
w/o Fairgrounds Drive	3,020	62.5	310	3,330	62.9	0.4	770	3,790	63.5	1.0	1,240	4,260	64.0	1.5
Sage Street/Six Flags Staff Driveway														
e/o Fairgrounds Drive	4,650	64.4	110	4,760	64.5	0.1	1,360	6,010	65.5	1.1	3,120	7,770	66.6	2.2
w/o Fairgrounds Drive	1,010	57.7	0	1,010	57.7	0.0	0	1,010	57.7	0.0	0	1,010	57.7	0.0
Marriott Driveway														
e/o Fairgrounds Drive	680	56.0	0	680	56.0	0.0	0	680	56.0	0.0	0	680	56.0	0.0
w/o Fairgrounds Drive	0	—	0	0	—	—	0	0	—	—	0	0	—	—
Six Flags Entrance Ramp														
e/o Fairgrounds Drive	0	—	0	0	—	—	0	0	—	—	0	0	—	—
w/o Fairgrounds Drive	9,740	67.6	0	9,740	67.6	0.0	0	9,740	67.6	0.0	0	9,740	67.6	0.0
Six Flags North Exit Driveway/Fairgrounds Driveway														
e/o Fairgrounds Drive	5,470	65.1	2,080	7,550	66.5	1.4	2,880	8,350	66.9	1.8	3,800	9,270	67.4	2.3
w/o Fairgrounds Drive	1,010	57.7	0	1,010	57.7	0.0	0	1,010	57.7	0.0	0	1,010	57.7	0.0

Table 3.9-6 (cont.): Project Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline														
Road Segment	Existing		Phase 1 - Project				Phases 1 & 2 - Project				Phases 1, 2 & 3 - Project			
	ADT	dB CNEL	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase	Project ADT	Existing plus Project ADT	dB CNEL	Project-Specific Increase
Six Flags South Exit Driveway														
e/o Fairgrounds Drive	100	47.7	0	100	47.7	0.0	0	100	47.7	0.0	0	100	47.7	0.0
w/o Fairgrounds Drive	100	47.7	0	100	47.7	0.0	0	100	47.7	0.0	0	100	47.7	0.0
Sereno Drive														
e/o Fairgrounds Drive	0	—	0	0	—	—	0	0	—	—	0	0	—	—
w/o Fairgrounds Drive	2,540	61.7	160	2,700	62.0	0.3	360	2,900	62.3	0.6	570	3,110	62.6	0.9
e/o Tuolumne Street	2,240	61.2	160	2,400	61.5	0.3	360	2,600	61.8	0.6	570	2,810	62.2	1.0
w/o Tuolumne Street	3,270	62.8	110	3,380	63.0	0.2	240	3,510	63.2	0.4	370	3,640	63.3	0.5
Valle Vista Avenue														
e/o Fairgrounds Drive	0	—	0	0	—	—	0	0	—	—	0	0	—	—
w/o Fairgrounds Drive	660	55.9	0	660	55.9	0.0	0	660	55.9	0.0	0	660	55.9	0.0
Redwood Street														
e/o Fairgrounds Drive/I-80 WB Ramps	20,590	70.8	910	21,500	71.0	0.2	2,170	22,760	71.3	0.5	3,500	24,090	71.5	0.7
w/o Fairgrounds Drive/I-80 WB Ramps	17,980	70.2	320	18,300	70.3	0.1	700	18,680	70.4	0.2	1,160	19,140	70.5	0.3
e/o Tuolumne Street	16,250	69.8	320	16,570	69.9	0.1	700	16,950	70.0	0.2	1,160	17,410	70.1	0.3
w/o Tuolumne Street	12,120	68.5	270	12,390	68.6	0.1	580	12,700	68.7	0.2	960	13,080	68.9	0.4
e/o Admiral Callaghan Lane/I-80 EB Off-Ramp	12,320	68.6	160	12,480	68.7	0.1	360	12,680	68.7	0.1	570	12,890	68.8	0.2
w/o Admiral Callaghan Lane/I-80 EB Off-Ramp	20,590	70.8	910	21,500	71.0	0.2	2,170	22,760	71.3	0.5	3,500	24,090	71.5	0.7

Table 3.9-6 (cont.): Project Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline														
Road Segment	**Existing**		**Phase 1 - Project**				**Phases 1 & 2 - Project**				**Phases 1, 2 & 3 - Project**			
	ADT	**dB CNEL**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**	**Project ADT**	**Existing plus Project ADT**	**dB CNEL**	**Project-Specific Increase**
e/o Oakwood Avenue	6,590	65.9	110	6,700	66.0	0.1	240	6,830	66.0	0.1	370	6,960	66.1	0.2
w/o Oakwood Avenue	6,320	65.7	160	6,480	65.8	0.1	360	6,680	65.9	0.2	570	6,890	66.1	0.4
Columbus Parkway														
e/o Admiral Callaghan Lane	10,070	67.7	170	10,240	67.8	0.1	340	10,410	67.9	0.2	570	10,640	68.0	0.3
w/o Admiral Callaghan Lane	20,530	70.8	270	20,800	70.9	0.1	580	21,110	70.9	0.1	970	21,500	71.0	0.2
I-80 EB Ramps/Safeway Driveway														
e/o Admiral Callaghan Lane	1,750	60.1	0	1,750	60.1	0.0	0	1,750	60.1	0.0	0	1,750	60.1	0.0
w/o Admiral Callaghan Lane	5,920	65.4	640	6,560	65.9	0.5	1,570	7,490	66.4	1.0	2,560	8,480	67.0	1.6

Year 2035 – Plus Project

The year 2035 plus project cumulative roadway noise impacts were calculated by comparing the year 2035 (no project) noise levels with the 2035 plus Phase 1, 2035 plus Phases 1 and 2, and 2035 plus Phases 1, 2 and 3. The results are shown below in Table 3.9-7.

Table 3.9-7: Project Plus Cumulative Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline											
Road Segment	2035 - (No Project)		2035 - Plus Phase 1			2035 - Plus Phases 1 & 2			2035 - Plus Phases 1, 2 & 3		
	ADT	dB CNEL	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase
NORTH/SOUTH ROADWAYS											
Fairgrounds Drive											
n/o Whitney Avenue/Taper Avenue	15,300	69.5	15,470	69.6	0.1	15,640	69.6	0.1	15,870	69.7	0.2
s/o Whitney Avenue/Taper Avenue	17,900	70.2	18,230	70.3	0.1	18,600	70.4	0.2	19,040	70.5	0.3
n/o SR-37 WB Ramps	19,700	70.6	20,030	70.7	0.1	20,400	70.8	0.2	20,840	70.9	0.3
s/o SR-37 WB Ramps	21,800	71.1	23,840	71.5	0.4	26,550	71.9	0.8	29,430	72.4	1.3
n/o SR-37 EB Ramps	21,800	71.1	23,840	71.5	0.4	26,550	71.9	0.8	29,430	72.4	1.3
s/o SR-37 EB Ramps	18,800	70.4	22,280	71.2	0.8	26,200	71.9	1.5	30,720	72.6	2.2
n/o Sage Street/Six Flags Staff Driveway	18,800	70.4	22,280	71.2	0.8	26,200	71.9	1.5	30,720	72.6	2.2
s/o Sage Street/Six Flags Staff Driveway	17,200	70.1	20,790	70.9	0.8	24,500	71.6	1.5	28,620	72.3	2.2
n/o Marriott Driveway	17,800	70.2	21,390	71.0	0.8	25,100	71.7	1.5	29,220	72.4	2.2
s/o Marriott Driveway	17,400	70.1	20,990	70.9	0.8	24,700	71.6	1.5	28,820	72.3	2.2
n/o Future Fairgrounds North Driveway	17,500	70.1	21,090	70.9	0.8	24,800	71.6	1.5	28,920	72.3	2.2
s/o Future Fairgrounds South Driveway	17,500	70.1	18,500	70.4	0.3	21,370	71.0	0.9	24,490	71.6	1.5
n/o Six Flags Entrance Ramp	17,500	70.1	18,500	70.4	0.3	21,370	71.0	0.9	24,490	71.6	1.5
s/o Six Flags Entrance Ramp	8,600	67.0	9,600	67.5	0.5	12,470	68.7	1.7	15,590	69.6	2.6
n/o Six Flags North Exit Driveway/Fairgrounds Driveway	8,600	67.0	9,600	67.5	0.5	12,470	68.7	1.7	15,590	69.6	2.6
s/o Six Flags North Exit Driveway/Fairgrounds Driveway	6,700	66.0	8,600	67.0	1.0	11,530	68.3	2.3	15,030	69.5	3.5

Table 3.9-7 (cont.): Project Plus Cumulative Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline											
Road Segment	2035 - (No Project)		2035 - Plus Phase 1			2035 - Plus Phases 1 & 2			2035 - Plus Phases 1, 2 & 3		
	ADT	dB CNEL	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase
n/o Six Flags South Exit Driveway	6,500	65.8	8,400	66.9	1.1	11,330	68.2	2.4	14,830	69.4	3.6
s/o Six Flags South Exit Driveway	6,500	65.8	8,400	66.9	1.1	11,330	68.2	2.4	14,830	69.4	3.6
n/o Future Fairgrounds South Driveway	6,500	65.8	8,400	66.9	1.1	11,330	68.2	2.4	14,830	69.4	3.6
s/o Future Fairgrounds South Driveway	6,500	65.8	8,400	66.9	1.1	10,650	68.0	2.2	13,150	68.9	3.1
n/o Sereno Drive	6,600	65.9	8,500	67.0	1.1	10,750	68.0	2.1	13,250	68.9	3.0
s/o Sereno Drive	6,100	65.6	7,840	66.6	1.0	9,890	67.7	2.1	12,180	68.6	3.0
n/o Valle Vista Avenue	6,700	66.0	8,440	67.0	1.0	10,490	67.9	1.9	12,780	68.8	2.8
s/o Valle Vista Avenue	6,900	66.1	8,640	67.1	1.0	10,690	68.0	1.9	12,980	68.8	2.7
Fairgrounds Drive/I-80 WB Ramps											
n/o Redwood Street	7,800	66.6	9,540	67.5	0.9	11,590	68.3	1.7	13,880	69.1	2.5
s/o Redwood Street	8,900	67.2	9,380	67.4	0.2	9,370	67.6	0.4	10,190	67.8	0.6
Tuolumne Street											
n/o Sereno Drive	7,500	66.5	7,550	66.5	0.0	7,620	66.5	0.0	7,700	66.6	0.1
s/o Sereno Drive	8,900	67.2	8,900	67.2	0.0	8,900	67.2	0.0	8,900	67.2	0.0
n/o Redwood Street	11,400	68.3	11,400	68.3	0.0	11,400	68.3	0.0	11,400	68.3	0.0
s/o Redwood Street	7,600	66.5	7,650	66.5	0.0	7,720	66.6	0.1	7,800	66.6	0.1
Admiral Callaghan Lane											
n/o Columbus Parkway	3,400	63.0	3,450	63.1	0.1	3,520	63.2	0.2	3,600	63.3	0.3
s/o Columbus Parkway	20,900	70.9	20,950	70.9	0.0	21,020	70.9	0.0	21,100	70.9	0.0

Table 3.9-7 (cont.): Project Plus Cumulative Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline											
Road Segment	2035 - (No Project)		2035 - Plus Phase 1			2035 - Plus Phases 1 & 2			2035 - Plus Phases 1, 2 & 3		
	ADT	dB CNEL	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase
n/o I-80 EB Ramps/Safeway Driveway	17,100	70.0	17,210	70.1	0.1	17,340	70.1	0.1	17,470	70.1	0.1
s/o I-80 EB Ramps/Safeway Driveway	24,700	71.6	25,450	71.8	0.2	26,510	71.9	0.3	27,630	72.1	0.5
Admiral Callaghan Lane/I-80 EB Off-Ramp											
n/o Redwood Street	24,700	71.6	25,450	71.8	0.2	26,510	71.9	0.3	27,630	72.1	0.5
s/o Redwood Street	5,400	65.0	5,400	65.0	0.0	5,400	65.0	0.0	5,400	65.0	0.0
Oakwood Avenue											
n/o Redwood Street	0	—	0	—	—	0	—	—	0	—	—
s/o Redwood Street	6,000	65.5	6,050	65.5	0.0	6,120	65.6	0.1	6,200	65.6	0.1
I-80 WB exit ramps											
n/o Redwood Street	3,800	63.5	3,830	63.5	0.0	3,890	63.6	0.1	3,930	63.6	0.1
EAST/WEST ROADWAYS											
Whitney Avenue/Taper Avenue											
e/o Fairgrounds Drive	2,800	62.2	2,850	62.2	0.0	2,920	62.4	0.2	3,000	62.5	0.3
w/o Fairgrounds Drive	4,600	64.3	4,710	64.4	0.1	4,840	—	—	4,970	—	—
SR-37 WB Ramps											
e/o Fairgrounds Drive	16,100	69.8	17,560	70.1	0.3	19,730	70.7	0.9	21,950	71.1	1.3
w/o Fairgrounds Drive	2,800	62.2	3,050	62.5	0.3	3,220	62.8	0.6	3,440	63.1	0.9
SR-37 EB Ramps											
e/o Fairgrounds Drive	11,200	68.2	12,330	68.6	0.4	13,080	68.9	0.7	14,250	69.2	1.0
w/o Fairgrounds Drive	3,400	63.0	3,710	63.4	0.4	4,170	63.9	0.9	4,640	64.4	1.4

Table 3.9-7 (cont.): Project Plus Cumulative Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline											
Road Segment	2035 - (No Project)		2035 - Plus Phase 1			2035 - Plus Phases 1 & 2			2035 - Plus Phases 1, 2 & 3		
	ADT	dB CNEL	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase
Sage Street/Six Flags Staff Driveway											
e/o Fairgrounds Drive	4,900	64.6	5,010	64.7	0.1	6,260	65.7	1.1	8,020	66.7	2.1
w/o Fairgrounds Drive	1,100	58.1	1,100	58.1	0.0	1,100	58.1	0.0	1,100	58.1	0.0
Marriott Driveway											
e/o Fairgrounds Drive	800	56.7	800	56.7	0.0	800	56.7	0.0	800	56.7	0.0
w/o Fairgrounds Drive	0	—	0	—	—	0	—	—	0	—	—
Six Flags Entrance Ramp											
e/o Fairgrounds Drive	0	—	0	—	—	0	—	—	0	—	—
w/o Fairgrounds Drive	9,900	67.7	9,900	67.7	0.0	9,900	67.7	0.0	9,900	67.7	0.0
Six Flags North Exit Driveway/Fairgrounds Driveway											
e/o Fairgrounds Drive	5,600	65.2	7,680	66.6	1.4	8,480	67.0	1.8	9,400	67.4	2.2
w/o Fairgrounds Drive	1,100	58.1	1,100	58.1	0.0	1,100	58.1	0.0	1,100	58.1	0.0
Six Flags South Exit Driveway											
e/o Fairgrounds Drive	0	—	0	—	—	0	—	—	0	—	—
w/o Fairgrounds Drive	200	50.7	200	50.7	0.0	200	50.7	0.0	200	50.7	0.0
Sereno Drive											
e/o Fairgrounds Drive	0	—	0	—	—	0	—	—	0	—	—
w/o Fairgrounds Drive	3,300	62.9	3,460	63.1	0.2	3,660	63.3	0.4	3,870	63.6	0.7
e/o Tuolumne Street	3,300	62.9	3,460	63.1	0.2	3,660	63.3	0.4	3,870	63.6	0.7
w/o Tuolumne Street	4,500	64.2	4,610	64.3	0.1	4,740	64.5	0.3	4,870	64.6	0.4

Table 3.9-7 (cont.): Project Plus Cumulative Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline											
Road Segment	2035 - (No Project)		2035 - Plus Phase 1			2035 - Plus Phases 1 & 2			2035 - Plus Phases 1, 2 & 3		
	ADT	dB CNEL	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase
Valle Vista Avenue											
e/o Fairgrounds Drive	0	—	0	—	—	0	—	—	0	—	—
w/o Fairgrounds Drive	800	56.7	800	56.7	0.0	800	56.7	0.0	800	56.7	0.0
Redwood Street											
e/o Fairgrounds Drive/I-80 WB Ramps	26,000	71.8	26,910	72.0	0.2	28,170	72.2	0.4	29,500	72.4	0.6
w/o Fairgrounds Drive/I-80 WB Ramps	22,900	71.3	23,720	71.5	0.2	23,600	71.4	0.1	24,060	71.5	0.2
e/o Tuolumne Street	20,600	70.8	20,920	70.9	0.1	21,300	71.0	0.2	21,760	71.1	0.3
w/o Tuolumne Street	15,600	69.6	15,870	69.7	0.1	16,180	69.8	0.2	16,560	69.9	0.3
e/o Admiral Callaghan Lane/I-80 EB Off-Ramp	15,700	69.7	15,860	69.7	0.0	16,060	69.8	0.1	16,270	69.8	0.1
w/o Admiral Callaghan Lane/I-80 EB Off-Ramp	26,000	71.8	26,910	72.0	0.2	28,170	72.2	0.4	29,500	72.4	0.6
e/o Oakwood Avenue	8,400	66.9	8,510	67.0	0.1	86,40	67.1	0.2	8,770	67.1	0.2
w/o Oakwood Avenue	8,000	66.7	8,160	66.8	0.1	8,360	66.9	0.2	8,570	67.0	0.3
e/o Future I-80 WB Ramps	26,000	71.8	26,910	72.0	0.2	28,170	72.2	0.4	29,500	72.4	0.6
w/o Future I-80 WB Ramps	26,000	71.8	26,910	72.0	0.2	28,170	72.2	0.4	29,500	72.4	0.6
e/o Future I-80 EB Ramps	26,000	71.8	26,910	72.0	0.2	28,170	72.2	0.4	29,500	72.4	0.6
w/o Future I-80 EB Ramps	26,000	71.8	26,910	72.0	0.2	28,170	72.2	0.4	29,500	72.4	0.6
Columbus Parkway											
e/o Admiral Callaghan Lane	13,500	69.0	13,670	69.1	0.1	13,840	69.1	0.1	14,070	69.2	0.2
w/o Admiral Callaghan Lane	27,200	72.0	27,470	72.1	0.1	27,780	72.1	0.1	28,170	72.2	0.2

Table 3.9-7 (cont.): Project Plus Cumulative Traffic Noise Contributions

Noise Levels 50 feet from Roadway Centerline											
Road Segment	2035 - (No Project)		2035 - Plus Phase 1			2035 - Plus Phases 1 & 2			2035 - Plus Phases 1, 2 & 3		
	ADT	dB CNEL	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase	ADT	dB CNEL	Project-Specific Increase
I-80 EB Ramps/Safeway Driveway											
e/o Admiral Callaghan Lane	2,300	61.3	2,300	61.3	0.0	2,300	61.3	0.0	2,300	61.3	0.0
w/o Admiral Callaghan Lane	7,500	66.5	8,140	66.8	0.3	9,070	67.3	0.8	10,060	67.7	1.2

Table 3.9-7 above shows that none of the roadway segments analyzed generate more than a 5-dBA, project-related increase above levels without the project. The highest increases attributable to project-related traffic, 3.7 dBA, are found on the road segments Fairgrounds Drive north of Six Flags South Exit Driveway, south of Six Flags South Exit Driveway, and north of Future Fairgrounds South Driveway. As the segments are located in non-residential areas, the impacts are considered less than cumulatively considerable, and thus a less than significant cumulative roadway noise impact for the year 2035 Project conditions would occur.

Level of Significance Prior to Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

Temporary or Periodic Increase in Ambient Noise Levels

Impact NOI-4:	**The project would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.**

Impact Analysis

This impact discussion analyzes the potential for project construction noise to cause a substantial temporary increase in ambient noise levels in the project vicinity above noise levels existing without the proposed project. For residential uses that already exceed these standards, a significant noise impact would occur if the proposed project would increase noise levels by 3 dB or more where the without the project, the noise level is greater than 60 dBA CNEL.

The City of Vallejo General Plan establishes the following goals and policies that are relevant to construction noise associated with the proposed project:

- **Policy 2.** Avoid adverse effects of noise-producing activities on existing land uses by implementing noise reduction measures, limiting hours of operation, or by limiting increases in noise.
  - 2b: Where appropriate, limit noise generating activities (for example, *construction* and maintenance activities and loading and unloading activities) to the hours of 7:00 a.m. and 9:00 p.m.

The project is expected to comply with General Plan Policy requirements. With incorporation of Mitigation Measures NOI-1a and NOI-1b (detailed above under Impact NOI-1) and incorporation of Mitigation Measures NOI-4a below, which requires that "all construction equipment utilizes noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally

installed by the manufacturer," impacts from construction noise are considered to be less than significant.

Level of Significance Prior to Mitigation

Potentially significant

Mitigation Measures

MM NOI-4 The project applicant shall require construction contractors to adhere to the following noise attenuation requirements:

- Construction activities shall be limited to between the hours of 7:00 a.m. and 9:00 p.m.
- All construction equipment shall use noise-reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Level of Significance After Mitigation

Less than significant impact.

Airport Noise Levels

Impact NOI-5:	**The project is located within an airport land use plan or, where such a plan has not been adopted, the project is not located within two miles of a public airport or public use airport. The project would not expose people residing or working in the project area to excessive noise levels.**

Impact Analysis

This impact discussion analyzes the potential for nearby airports to expose people residing or working in the project area to excessive noise levels.

The nearest airport is Napa County Airport (NCA), located approximately 5.6 miles northwest of the project site. The project site falls well outside the 55 dBA noise contour for the NCA (Exhibit 3.9-6), and is not considered as a source that contributes to the ambient noise levels on the project site.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

Private Airstrip Noise Levels

Impact NOI-6:	**The project is not within the vicinity of a private airstrip; therefore, the project would not expose people residing or working in the project area to excessive noise levels.**

Impact Analysis

The closest private airstrip/airport to the project site is Nut Tree Airport, located in Vacaville. The airport is situated approximately 21 miles northeast of the project site and will not expose people residing or working in the project area to excessive noise levels.

Mitigation Measures

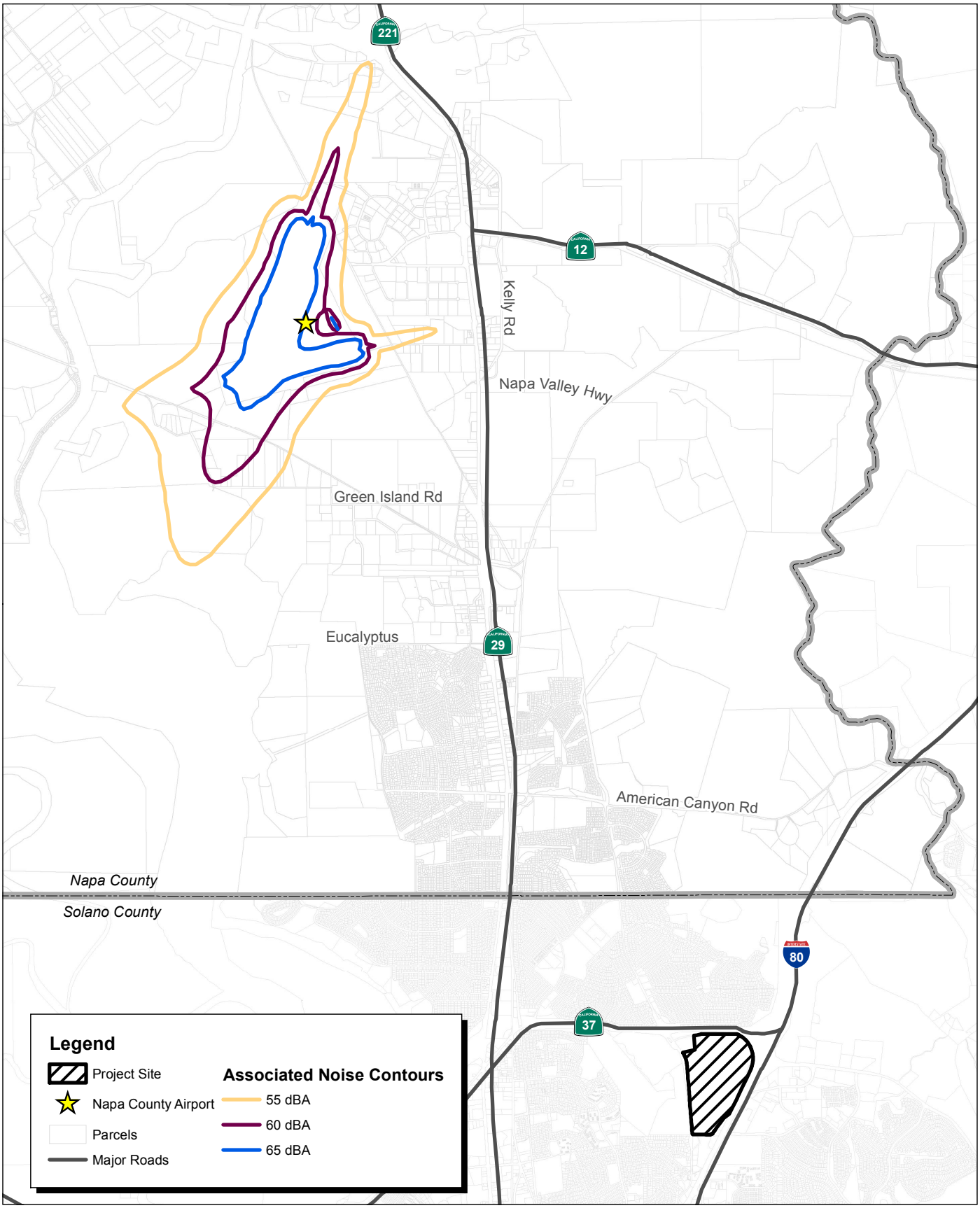
No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

3.9.7 - Residual Significant Impacts

None identified.



Source: County of Napa, CA, 2004.

Exhibit 3.9-6
Napa County Airport Noise Contours Relative to the Project Site

NORTH

5,000 2,500 0 5,000 Feet

Michael Brandman Associates