4.11 NOISE

This section includes a description of ambient noise conditions, a summary of applicable regulations related to noise and vibration, and an analysis of impacts resulting from implementation of the Draft General Plan. The section is based on the City of Hemet Noise Element Technical Report, prepared by Urban Crossroads in May 2011. This report, along with related modeling and monitoring data, is attached to the EIR as Appendix E.

4.11.1 SOUND FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, unexpected, or unwanted. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave by a disturbance or vibration that causes pressure variation in air that the human ear can detect.

SOUND AND THE HUMAN EAR

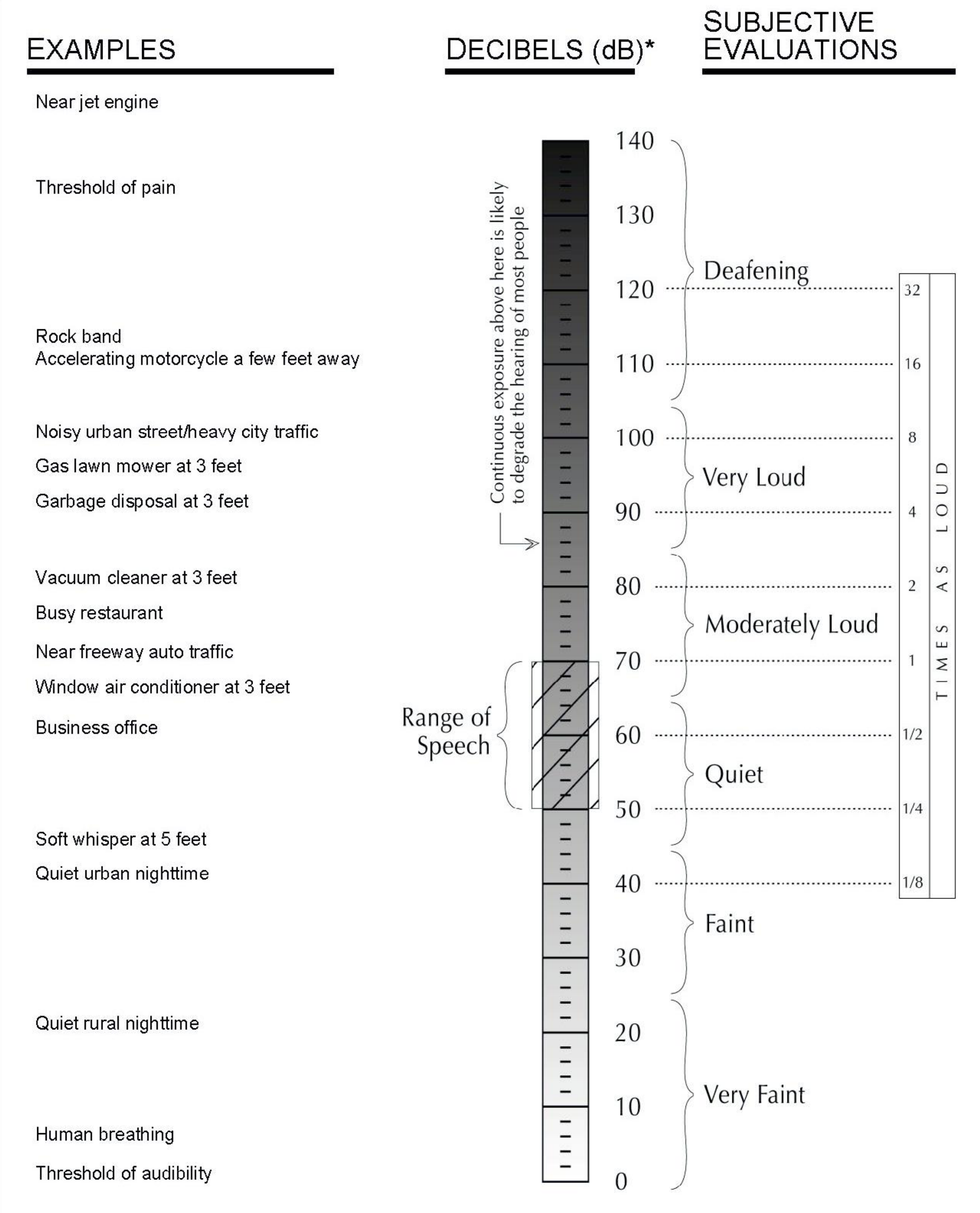
Because of the ability of the human ear to detect a wide range of sound-pressure fluctuations, sound-pressure levels are expressed in logarithmic units called decibels (dB) to avoid a very large and awkward range in numbers. The sound-pressure level in decibels is calculated by taking the log of the ratio between the actual sound pressure and the reference sound pressure and then multiplied by 20. The reference sound pressure is considered the absolute hearing threshold (Caltrans 2009). Use of this logarithmic scale reveals that the total sound from two individual 65-dB sources is 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB).

Because the human ear is not equally sensitive to all audible frequencies, a frequency-dependent rating scale was devised to relate noise to human sensitivity. An A-weighted decibel (dBA) scale performs this compensation by discriminating against frequencies that are more sensitive to humans. The basis for compensation is the faintest sound audible to the average ear at the frequency of maximum sensitivity. This dBA scale has been chosen by most public agencies for the purpose of regulating environmental noise. Typical indoor and outdoor noise levels are presented in Exhibit 4.11-1.

With respect to how humans perceive and react to changes in noise levels, a 1-dBA increase is imperceptible, a 3-dBA increase is barely perceptible, a 6-dBA increase is clearly noticeable, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Egan 1988), as presented in Table 4.11-1. Table 4.11-1 was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels. For these reasons, a noise level increase of 3 dBA or more is typically considered substantial in terms of the degradation of the existing noise environment.

SOUND PROPAGATION AND ATTENUATION

As sound (noise) propagates from the source to the receptor, the attenuation, or manner of noise reduction in relation to distance, is dependent on surface characteristics, atmospheric conditions, and the presence of physical barriers. The inverse-square law describes the attenuation caused by the pattern in which sound travels from the source to receptor. Sound travels uniformly outward from a point source in a spherical pattern with an attenuation rate of 6 dBA (for acoustically hard sites) to 7.5 dBA (for acoustically soft sites) per doubling of distance. However, from a line source (e.g., a road), sound travels uniformly outward in a cylindrical pattern with an attenuation rate of 3 dBA (for acoustically hard sites) to 4.5 dBA (for acoustically soft sites) per doubling of distance. The surface characteristics between the source and the receptor may result in additional sound absorption (soft site) and/or reflection (hard site). Atmospheric conditions, such as wind speed, temperature, and humidity may affect noise levels. Furthermore, the presence of a barrier between the source and the receptor may also attenuate noise levels. The actual amount of attenuation is dependent upon the size of the barrier and the



* dB are "average" values as measured on the A-scale of a sound-level meter.
From Concepts in Architectural Acoustics: M. David Egan, McGraw Hill, 1972 and U.S. Department of Housing and Urban Development, Office of Community Planning and Development "The Noise Guidebook."

Source: EDAW 2006

Exhibit 4.11-1 **Typical Noise Levels**

Table 4.11-1 Subjective Reaction to Changes in Noise Levels of Similar Sources		
Change in Level, dBA	Subjective Reaction	Factor Change in Acoustical Energy
1	Imperceptible (Except for Tones)	1.3
3	Just Barely Perceptible	2.0
6	Clearly Noticeable	4.0
10	About Twice (or Half) as Loud	10.0

Note: dBA = decibels
Source: Egan 1988

frequency of the noise. A noise barrier may be any natural or human-made feature such as a hill, tree, building, wall, or berm (Caltrans 2009).

NOISE DESCRIPTORS

The selection of a proper noise descriptor for a specific source is dependent upon the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise are defined below.

- L_{max} (Maximum Noise Level): The maximum instantaneous noise level during a specific period of time. The L_{max} may also be referred to as the peak (noise) level.

- L_{min} (Minimum Noise Level): The minimum instantaneous noise level during a specific period of time.

- L_X (Statistical Descriptor): The noise level exceeded X% of a specific period of time. For example, L_{50} represents the noise level exceeded 50% of the time.

- L_{eq} (Equivalent Noise Level): The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the L_{eq}. In noise environments determined by major noise events, such as aircraft overflights, the L_{eq} value is heavily influenced by the magnitude and number of single events that produce high noise levels.

- L_{dn} (Day-Night Noise Level): The 24-hour L_{eq} with a 10 dBA 'penalty' for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is 'added' to noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to typical sleeping hours.

- CNEL (Community Noise Equivalent Level): The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA 'penalty' added to noise events that occur during the noise-sensitive hours between 7:00 p.m. to 10:00 p.m., which are typically reserved for relaxation, conversation, reading, and television. If using the same 24-hour noise data, the reported CNEL is typically approximately 0.5 dBA higher than the L_{dn}.

- SENL (Single Event [Impulsive] Noise Level): The SENL describes a receiver's cumulative noise exposure from a single impulsive noise event, which is defined as an acoustical event of short duration and involves a change in sound pressure above some reference value. SENLs typically represent the noise events used to calculate the L_{eq}, L_{dn}, and CNEL.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level L_{eq}, which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, as defined above, and shows very good correlation with community response to noise.

Negative Effects of Noise on Humans

Negative effects of noise exposure include physical damage to the human auditory system, interference, and disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over a period of time; traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, the level of the noise, and the exposure time (Caltrans 2009).

VIBRATION

Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure borne noise. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS) vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. RMS is defined as the positive and negative statistical measure of the magnitude of a varying quantity. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (FTA 2006).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2006). This is based on a reference value of 1 microinch per second (μin/sec).

The background vibration-velocity level in residential areas is usually approximately 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006).

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate groundborne vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2006).

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, horizontal directional drilling, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table 4.11-2 describes the general human response to different levels of groundborne vibration-velocity levels.

Table 4.11-2
Human Response to Different Levels of Groundborne Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Note: VdB = vibration decibels referenced to 1 micro inch per second and based on the root mean square velocity amplitude.
Source: FTA 2006

4.11.2 REGULATORY SETTING

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and other adverse physiological and social effects associated with noise. Applicable standards and guidelines are described below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

There are no federal plans, policies, regulations, or laws that directly pertain to the City's consideration or adoption of the Draft General Plan. However, various federal agencies have published methods and criteria related to noise assessment.

The Federal Noise Control Act (1972) addressed the issue of noise as a threat to human health and welfare. To implement the Federal Noise Control Act, the U.S. Environmental Protection Agency (EPA) undertook a number of studies related to community noise in the 1970s. The results of these studies have been widely published, and discussed and refereed by many professionals in acoustics. EPA found that 24-hour averaged noise levels less than 70 dBA would avoid measurable hearing loss, levels of less than 55 dBA outdoors and 45 dBA indoors would prevent activity interference and annoyance (EPA 1974).

The U.S. Department of Housing and Urban Development (HUD) published a Noise Guidebook for use in implementing the Department's noise policy. In general, HUD's goal is exterior noise levels that are less than or equal to 55 dBA L_{dn}. The goal for interior noise levels is 45 dBA L_{dn}. HUD suggests that attenuation be employed to achieve this level, where feasible, with a special focus on sensitive areas of homes, such as bedrooms (HUD 2011).

The Federal Transit Administration (FTA) has developed a methodology and significance criteria to evaluate noise impacts from surface transportation modes. These methods and criteria are presented in FTA's *Transit Noise Impact and Vibration Assessment* (May 2006).

To address the human response to groundborne vibration, FTA has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 65 VdB, referenced to 1 microinch per second and based on the root-mean-square velocity amplitude, for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities); 80 VdB for residential uses and buildings where people normally sleep; and 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices) (FTA 2006).

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Title 24 of the California Code of Regulations (CCR) establishes standards governing interior noise levels that apply to all new single-family and multi-family residential units in California. These standards require that acoustical studies be performed before construction at building locations where the existing L_{dn} exceeds 60 dBA. Such acoustical studies are required to establish mitigation measures that will limit maximum L_{dn} levels to 45 dBA in any habitable room. Although there are no generally applicable interior noise standards pertinent to all uses, many communities in California have adopted an L_{dn} of 45 as an upper limit on interior noise in all residential units.

In addition, the State of California General Plan Guidelines (OPR 2003), provides guidance for noise compatibility. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Caltrans guidelines recommend that a standard of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2004).

LOCAL REGULATIONS

City of Hemet Noise Element

The Noise Element of the City's 1992 General Plan contains a goal and strategies to protect citizens from exposure to excessive noise.

Goal: Promote noise compatible land use relationships by implementing noise standards to be utilized for design purposes in new development and establishing a program to attenuate existing noise problems.

Strategies:

1. Utilize the noise standards described in Table II-F-4 (Table 4.11-3 of this document) for design purposes in all new development and establish a program to attenuate existing noise problems to the extent feasible.

2. Where new development is proposed within areas where the exterior or interior noise levels outlined in Table II-F-4 (Table 4.11-3 of this document) are likely to be exceeded, require a detailed noise analysis to be prepared to determine appropriate mitigation, and incorporate such mitigation into the project design.

3. Enforce California Noise Insulation Standards which apply to new multiple-family developments within a 60 CNEL noise contour adjacent to roads, transit lines, and manufacturing areas, to ensure that the units have been designed to limit interior noise levels in habitable rooms to 45 CNEL with doors and windows closed.

4. When site and architectural design features cannot sufficiently reduce adverse noise levels, or cannot economically be provided, require the provision of noise barriers, noise berms, or barrier and berms in combination, in order to incorporate the following standards:

    a. Noise barriers must be massive enough to prevent significant noise transmission and high enough to shield the receiver from the noise source.

Table 4.11-3 Minimum Noise Standards (Table II-F-4 of City of Hemet General Plan 1992)		
Land Use	Maximum Exterior CNEL	Maximum Interior CNEL
Rural, Single-Family, Multiple-Family Residential	65 dBA	45 dBA
Schools:		
Classrooms	65 dBA	45 dBA
Playgrounds	70 dBA	--
Libraries	--	50 dBA
Hospitals/Convalescent Facilities:		
Living Areas	--	50 dBA
Sleeping Areas	--	40 dBA
Recreation:		
Quiet, Passive Areas	65 dBA	--
Noisy, Active Areas	70 dBA	--
Commercial and Industrial	70 dBA	--
Office Areas	--	50 dBA
Source: Hemet General Plan (1992), Table II-F-4		

b. The minimum acceptable surface weight for a noise barrier shall be four (4) pounds per square foot (equivalent to ¾" plywood).

c. The barrier must be carefully constructed so that there are no cracks or openings.

d. The barrier must interrupt the line of sight between the noise source and the noise receiver.

e. The effects of flanking (sound which travels around a barrier) should be minimized by bending the barrier back from the noise source at the end of the barrier.

f. Require landscaping treatment to be provided in conjunction with noise barriers to provide visual relief and to reduce aesthetic impacts.

5. When proposed projects include potentially significant noise generators, require noise analyses to be prepared by an acoustical expert, including specific recommendations for mitigation when 1) the project is located in close proximity to noise sensitive land uses or land which is planned for noise sensitive land uses, or 2) the proposed noise source could violate the noise provisions for the General Plan or City ordinance.

6. For purposes of consistency, require that noise reports incorporate the following methodology:

   a. Assume three (3) dBA attenuation with doubling of distance for the natural attenuation of noise emanating from roadways (with the exception of freeways, where a 4.5 dBA attenuation with doubling of distance may be utilized).

b. Use the design capacity of roadways as outlined in the Community Development Element and the posted speed limit to quantify the design noise levels adjacent to master planned transportation routes for mitigation purposes.

7. Require the provision of adequate buffers, where feasible, such that CNEL levels due to single event noise levels from motor vehicles, trains, commercial, industrial, construction, and other activities are no greater than 15 dBA above the noise objectives described in Table II-F-4 (Table 4.11-3 of this document).

8. Review and respond to any proposals involving new flight patterns, more intense operations over the City, or relocation or extension of runways at the Hemet-Ryan Airport which would create the potential for noise impacts on sensitive land uses within the City in a manner consistent with other noise policies contained herein.

9. Incorporate mitigation of motor vehicle noise impacts from streets and highways into new roadway designs.

10. Ensure that new commercial and industrial activities (including the placement of mechanical equipment) are designed so that activities comply with the maximum noise level standards at the property line of adjacent uses, thereby minimizing impacts on adjacent uses.

City of Hemet Municipal Code

The City of Hemet Municipal Code contains regulations to protect residents from exposure to excessive noise in Chapters 30, 53, 62, 78, and 90. These regulations are summarized below.

Chapter 30, Article II, Section 30-32(32) – Restricts the production of any electrical or mechanical sound or noise from any property C-M or M zoned within the city and projected onto residential property that exceeds the limits established in Table 4.11-4.

Table 4.11-4
Table of Limiting Noise Levels

Octave Frequency Band in Cycles Per Second Re .002 Microbar	Maximum Permissible Sound Pressure Level in Decibels Re .002 Microbar
Below 75	65 dB
75--150	60
151--600	55
601--2,400	45
Above 2,400	40

Chapter 30, Article II, Section 30-32(33) – Permits construction activities between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. Exceptions to these standards may be granted only by the City building official and/or the City Council.

Chapter 53, Article I, Section 53-4 - Prohibits loud, unnecessary, and unusual noise.

Chapter 90, Article VIII, Section 90-214(l) - Requires project designs to comply with state noise insulation standards (California Administrative Code, Title 25, Chapter 1, Subchapter 1, Article 4, Section 1092).

Chapter 90, Article VIII, Section 90-214(p) – Requires all permanent mechanical equipment determined by the building section to be a source of vibration or noise to be shock-mounted, isolated from the floor and ceiling, or otherwise installed to lessen the transmission of vibrations and noise attached to floors or cabinets.

Chapter 90, Article XXX, Section 90-1046 – Requires uses established or placed into operation to comply with the noise performance standards established in Table 4.11-5.

Table 4.11-5
Noise Levels

Octave Band (cycles per second)	Zone Boundary M-1	Zone Boundary M-2
Below 75	72	79
75--149	59	74
150--299	52	66
300--599	46	59
600--1,199	42	53
1,200--2,399	39	47
2,400--4,799	34	41
4,800 and above	32	39

Hemet-Ryan Airport Comprehensive Airport Land Use Plan

The Hemet-Ryan Airport Comprehensive Airport Land Use Plan (ALUP), as adopted in 1992 and amended in 2009, is the currently applicable Compatibility Plan for the Hemet-Ryan Airport. The ALUP identifies 60 dB and 65 dB CNEL contours surrounding the airport for both existing and future conditions. A new ALUP for Hemet-Ryan Airport will be required following adoption of a new Airport Master Plan.

4.11.3 ENVIRONMENTAL SETTING

EXISTING NOISE-SENSITIVE LAND USES

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include schools, hospitals, convalescent facilities, parks, hotels, and places of worship, libraries, and other uses where low interior noise levels are essential.

Noise-Sensitive Areas

The following noise-sensitive areas have been identified within the planning area:

- Residential areas (e.g., single-family units, multi-family units, mobile homes)
- Schools
- Convalescent hospitals and care facilities with 7 or more residents, (California Research Bureau 2002)
- Parks and recreation areas
- Hotels and transient lodging
- Libraries

EXISTING NOISE SOURCES

Vehicular traffic on the local arterial system is the primary source of noise in the planning area. Other sources of noise include industrial facilities, retail centers, schools, and parks. Periodic sources of noise include aircraft overflights from Hemet-Ryan Airport, and high-activity and high-turn-over commercial land uses.

COMMUNITY NOISE SURVEY

As required by the Government Code and the Office of Noise Control Guidelines, a community noise survey was conducted to support the preparation of the Draft General Plan. The survey documented noise exposure in areas of the community containing noise-sensitive land uses. Noise monitoring sites were selected to be representative of typical conditions in areas with noise-sensitive uses. To quantify existing noise levels, a community noise survey was performed at 17 locations within the existing City limits. Two of the 17 locations were monitored over a continuous 24-hour period (see Appendix E), while the other 15 locations were each monitored for a minimum period of 10 minutes during daytime hours. Traffic from local roadways was the dominant noise source identified during the ambient noise survey. Table 4.11-6 identifies the noise measurement survey locations, timing, and results.

Noise measurements were taken in accordance with ANSI standards at 15 locations using a Larson Davis Laboratories (LDL) Model 824 precision integrating sound-level meter. Continuous 24-hour, long-term monitoring of noise levels was conducted at two locations using a Quest DL Model Noise Dosimeter. The instruments were programmed, in "fast" mode, to record noise levels in dBA. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen.

Community noise survey locations are shown in Appendix E. The L_{eq} values were taken at each short-term ambient noise measurement location and CNEL values were then calculated. Measured CNEL values were taken at each long term ambient noise measurement location, as presented in Table 4.11-6. During the survey, average daytime ambient noise levels ranged from 45.2 dBA to 69.1 dBA L_{eq}.

HIGHWAYS AND MAJOR LOCAL STREETS

Existing traffic noise levels were calculated for roadway segments in the planning area using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) (FHWA 1978), and traffic data provided in the traffic impact study prepared for the project (Urban Crossroads 2006, 2011). The FHWA model is based on the California vehicle noise (CALVENO) reference noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and ground attenuation factors.

Table 4.11-7 summarizes the modeled traffic noise levels 100 feet from the centerline of each roadway study segment in the planning area. Traffic noise level modeling occurs at this distance because 100 feet is considered a representative distance from the roadway centerline to adjacent noise sensitive uses. Traffic noise modeling is based on existing average daily traffic (ADT) volumes, and distances from the roadway centerlines to the 60 dBA, 65 dBA, and 70 dBA L_{dn} traffic noise contours. As shown in Table 4.11-7, the location of the 65 dBA L_{dn} contour ranges from 2 to 406 feet from the centerline of the modeled roadways. The extent to which existing land uses in the City are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise. Refer to Appendix E for modeling inputs and results.

Railroad Operations

A BNSF railroad line runs through the southwestern and north central portions of the planning area. Operations along the BNSF line result in stationary- and transportation –source related noise from warning horns/wayside horns, at-grade crossing bells, and locomotive engine and rail car noise. Railroad operations along this line consist

Table 4.11-6 Summary of Monitored Short Term Daytime Ambient Noise Levels					
Site	Location	Time	Noise Source	Noise Levels (dBA Leq)	Noise Levels (dBA CNEL)
1	Located 50 feet from the airport north property line at Whittier Av.	3:10 PM	Aircraft landings	47.6	47.6
		3:20 PM	Aircraft take off and landings	54.3	54.3
2	Located approximately 100 feet from the airport south entrance across Stetson Av.	2:45 PM	Aircraft and traffic noise from Stetson Avenue	62	63.1
3	Located approximately 100 feet from the airport south property line across Stetson Av.	3:30 PM	Traffic noise from Stetson Avenue	60.5	61.6
4	Located approximately 100 feet from Florida Avenue near a mobile home park and Cordoba Dr.	3:50 PM	Traffic noise from Florida Avenue	69.1	70.3
5	Located 100 feet from Esplanade Av. at a new residential development.	4:15 PM	Traffic noise from Esplanade Avenue	62.9	64.1
6	Located 50 feet from Esplanade Av. at a vacant lot adjacent to single family homes.	12:30 PM	Traffic noise from Esplanade Avenue	67.2	69.4
7	Located adjacent to the railroad line 150 feet from automotive maintenance shops.	10:30 AM	Traffic noise from State Street	45.2	45.7
8	Located in the parking lot of the Hemet Valley Medical Center 50 feet from Devonshire Av.	9:30 AM	Traffic noise from Devonshire Avenue	55.8	57.6
9	Located in a residential area at the façade of a single family home approximately 50 feet from the road centerline.	10:10 AM	Traffic noise from Oakland Avenue and Buena Vista Avenue	67.8	69.1
10	Located near homes adjacent to the RR track approximately 150 feet from Lyon Av.	12:10 PM	Traffic noise from Lyon Avenue	59.7	60.2
11	Located in a residential area 100 feet from State St.	11:50 PM	Traffic noise from State Street	61.5	63.9
12	Located in a residential area 30 feet from a 6-foot high wall adjacent to Ramona Expy.	11:15 AM	Traffic noise from Ramona Expressway	55.6	58.1
13	Located in a residential area approximately 150 feet from Florida Av. and 30 feet from Stanford St.	11:00 PM	Traffic noise from Florida Avenue and Stanford Street	65.8	68.3
14	Located in a residential area 10 feet from a 8-foot high wall approximately 75 feet from Sanderson Av.	2:15 PM	Traffic noise from Sanderson Avenue and Domenigoni Parkway	64.4	66.3

Table 4.11-6 Summary of Monitored Short Term Daytime Ambient Noise Levels					
Site	Location	Time	Noise Source	Noise Levels (dBA Leq)	Noise Levels (dBA CNEL)
15	Located 200 feet from Florida Av. in vacant land.	3:40 PM	Traffic noise from Florida Avenue and Acacia Avenue	61.5	63.4
A	Located 50 feet from the airport north property line at Whittier Av.	-	Aircraft noise	-	57.9
B	Located approximately 100 feet from the airport south property line across Stetson Av.	-	Aaircraft noise and traffic noise from Stetson Avenue	-	62.5

Notes:
See Appendix E for the location of the monitoring sites,
Measurements 1 to 15 taken with a Larson Davis 824 noise meter for a minimum period of 10 minutes.
Measurements A and B taken with a Quest DL noise dosimeter for a period of 24 hours.
Weather conditions: clear, winds=up to 5 mph, temperatures in the 60s.
Source: Urban Crossroads (December 6, 2006; May 11, 2011)

of two or three short trains per year to transport potatoes during the harvest season. No train operations occurred during the noise level measurements (Urban Crossroads 2006,2011). Assuming a typical sound exposure level (SEL) of 100 dBA at 100 feet and 0.01 train movements per day (3 train operations per year / 365 days per year), the daily calculated noise level attributable to train movements is 37 dBA $L_{dn.}$

AIRCRAFT FLYOVERS

Hemet-Ryan Airport is a general aviation airport located in the southwest portion of the City. As of 2002, the airport had 192 average daily operations. Of those average operations, 71% were single-engine aircraft, with sailplane operations making up an additional 24%. Other aircraft types, including twin-engine piston, turboprop, helicopters, and business jets made up less than 3% of operations each (Riverside County 2006).

The majority of the planning area is located outside the Hemet-Ryan Airport noise contours. The existing noise levels at the nearest sensitive receptor area to the north and south of the airport are 54 dBA CNEL and 63 dBA CNEL, respectively (refer to Measurement Sites 1 and 2 of Table 4.11-6).

Hemet-Ryan Airport has a helipad. Private, police/emergency, medical, and news/traffic monitoring helicopters also contribute to the general noise environment in the City. In particular, low-flying helicopters can be a source of annoyance to residents, particularly at night. Helicopter landing pads and operations are regulated by the Caltrans Department of Aeronautics and the Federal Aviation Administration (FAA). Helicopter noise levels are considered notable; however, helicopters make up only 3% of average daily airport operations, comprising a total of approximately six operations per day. Exhibits 4.11-2 show the existing noise contours for Hemet-Ryan Airport.

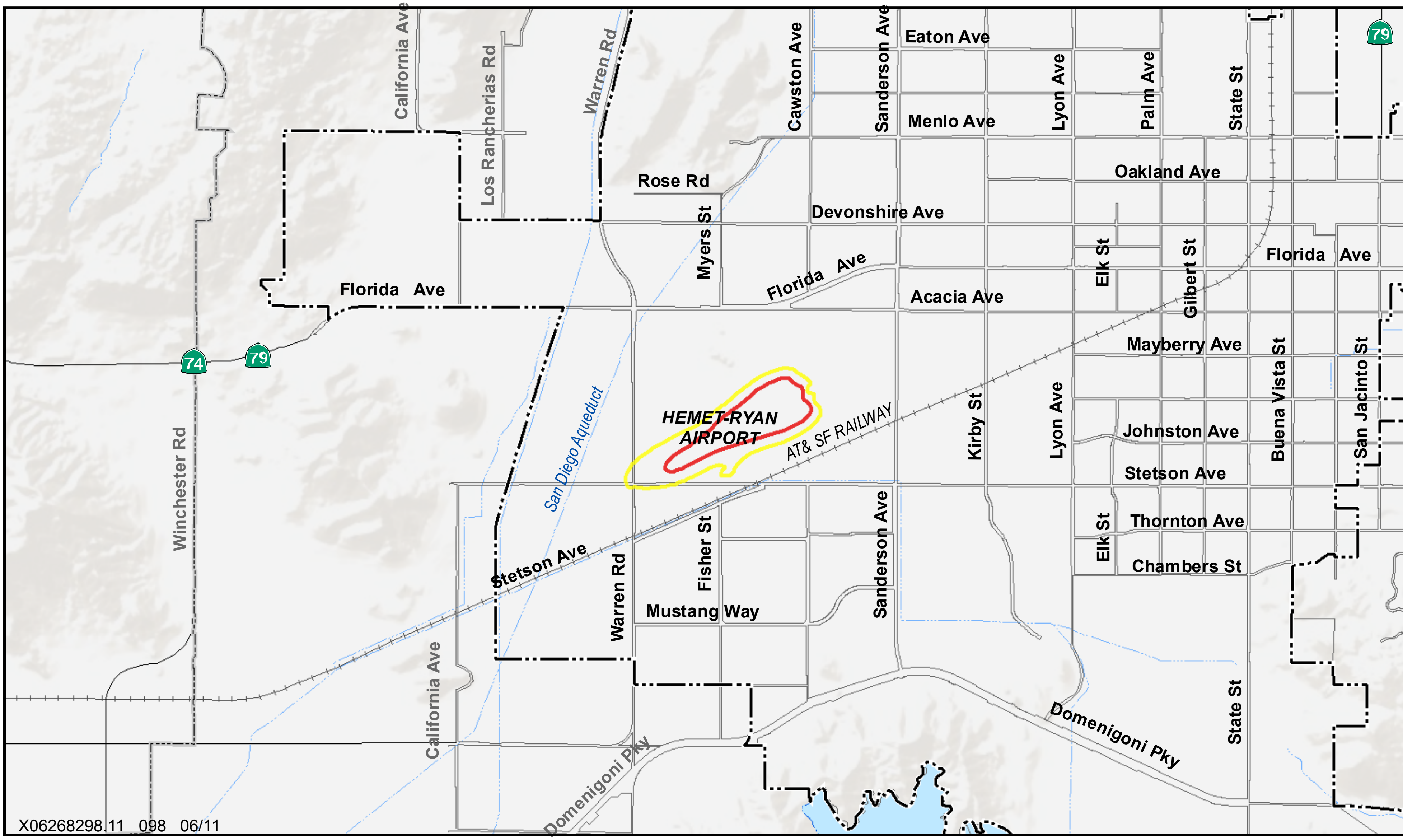
INDUSTRIAL AND OTHER STATIONARY NOISE SOURCES

Many processes and activities in cities produce noise, even when the best available noise control technology is used. Noise exposure within industrial facilities is controlled by federal and state employee health and safety regulations. Noise levels outside of industrial and other facilities are subject to local standards. In addition to

Table 4.11-7 Summary of Modeled Levels of Existing Traffic Noise						
Roadway	Segment	CNEL (dBA) 100 Feet	Distance (feet) from Roadway Centerline to CNEL Contour			
			70 dBA	65 dBA	60 dBA	55 dBA
Warren Road	City limit to Esplanade	64.2	41	88	191	411
Warren Road	Esplanade to Florida	65.5	50	108	232	500
Warren Road	Stetson to City limit	65.0	46	100	215	464
Crawston Avenue	Esplanade to Menlo	57.4	15	31	67	145
Crawston Avenue	Menlo to Florida	59.1	19	40	87	187
Crawston Avenue	Florida to Stetson	40.9	1	2	5	11
Crawston Avenue	Stetson to Dominigoni	40.9	1	2	5	11
Sanderson Avenue	Esplanade to Menlo	67.3	66	142	306	660
Sanderson Avenue	Menlo to Florida	68.1	74	160	344	742
Sanderson Avenue	Florida to Stetson	68.1	75	162	348	750
Sanderson Avenue	Stetson to Dominigoni	66.7	60	129	278	599
Lyon Avenue	Esplanade to Menlo	56.5	12	27	58	125
Lyon Avenue	Menlo to Florida	60.7	24	52	112	240
Lyon Avenue	Florida to Stetson	60.4	23	49	106	228
Lyon Avenue	Stetson to Dominigoni	56.3	12	26	58	123
State Street	Esplanade to Menlo	63.9	39	84	181	389
State Street	Menlo to Florida	63.0	34	74	159	343
State Street	Florida to Stetson	61.8	29	61	132	285
State Street	Stetson to Dominigoni	64.1	40	87	188	405
San Jacinto Street	Menlo to Florida	63.4	36	78	169	364
San Jacinto Street	Florida to Stetson	61.5	28	58	126	271
Meridian Street	Washington to Florida	57.1	14	30	64	137
Esplanade Avenue	Warren to Sanderson	62.9	33	72	155	334
Esplanade Avenue	Sanderson to Lyon	63.2	35	76	164	354
Esplanade Avenue	Lyon to State	65.7	51	111	239	514
Esplanade Avenue	State to Commonwealth	66.9	62	134	289	623

Table 4.11-7 **Summary of Modeled Levels of Existing Traffic Noise**						
Roadway	Segment	CNEL (dBA) 100 Feet	Distance (feet) from Roadway Centerline to CNEL Contour			
			70 dBA	65 dBA	60 dBA	55 dBA
Florida Avenue	Warren to Sanderson	73.7	177	380	820	1766
Florida Avenue	Sanderson to Lyon	74.1	188	406	874	1883
Florida Avenue	Lyon to State	73.7	178	383	824	1776
Florida Avenue	State to Columbia	73.7	178	383	824	1776
Florida Avenue	Columbia to City limits	68.4	78	168	362	780
Stetson Avenue	City limits to Warren	59.9	21	46	98	212
Stetson Avenue	Warren to Crawston	64.6	43	93	201	434
Stetson Avenue	Crawston to Sanderson	66.6	59	128	274	590
Stetson Avenue	Sanderson to Lyon	68.3	77	166	357	769
Stetson Avenue	Lyon to State	67.9	73	157	338	728
Stetson Avenue	State to San Jacinto	67.4	67	144	309	666
Domenigoni Parkway	City limits to Sanderson	71.3	123	265	570	1229
Domenigoni Parkway	Sanderson to Lyon	69.3	90	194	417	899
Domenigoni Parkway	Lyon to State	68.3	77	165	356	766
Domenigoni Parkway	State to City limits	58.9	18	39	84	181
State Street	Domenigoni to City limits	62.3	31	66	143	307
Menlo Avenue	Crawston to Lyon	59.8	21	45	96	207
Menlo Avenue	Lyon to State	59.8	21	45	96	207
Menlo Avenue	State to San Jacinto	59.8	21	45	96	207
Acacia Avenue	Crawston to Sanderson	57.5	15	32	68	147
Acacia Avenue	Sanderson to Lyon	62.1	30	64	137	296
Acacia Avenue	Lyon to State	59.9	21	46	99	213
Acacia Avenue	State to San Jacinto	60.1	22	47	101	218

Notes: dBA = A-weighted decibels; L_{dn} = day-night average noise level.
Source: Urban Crossroads (December 6, 2006; May 11, 2011)



Sources:
Mead and Hunt 2003
Census Tiger Line Data 2005
ESRI 2010

0 0.25 0.5 1 Miles

LEGEND

Noise Contours

60 CNEL

65 CNEL

Exhibit 4.11-2

AIRPORT NOISE CONTOURS (EXISTING)

Hemet General Plan

industry, activities at other commercial, recreational, and public facilities can also produce noise that affects neighbors and the community at-large.

Communities typically approach exposure to noise from two perspectives through land use planning:

- prevent the introduction of new noise-producing land uses in noise-sensitive areas; and,
- prevent encroachment of noise-sensitive uses upon existing noise-producing facilities.

With the exception of parks, most of the City's stationary noise-producing land uses are located either adjacent to Florida Avenue or in business parks and light industrial areas south of Florida Avenue between downtown Hemet and Hemet-Ryan Airport.

VIBRATION SOURCES

The primary existing sources of vibration in the planning area are roadways and rail operations. Heavy truck traffic on local and regional roadway networks can generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, traffic vibration levels are not typically perceptible beyond the right-of-way. According to FTA, vibration from freight locomotives could be perceptible (above 80 VdB) within 80 feet of operations when train speeds reach 50 miles per hour (mph). Trains typically go much slower through the planning area (maximum of 10 mph), thus railroad vibration levels are lower than 80 VdB.

4.11.4 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODS

The analysis of impacts is based on the likely consequences of adoption and implementation of the Draft General Plan, including: future land uses consistent with the Land Use Diagram, supporting roadways on the Circulation Master Plan, infrastructure and public services to support future uses, and implementation of Draft General Plan policies and programs.

DRAFT GENERAL PLAN POLICIES AND PROGRAMS

Implementation of Draft General Plan policies and programs listed below would reduce noise impacts.

Policies

- **PS-11.1: Noise Standards** Enforce noise standards [Table 4.11-8 below] to maintain acceptable noise limits and protect existing areas with acceptable noise environments.

- **PS-11.2: Design to Minimize Noise** Encourage the use of siting and building design techniques as a means to minimize noise.

- **PS-11.3: Evaluate Noise** Evaluate potential noise conflicts for individual sites and projects, and require mitigation of all significant noise impacts (including construction and short-term noise impacts) as a condition of project approval.

- **PS-11.4: Protect Noise-Sensitive Uses** Protect noise-sensitive uses from new noise sources.

- **PS-12.1: Traffic Noise** Minimize noise conflicts between current and proposed land uses and the circulation network by encouraging compatible land uses around critical roadway segments with higher noise potential.

Table 4.11-8 Land Use Compatibility Standards for Exterior and Interior Noise		
	Maximum Allowable Noise (CNEL)	
Land Use	Exterior (dBA)	Interior (dBA)
Residential and mixed use with residential component	65	45
School classrooms	65	45
School playgrounds	70	--
Libraries	–	50
Hospitals, convalescent homes—sleeping areas	–	40
Hospitals, convalescent homes—living areas	–	50
Passive recreation areas	65	–
Active recreation areas	70	–
Commercial and industrial areas	70	–
Office areas	–	50

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibel; – = not applicable/not available.
The acceptable interior noise level for other uses depends upon the specific nature of the indoor activity.
Source: City of Hemet General Plan 2030, Public Safety Element, Table 6.4

- **PS-12.3: Airport Noise** Ensure that future development in the vicinity of Hemet-Ryan Airport is compatible with current and projected airport noise levels in accordance with the noise standards presented in Table 6.4 [Table 4.11-9 of this EIR].

Table 4.11-9 Significant Change in Ambient Noise Levels	
Existing Ambient Noise Level, L_{dn}/CNEL	Significant Increase
< 60 dBA	+ 5 dBA or greater
> 60 dBA	+ 3 dBA or greater

Note: CNEL = community noise equivalent level; dBA = decibels; L_{dn} = day-night average noise level
Sources: Adapted from FICON 1992; Caltrans 1998, OPR 2003

- **PS-12.4: Airport Conflicts** Review and respond to proposals involving new flight patterns, more intense flight operations over the planning area, or relocation or extension of runways at the Hemet-Ryan Airport, which would create the potential for noise conflicts with sensitive land uses.

- **PS-13.2: New Sensitive Uses** Restrict the location of sensitive land uses near major noise sources to achieve the standards presented in Table 6.4 [Table 4.11-8 of this EIR].

- **PS-13.3: Prevent Encroachment.** Prevent the encroachment of noise sensitive land uses into areas designated for use by existing or future noise generators.

Programs

- **PS-P-27: Noise Standards.** Utilize the noise standards described in Table 6.4 [Table 4.11-8 of this EIR] for design purposes in new development. Where new development is proposed within areas where the noise levels identified in Table 6.4 are likely to be exceeded, require an acoustical study to be prepared to determine appropriate mitigation, and incorporate such mitigation into the project design.

- **PS-P-28: Noise Reduction through Project Design.** Promote the use of berms, landscaping, setbacks, or architectural design for noise abatement, in addition to conventional wall barriers, to enhance aesthetics and minimize barriers to pedestrian travel. When site and architectural design features cannot sufficiently reduce adverse noise levels, or cannot economically be provided, require the provision of noise barriers, noise berms, or barriers and berms in combination.

  Development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from roadways, rail lines, the airport, or stationary sources exceeding, or estimated to exceed, levels specified in Table 6.4 [Table 4.11-8 of this EIR] shall require traffic calming, site planning, buffering, sound insulation, or other methods to reduce noise exposure in interior spaces to the levels specified in Table 6.4.

- **PS-P-29: Acoustical Studies.** When proposed projects include potentially significant noise generators, require acoustical studies to be prepared by an expert, including specific recommendations for mitigation when (1) the project is located near noise sensitive land uses or land that is planned for noise sensitive land uses or (2) the proposed noise source would violate provisions of the General Plan or City noise ordinance.

  - For purposes of consistency, require that acoustical studies incorporate the following methods:
  - Assume 3 dBA attenuation with doubling of distance for the natural attenuation of noise emanating from roadways (with the exception of freeways, where a 4.5 dBA attenuation with doubling of distance may be assumed).
  - Use the design capacity of roadways as outlined in the Circulation Element and the posted speed limit to quantify the design noise levels adjacent to master planned transportation routes for mitigation purposes.

THRESHOLD FOR DETERMINING SIGNIFICANCE

CEQA Guidelines Appendix G provides the following criteria, with refinements specific to the City of Hemet, for determining significance. For the purposes of this EIR, a significant impact would occur if implementation of the General Plan would:

- expose persons to or generate noise levels in excess of applicable standards (e.g., exterior and interior noise standards from the City of Hemet General Plan and City of Hemet Municipal Code);
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, as listed in Table 4.11-9;
- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, as listed in Table 4.11-9;
- expose people residing or working in the area to excessive noise levels, for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport;

- expose people residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip; or

- expose persons to or generate excessive groundborne vibration or groundborne noise levels (specifically, vibration impacts would be significant if levels exceed the Caltrans recommended standard of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable vibration standard of 80 VdB with respect to human response at nearby vibration-sensitive land uses.

There are no private airstrips in the planning area; therefore, this EIR does not discuss the potential for exposure to excessive noise levels associated with a private airstrip.

The significance criteria listed in Table 4.11-10 below are based on published guidance from the Governor's Office of Planning and Research, and are considered to correlate well with human response to changes in ambient noise levels and assess degradation of the ambient community noise environment.

IMPACT ANALYSIS

IMPACT 4.11-1	Expose Noise Sensitive Receptors to Construction Noise Levels. *Short-term construction source noise levels could exceed City standards at nearby noise-sensitive receptors. In addition, if construction were to occur during noise-sensitive hours, construction noise could also result in annoyance and/or sleep disruption to occupants of existing and proposed noise-sensitive land uses and create a substantial temporary increase in ambient noise levels affecting sensitive receptors. However, implementation of the Hemet Municipal Code and Draft General Plan policies would exempt construction noise during working hours, protect noise sensitive uses, and require evaluation and mitigation of noise conflicts as a condition of future project approvals. This impact would be less than significant.*

Implementation of the Draft General Plan would result in construction of new residential, commercial, and industrial uses throughout the planning area. This construction would generate noise in excess of ambient levels and has the potential to affect noise sensitive land uses. Table 4.11.10 illustrates typical noise levels associated with the operation of construction equipment at a distance of 50 feet. As shown, construction equipment generates high levels of intermittent noise ranging from 55 dBA to 95 dBA.

The City's Municipal Code exempts construction noise that occurs between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. The Code permits Saturday construction between the hours of 7:00 a.m. and 6:00 p.m. and prohibits Sunday construction (City of Hemet Municipal Code, Article II, Section 30-32 [33]). This regulatory exemption reflects the City's acknowledgement that construction noise is a necessary part of new development and does not create an unacceptable public nuisance when conducted within the least noise sensitive hours of the day.

Draft General Plan policies require construction noise to remain within acceptable noise limits and protect existing areas with acceptable noise environments (Policy PS-11.1), make evaluating potential noise conflicts and mitigating conflicts a condition of project approval (Policy PS-11.3), and protect noise-sensitive uses from new noise sources (e.g., construction) (Policy PS-11.4). Therefore, implementation of the Hemet Municipal Code and Draft General Plan policies would result in a **less than significant** impact related to, exposure of noise-sensitive receptors to construction noise by exempting construction noise during working hours, protecting noise sensitive uses, and evaluating and mitigating noise conflicts as a condition of future project approvals.

Table 4.11.10 Construction Equipment Noise Levels	
Equipment Item	Typical Maximum Noise Level (dBA) at 50 Feet
Earthmoving	
Backhoes	80
Bulldozers	85
Front Loaders	80
Graders	85
Paver	85
Roller	85
Scrapers	85
Tractors	84
Slurry Trencher	82
Dump Truck	84
Pickup Truck	55
Materials Handling	
Concrete Mixer Truck	85
Concrete Pump Truck	82
Crane	85
Man Lift	85
Stationary Equipment	
Compressors	80
Generator	82
Pumps	77
Impact Equipment	
Compactor	80
Jack Hammers	85
Impact Pile Drivers (Peak Level)	95
Pneumatic Tools	85
Rock Drills	85
Other Equipment	
Concrete Saws	90
Vibrating Hopper	85
Welding Machine / Torch	73

Notes: dBA = A-weighted decibels
Noise levels are for equipment fitted with properly maintained and operational noise control devices, per manufacturer specifications.
Source: Bolt, Beranek and Newman Inc. 1981, FTA 2006

IMPACT 4.11-2 Transportation Noise Levels. *Long-term traffic noise levels would exceed standards and create a substantial permanent increase in ambient noise levels at existing and proposed noise-sensitive receptors. Future land uses consistent with the Draft General Plan would create new vehicle trips that would increase existing noise levels substantially (+3 dBA) above ambient noise levels affecting sensitive receptors. This impact would be significant.*

Future land uses consistent with the Draft General Plan, along with other regional growth and implementation of the Circulation Master Plan would result in additional daily trips throughout the planning area, which would increase ambient noise levels at existing land uses along roadways. Section 4.13, "Transportation/Traffic," describes future traffic conditions with implementation of the Draft General Plan.

To examine traffic noise impacts, traffic noise levels associated with implementation of the Draft General Plan were calculated for roadway segments in the planning area using FHWA's Highway Noise Prediction Model (FHWA-RD-77-108) (FHWA 1978). Table 4.11-11 summarizes modeled 2030 L_{dn} noise levels at 100 feet from the roadway centerline for affected roadway segments in the planning area with implementation of the Draft General Plan (Urban Crossroads 2006, 2011). The traffic noise levels presented represent an application of conservative traffic noise modeling methodologies which assume no natural or artificial shielding from existing or proposed structures or topography. Actual traffic noise exposure levels at noise sensitive receptors in the planning area would vary depending on a combination of factors such as variations in daily traffic volumes, shielding provided by existing and proposed structures, and meteorological conditions. (Refer to Appendix E).

Based on the modeling summarized in Table 4.11-11, implementation of the Draft General Plan would result in a change in traffic noise levels ranging from -1.9 dBA to +23.8 dBA L_{dn} compared to existing conditions (Urban Crossroads 2006, 2011). As a result, long-term noise levels from new traffic associated with implementation of the Draft General Plan would result in a substantial permanent increase in ambient noise levels exceeding significance thresholds (+3 dBA increase) along 19 roadway segments.

Draft General Plan policies and programs require traffic-generated noise to remain within acceptable noise limits and protect existing areas with acceptable noise environments (Policy PS-11.1), require evaluation of potential noise conflicts and mitigation of conflicts as a condition of project approval (Policy PS-11.3), protect noise-sensitive uses from new noise sources (e.g., traffic) (Policy PS-11.4), and require that traffic-noise and land use conflicts be minimized (Policy PS-12.1). Programs PS-P-27and PS-P 29 require use of noise standards defined in policies (Table 4.11-8) and preparation of acoustical studies when noise standards are likely to be exceeded. Program PS-P-28 requires project design modifications to reduce noise to acceptable levels based on Table 4.11-8.

Although implementation of Draft General Plan policies and programs would reduce traffic noise impacts on new development, because design features (e.g., insulation; windows and doors; exterior berms, landscaping, and sound barriers) would be required, exterior noise levels would still increase more than the standards in Table 4.11-9, and exterior noise levels at 100 feet from roadway centerlines could still be above 65 db, which is identified as an acceptable exterior level for some sensitive receptors. The increases in noise levels would also affect existing development that is located adjacent to larger roadways. Although the City would require implementation of barriers and other noise controls in new development, because existing sensitive receptors could be exposed to excessive roadway noise, this would be a **significant** impact.

No additional feasible mitigation beyond Draft General Plan policies and programs is available at a program level. This impact would remain **significant and unavoidable**.

Table 4.11-11 Predicted Traffic Noise Levels Existing Conditions and Future Draft General Plan Update Conditions					
Roadway	Segment	CNEL (dBA) 100 Feet			
		Existing	General Plan Buildout	Net Change	Significant?
Warren Road	**City limit to Esplanade**	**64.2**	**68.3**	**+4.1**	**Yes**
Warren Road	**Esplanade to Florida**	**65.5**	**69.2**	**+3.7**	**Yes**
Warren Road	Florida to Stetson	-	70.0	-	No
Warren Road	Stetson to City limit	65.0	66.5	+1.5	No
Crawston Avenue	**Esplanade to Menlo**	**57.4**	**62.4**	**+5.0**	**Yes**
Crawston Avenue	Menlo to Florida	59.1	61.7	+2.6	No
Crawston Avenue	**Florida to Stetson**	**40.9**	**64.7**	**+23.8**	**Yes**
Crawston Avenue	**Stetson to Dominigoni**	**40.9**	**58.7**	**+17.8**	**Yes**
Sanderson Avenue	Esplanade to Menlo	67.3	69.2	+1.9	No
Sanderson Avenue	Menlo to Florida	68.1	70.3	+2.2	No
Sanderson Avenue	Florida to Stetson	68.1	70.0	+1.9	No
Sanderson Avenue	Stetson to Dominigoni	66.7	67.8	+1.1	No
Lyon Avenue	**Esplanade to Menlo**	**56.5**	**62.0**	**+5.5**	**Yes**
Lyon Avenue	Menlo to Florida	60.7	63.4	+2.7	No
Lyon Avenue	Florida to Stetson	60.4	58.6	-1.8	No
Lyon Avenue	**Stetson to Dominigoni**	**56.3**	**61.7**	**+5.4**	**Yes**
State Street	Esplanade to Menlo	63.9	65.5	+1.6	No
State Street	Menlo to Florida	63.0	64.9	+1.9	No
State Street	Florida to Stetson	61.8	63.4	+1.6	No
State Street	Stetson to Dominigoni	64.1	66.7	+2.6	No
San Jacinto Street	Menlo to Florida	63.4	62.9	-0.5	No
San Jacinto Street	Florida to Stetson	61.5	60.9	-0.6	No
Meridian Street	**Washington to Florida**	**57.1**	**60.8**	**+3.7**	**Yes**
Esplanade Avenue	**Warren to Sanderson**	**62.9**	**66.8**	**+3.9**	**Yes**
Esplanade Avenue	**Sanderson to Lyon**	**63.2**	**67.2**	**+4.0**	**Yes**
Esplanade Avenue	Lyon to State	65.7	67.2	+1.5	No
Esplanade Avenue	State to Commonwealth	66.9	67.4	+0.5	No
Florida Avenue	**Warren to Sanderson**	**73.7**	**77.2**	**+3.5**	**Yes**

Table 4.11-11 Predicted Traffic Noise Levels Existing Conditions and Future Draft General Plan Update Conditions					
Roadway	Segment	CNEL (dBA) 100 Feet			
		Existing	General Plan Buildout	Net Change	Significant?
Florida Avenue	Sanderson to Lyon	74.1	74.5	+0.4	No
Florida Avenue	Lyon to State	73.7	73.6	-0.1	No
Florida Avenue	State to Columbia	73.7	72.6	-1.1	No
Florida Avenue	Columbia to City limits	68.4	66.9	-1.5	No
Stetson Avenue	**City limits to Warren**	**59.9**	**64.8**	**+4.9**	**Yes**
Stetson Avenue	**Warren to Crawston**	**64.6**	**69.6**	**+5.0**	**Yes**
Stetson Avenue	Crawston to Sanderson	66.6	69.4	+2.8	No
Stetson Avenue	Sanderson to Lyon	68.3	69.3	+1.0	No
Stetson Avenue	Lyon to State	67.9	67.6	+0.3	No
Stetson Avenue	State to San Jacinto	67.4	68.6	+1.2	No
Domenigoni Parkway	**City limits to Sanderson**	**71.3**	**74.8**	**+3.5**	**Yes**
Domenigoni Parkway	**Sanderson to Lyon**	**69.3**	**74.6**	**+5.3**	**Yes**
Domenigoni Parkway	**Lyon to State**	**68.3**	**73.1**	**+4.8**	**Yes**
Domenigoni Parkway	**State to City limits**	**58.9**	**71.2**	**+12.3**	**Yes**
State Street	**Domenigoni to City limits**	**62.3**	**67.2**	**+4.9**	**Yes**
Menlo Avenue	Crawston to Lyon	59.8	62.7	+2.9	No
Menlo Avenue	Lyon to State	59.8	62.7	+2.9	No
Menlo Avenue	**State to San Jacinto**	**59.8**	**63.4**	**+3.6**	**Yes**
Acacia Avenue	Crawston to Sanderson	57.5	60.4	+2.9	No
Acacia Avenue	Sanderson to Lyon	62.1	63.8	+1.7	No
Acacia Avenue	Lyon to State	59.9	57.8	-1.9	No
Acacia Avenue	State to San Jacinto	60.1	59.3	-0.8	No

Notes: dBA = A-weighted decibels; L_{dn} = day-night average noise level.
Source: Urban Crossroads (December 6, 2006; May 11, 2011)

IMPACT 4.11-3 — Expose Noise Sensitive Receptors to Stationary and Area-Source Noise Levels. *Future land uses consistent with the Draft General Plan would result in the siting of new noise sources near sensitive receptors, and would likely increase the number of noise-sensitive receptors in the planning area. However, implementation of the Hemet Municipal Code and Draft General Plan policies and programs would require design features in new construction to reduce noise levels. As a result, this impact would be less than significant.*

Future land uses consistent with the Draft General Plan would include an additional 22,615 dwelling units and 47,888,000 square feet of non-residential (i.e., commercial, industrial, mixed use, public, and specific plans) building floor area. As a result of increased residential development in the city, the number of noise-sensitive receptors would also likely increase. As a consequence, additional dwelling units could result in location of new noise-sensitive receptors near existing noise-generating land uses. As shown in Table 4.11-6, existing 24-hour ambient noise levels in the planning area ranged from 58 dBA to 63 dBA L_{dn}.

Both the 1992 General Plan and Draft General Plan state that the standard for community ambient noise levels for residential uses should be 65 dBA for outdoor activities and 45 dBA for indoor activities. The General Plan requires new development in areas where the ambient noise level exceeds 65 dBA to incorporate special treatment measures into project design to reduce interior noise levels. Based on existing ambient noise levels in the planning area, noise intrusion would not occur with new residential development as proposed by the Draft General Plan.

The Draft General Plan also proposes an increase in non-residential land uses throughout the planning area, creating the potential for additional stationary noise sources. During daytime hours, activities associated with these uses could also create additional noise (e.g., delivery trucks, forklifts) that disturbs nearby noise-sensitive receptors.

Mixed-use development projects often include residential uses located above or in proximity to commercial uses, and in areas served by public transit along major roadways. Implementation of the Draft General Plan would provide for new mixed-use development. Noise sources associated with commercial land uses could include mechanical equipment operations, public address systems, parking lot noise (e.g., opening and closing of vehicle doors, people talking, car alarms), delivery activities (e.g., use of forklifts, hydraulic lifts), trash compactors, and air compressors. Noise from such equipment can reach intermittent levels of approximately 90 dBA, 50 feet from the source (EPA 1974). These elevated noise levels would expose nearby noise sensitive land uses (e.g., multiple-family residential units) to noise levels that exceed the City's stationary source exterior noise standards, identified in Tables 4.11-3 and 4.11-4.

Implementation of Draft General Plan policies and programs would reduce noise impacts on sensitive receptors through assessment and the use of design features (e.g., insulation; windows and doors; exterior berms, landscaping, and sound barriers). Policies require noise to remain within acceptable limits and protect existing areas with acceptable noise environments (Policy PS-11.1), require evaluation of potential noise conflicts and mitigation of any conflicts as a condition of project approval (Policy PS-11.3), protect noise-sensitive uses from new noise sources (e.g., commercial and industrial land uses) (Policy PS-11.4), require that noise sensitive uses be restricted near major noise sources (Policy PS-13.2), and prevent encroachment of sensitive land uses into areas designated for use by existing or future noise generators(Policy PS-13.3). Programs PS-P-27 and PS-P-29 require use of noise standards defined in policies (Table 4.11-8) and preparation of acoustical studies when noise standards are likely to be exceeded. Program PS-P-28 requires project design modifications to reduce noise to acceptable levels based on Table 4.11-8.

With implementation of the Hemet Municipal Code and Draft General Plan policies and programs, stationary and area-source noise (e.g., commercial, mixed use development) would be reduced, and exposure of noise-sensitive receptors to other noise sources would be **less than significant**.

IMPACT 4.11-4 Aircraft Noise. *Construction of new residential land uses or other sensitive receptors within airport overflight areas and noise contours could result in increased exposure to aircraft noise compared to existing conditions However, implementation of the Draft General Plan would not expose new or existing noise sensitive land uses to elevated aircraft noise levels. This impact is less than significant.*

Aircraft noise from the Hemet-Ryan Airport may be considered an intermittent, disturbing noise to some residents in the planning area. Private, police, emergency medical, and news and traffic monitoring helicopters also contribute to the general noise environment in the planning area. Construction of new residential land uses or other sensitive receptors within airport overflight areas and noise contours could result in increased exposure to aircraft noise compared to existing conditions.

The majority of the planning area is located outside the Hemet-Ryan Airport noise contours, and the 60 dB and 65 dB CNEL contours are approximately contained east of Warren Road and north of Stetson Avenue. The existing noise levels at the nearest sensitive receptor area to the north and south of the airport are 54 dBA CNEL and 63 dBA CNEL, respectively (refer to Measurement Sites 1 and 2 of Table 4.11-6). Under future conditions, both the 60 dB and 65 dB CNEL contours would extend further to the south and west of the airport, and the 60 dB CNEL contour would cross Stetson Avenue and extend approximately ¼ mile southwest of Warren Road.

Implementation of Draft General Plan policy PS-12.3 would require the City to ensure that future development in the airport vicinity is compatible with both current and projected airport noise levels based on the standards identified in Table 4.11-8.

With implementation of Draft General Plan policy PS-12.3, impacts related to aircraft-generated noise effects on sensitive receptors would be **less than significant**.

IMPACT 4.11-5 Vibration Levels. *Short-term project-generated construction source vibration levels could exceed Caltrans' recommended standard of 0.2 in/sec peak particle velocity (PPV) with respect to the prevention of structural damage for normal buildings and the FTA maximum acceptable vibration standard of 80 vibration decibels (VdB) with respect to human response for residential uses (i.e., annoyance) at vibration-sensitive land uses. Implementation of the Draft General Plan would not expose sensitive receptors to unacceptable levels of vibration related to the BNSF line or light industrial activities. However, short-term construction has the potential to expose sensitive receptors to unacceptable levels of vibration. This impact would be significant.*

Sources of groundborne noise and vibration in the planning area include light industrial uses, traffic, and train activity. Short-term intermittent groundborne noise and vibration may also be generated by construction.

Railroad-Induced Vibration

Train operations have the potential to create varying degrees of temporary ground vibration, depending on the type of train (e.g., freight, passenger) and length of train involved. Railroad operations along the BNSF line consist of two or three short trains per year to transport potatoes during the harvest season. A freight train passage is expected to result in levels of approximately 0.06 to 0.1 in/sec PPV at a distance of 50 feet from the centerline of the railroad tracks. In addition, light-rail systems typically generate vibration levels of around 80 Vdb at 50 feet (FTA 2006). Based on FTA's vibration measurements and conclusions, railroad or light-rail vibration levels could exceed the threshold of human perception (65 VdB) at locations adjacent to the BNSF line. Sensitive receptors located in close proximity to a railroad line could be exposed to groundborne vibration levels exceeding the recommended FTA and Caltrans guidelines of 80 VdB and 0.2 in/sec PPV, respectively. However, these vibrations would last for a short time and only occur two or three times per year.

Construction-Induced Vibration

Construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized below in Table 4.11-12. Based on the representative vibration levels presented for various construction equipment types, sensitive receptors located in proximity to construction operations could be exposed to groundborne vibration levels exceeding the recommended FTA and Caltrans guidelines of 80 VdB and 0.2 in/sec PPV, respectively.

Table 4.11-12
Representative Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 feet (in/sec)[1, 3]	Approximate Lv (VdB) at 25 feet[2]
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Heavy-duty Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Notes:
1 Where PPV is the peak particle velocity.
2 Where Lv is the RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.
3 Vibration levels can be approximated at other locations and distances using the above reference levels and the following equation: PPVequip = PPVref (25/D)1.1 (in/sec); where “PPV ref” is the given value in the above table, “D” is the distance for the equipment to the new receiver in feet.
Source: Federal Transit Administration 2006

Vibration from Car and Truck Traffic

Vehicles traveling on the local and regional roadway network are generally supported on flexible suspension systems and therefore are not an efficient source of ground vibration. However, vehicles can cause vibration when they roll over pavement surfaces that are not smooth. These discontinuities typically develop as a result in cracking, potholes, or misaligned expansion joints. When discontinuities develop, vehicles passing over the imperfection impart energy into the ground, generating vibration. Groundborne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of groundborne vibration and the short duration of the associated events, vehicular traffic-induced groundborne vibration is rarely perceptible beyond the roadway right-of-way, and rarely result in vibration levels that cause damage to buildings in the vicinity.

Industrial and Commercial Operations

Light industrial and commercial operations have, on occasion, been known to use equipment or processes that have a potential to generate groundborne vibration. However, such vibrations are generally addressed from an occupational health and safety perspective. The residual vibrations from industrial processes or machinery are typically of such low amplitude that they quickly dissipate into the surrounding soil and are rarely perceivable at the surrounding land uses.

Distribution of materials to and from industrial and commercial land uses can have the potential to generate more substantial levels of groundborne vibration than mechanical equipment. For deliveries and distributions occurring by heavy truck, the loading and unloading process benefits from the resiliency of flexible suspension systems and pneumatic tires, which substantially limit the effect and transfer of energy to the ground. Heavy truck traffic passing over uneven roadway surfaces can impart energy into the ground and induce groundborne vibration; however, heavy trucks used for delivery and distribution of materials to and from industrial and commercial sites generally operate at very low speeds. Therefore, groundborne vibrations induced by heavy truck traffic at industrial or commercial land uses are not anticipated to be perceptible at distances greater than 25 feet (typical distance from roadway centerline to edge of roadway right-of-way for a single-lane road).

Based on operational characteristics of mechanical equipment and distribution methods for general light industrial and commercial land uses, it is not anticipated that light industrial and commercial operations would result in groundborne vibration levels that approach or exceed the FTA and Caltrans guidelines of 80 VdB and 0.2 in/sec PPV.

Conclusion

Implementation of the Draft General Plan would not expose sensitive receptors to unacceptable levels of vibration related to the BNSF line or light industrial activities. However, short term construction has the potential to expose sensitive receptors to unacceptable levels of vibration. This impact would be **significant**, requiring mitigation.

Mitigation Measure

Mitigation Measure 4.11-5: Construction-Induced Vibration

Where necessary to reduce potentially significant impacts, the City shall implement or require implementation of the following construction measures through contract provisions and/or conditions of approval as appropriate:

- Utilize alternative installation methods where possible (e.g., pile cushioning, jetting, pre-drilling, cast-in-place systems, resonance-free vibratory pile drivers) for pile driving required within a 50-foot radius of historic structures. Specifically, geo-pier style cast-in-place systems or equivalent shall be used where feasible as an alternative to pile driving to reduce the number and amplitude of impacts required for seating the pile.

- Record, in the form of a preconstruction survey, the preexisting condition of all buildings within a 50-foot radius and of historic buildings within the immediate vicinity of proposed construction activities. The preconstruction survey shall determine conditions that exist before construction begins for use in evaluating damage caused by construction activities. Fixtures and finishes within a 50-foot radius of construction activities susceptible to damage shall be documented (photographically and in writing) prior to construction. All damage shall be repaired back to its preexisting condition.

- Conduct vibration monitoring prior to and during pile driving operations occurring within 100 feet of the historic structures. Every attempt shall be made to limit construction-generated vibration levels in accordance with Caltrans recommendations during pile driving and impact activities in the vicinity of the historic structures.

- Provide protective coverings or temporary shoring of on-site or adjacent historic features as necessary, in consultation with the City Building Department.

Significance After Mitigation

Implementation of Mitigation Measure 4.11-5 would avoid and/or reduce impacts related to elevated groundborne noise and vibration levels associated with construction to a **less than significant** level.