Appendix G

Noise Assessment

Noise Assessment For The

RANCHO CUCAMONGA GENERAL PLAN UPDATE

CITY OF RANCHO CUCAMONGA

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1.0 EXISTING SETTING

1.1 Project Description

Each city and county in California must prepare a comprehensive, long-term general plan to guide its future. California state law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (California Government Code, §65300). A general plan expresses the community's development goals and embodies public policies relative to the distribution of future land uses, both public and private. The Rancho Cucamonga General Plan Update proposes to establish the overall development capacity for the City and its Sphere of Influence and will serve as a long-range policy document for determining the appropriate look, feel, and experience of the City.

The proposed General Plan Update will address six of the seven State-mandated General Plan elements and other issues that are important to the community. The proposed General Plan Update contains the following elements (referred to as "Chapters"):

Managing Land Use, Community Design, and Historic Resources
Community Mobility
Economic Development
Community Services
Resource Conservation
Public Facilities and Infrastructure
Public Health and Safety

The City General Plan (GP) Update encompasses a total of approximately 26,551 acres. The GP Update Target Density consists of a total of 63,253 residential dwelling units (including mixed-use residential), a total of 2,430,000 square feet of school uses, 445 acres of parks, a total of 23,102,000 square feet of mixed commercial land uses, and a total of 72,000,000 square feet of mixed industrial land uses. Exhibit 1 shows the proposed land uses within the City of Rancho Cucamonga. Focused changes have been proposed to the 2001 General Plan that generated the proposed 2009 General Plan. The changes in the land uses primarily reflect the development trends in the city and mixed use along the Foothill corridor. Relative to baseline 2009 conditions the 2009 General Plan will result in 7,591 more dwelling units.

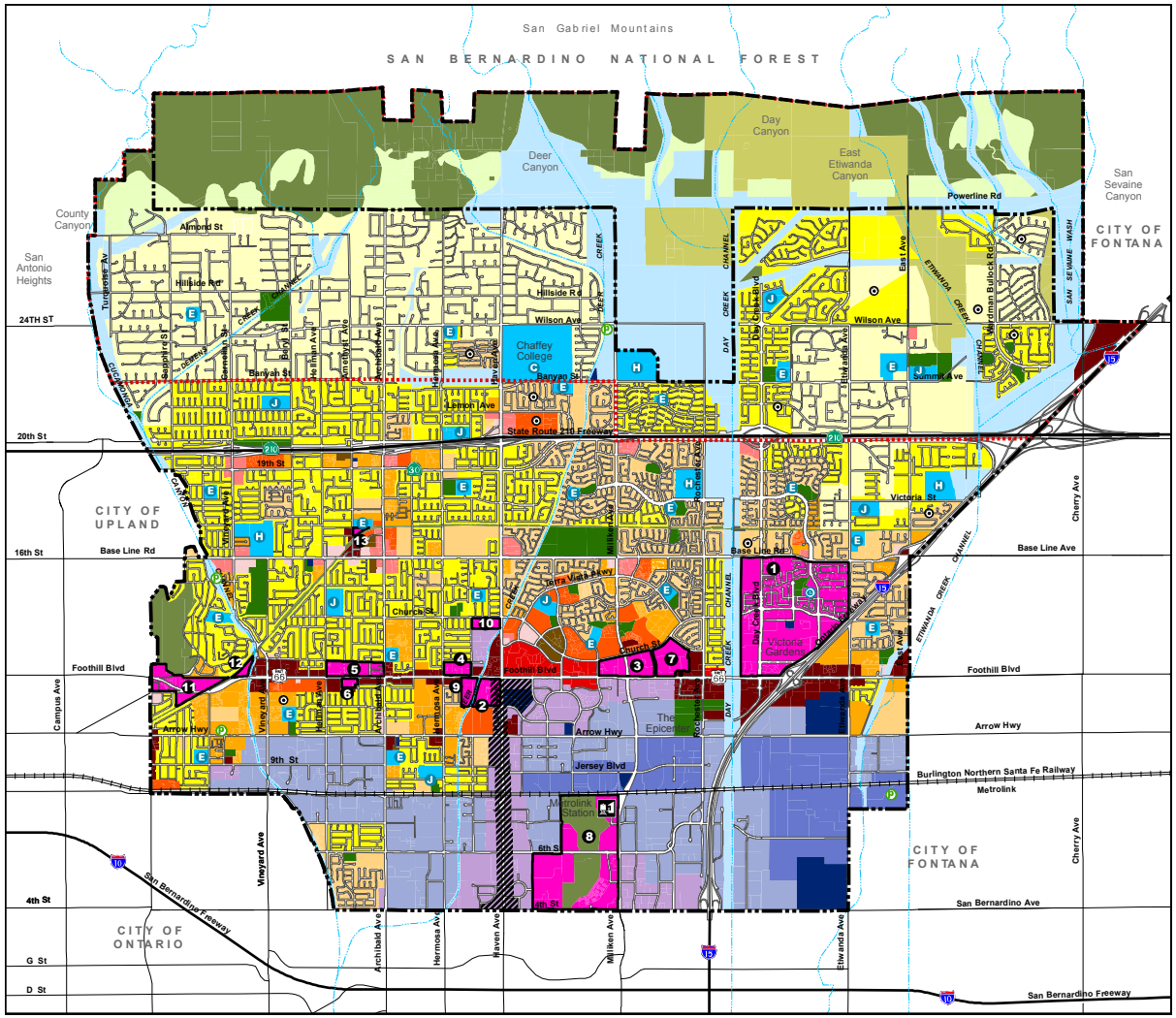


Figure LU-X:

Draft Land Use Plan

RANCHO CUCAMONGA GENERAL PLAN

Exhibit 1
Proposed General Plan

Mestre Greve Associates

1.2 Background Information on Noise

1.2.1 Noise Criteria Background

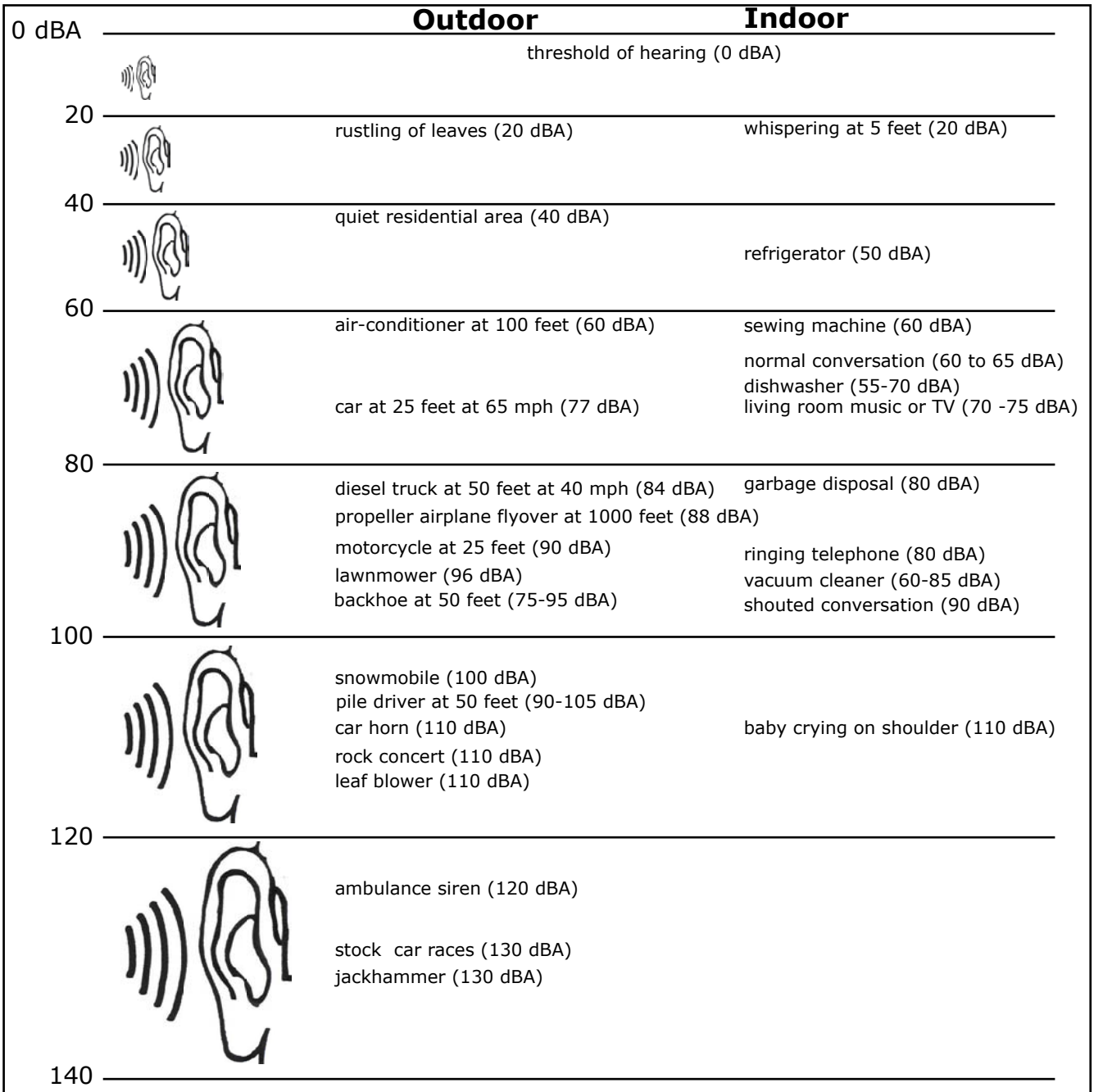
Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA. Exhibit 2 provides examples of various noises and their typical A-weighted noise level.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave form travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the effective perceived noise levels.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

> *Hearing Loss* is generally not a concern in community noise problems, even very near a major airport or a major freeway. Environmental noise does not have an effect on hearing threshold levels particularly due to the fact that environmental noise does not approximate occupational noise exposures in heavy industry, very noisy work environments with long-term exposure, or certain very loud recreational activities such as target shooting, motorcycle, or automobile racing, etc. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dBA for 8 hours per day to protect from hearing loss (higher limits are allowed for shorter duration exposures). Noise levels in neighborhoods, even in very noisy neighborhoods, are not sufficiently loud to cause hearing loss.



Sources: League For The Hard Of Hearing, www.lhh.org
Handbook of Noise Control, McGraw Hill, Edited byCyril Harris, 1979
Measurements by Mestre Greve Associates

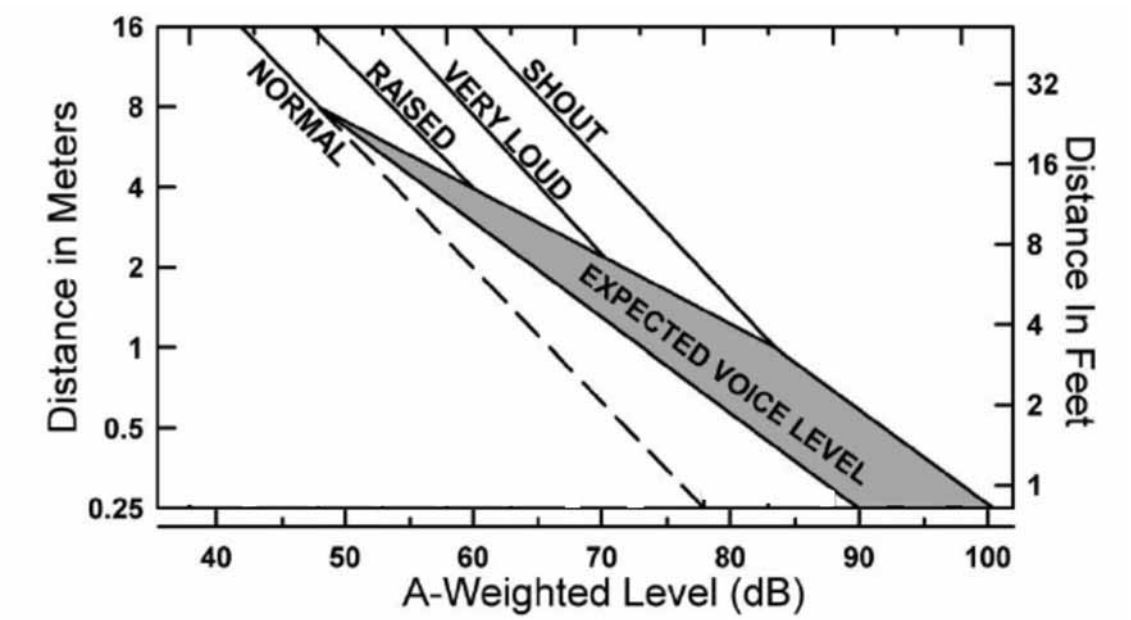
Exhibit 2
Typical A-Weighted Sound Levels

Communication Interference is one of the primary concerns in environmental noise problems. Communication interference includes speech interference and interference with activities such as watching television. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. Exhibit 3 shows the relation of quality of speech communication with respect to various noise levels.

Sleep Interference is a major noise concern in noise assessment and, of course, is most critical during nighttime hours. Sleep disturbance is one of the major causes of annoyance due to community noise. Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages, and cause awakening. Noise may even cause awakening, which a person may or may not be able to recall.

Extensive research has been conducted on the effect of noise on sleep disturbance. Recommended values for desired sound levels in residential bedroom space range from 25 to 45 dBA with 35 to 40 dBA being the norm. Some years ago (1981), the National Association of Noise Control Officials published data on the probability of sleep disturbance with various single event noise levels. Based on older laboratory experiments conducted in the 1970s, this data indicated noise exposure at 75 dBA interior noise level event could cause noise induced awakening in 30 percent of the cases.

Exhibit 3 Speech Interference Levels

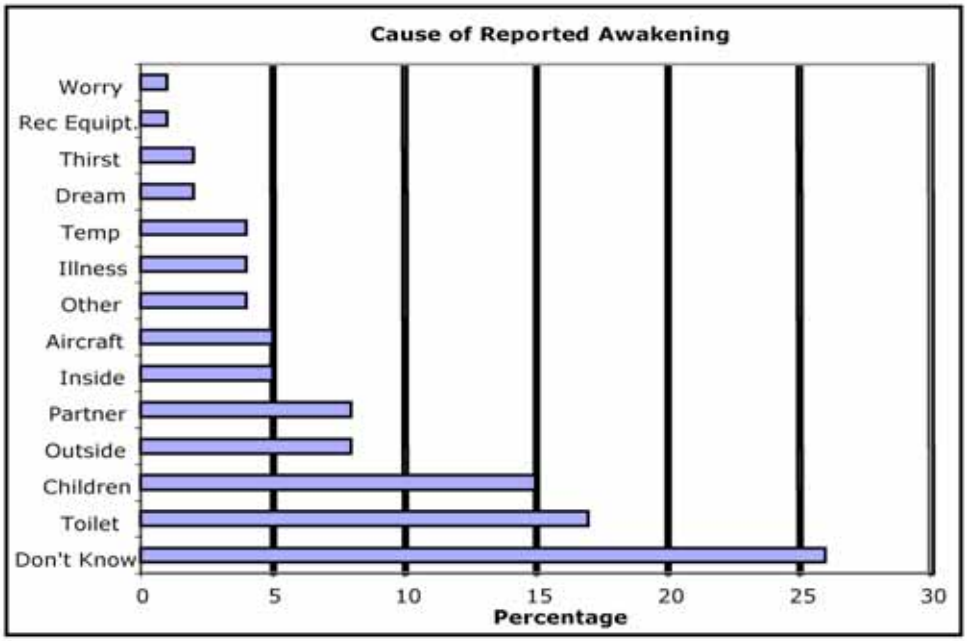


Source: U.S. EPA (1973)

However, more recent research from England has shown that the probability for sleep disturbance is less than what had been reported in earlier research. These recent field studies were conducted during the 1990s and used more sophisticated data collection techniques. These field studies indicate that awakenings can be expected at a much lower rate than had been expected based on earlier laboratory studies. This research showed that once a person was asleep, it is much more unlikely that they will be awakened by a noise. The significant difference in the recent English study is the use of actual in-home sleep disturbance patterns as opposed to laboratory data that had been the historic basis for predicting sleep disturbance. Some of this research has been criticized because it was conducted in areas where subjects had become habituated to aircraft noise. On the other hand, some of the earlier laboratory sleep studies were criticized because of the extremely small sample sizes of most laboratory studies and because the laboratory was not necessarily a representative sleep environment. The 1994 British sleep study compared the various causes of sleep disturbance using in home sleep studies. This field study assessed the effects of nighttime aircraft noise on sleep in 400 people (211 women and 189 men; 20-70 years of age; one per household) habitually living at eight sites adjacent to four U.K. airports, with different levels of night flying. The main finding was that only a minority of aircraft noise events affected sleep, and, for most subjects, that domestic and other non-aircraft factors had much greater effects. As shown in the Exhibit 4, aircraft noise was a minor contributor among a host of other factors that lead to awakening response.

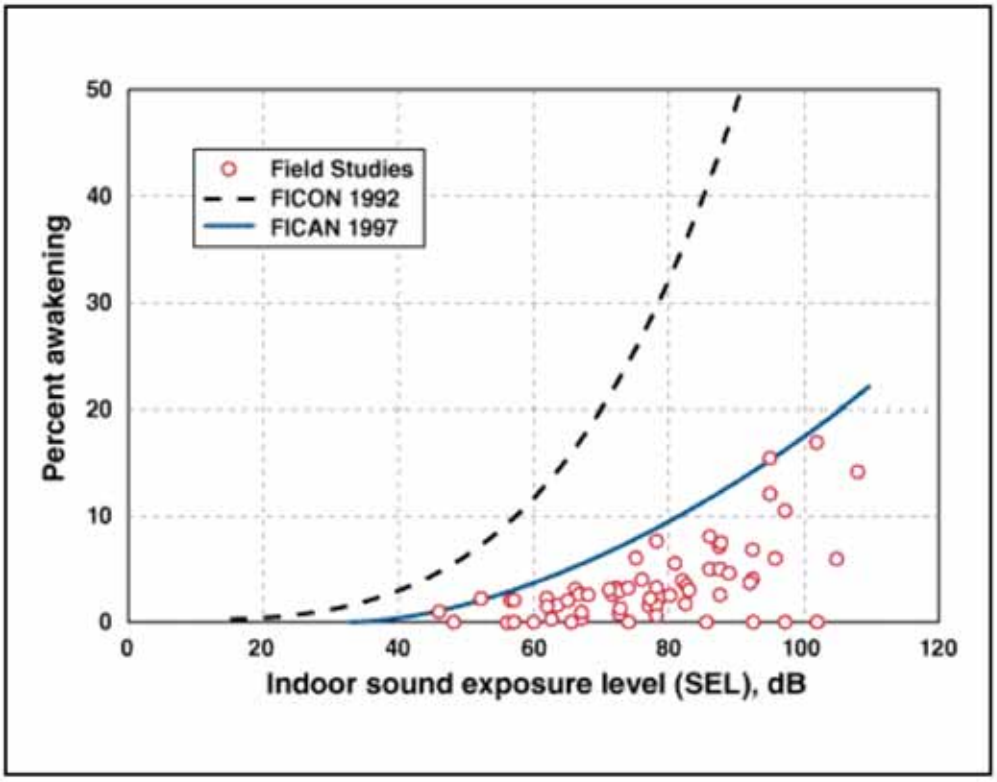
Exhibit 4 Causes and Prevalence of All Awakenings

(Total awakenings = 6,457. Each subject could have reported more than one awakening each night.)



The Federal Interagency Committee on Noise (FICON) in 1992 in a document entitled *Federal Interagency Review of Selected Airport Noise Analysis Issues* recommended an interim dose-response curve for sleep disturbance based on laboratory studies of sleep disturbance. In June of 1997, the Federal Interagency Committee on Aviation Noise (FICAN) updated the FICON recommendation with an updated curve based on the more recent in-home sleep disturbance studies which show lower rates of awakening compared to the laboratory studies. The FICAN recommended a curve based on the upper limit of the data presented and, therefore, considers the curve to represent the "maximum percent of the exposed population expected to be behaviorally awakened," or the "maximum awakened." The FICAN recommendation is shown on Exhibit 5. This is a very conservative approach. A more common statistical curve for the data points reflected in Exhibit 5, for example, would indicate a 10% awakening rate at a level of approximately 100 dB SEL, while the "maximum awakened" curve reflected in Exhibit 5 shows the 10% awakening rate being reached at 80 dB SEL. (The full FICAN report can be found on the internet at www.fican.org.)

Exhibit 5 FICAN Recommended Sleep Disturbance Curve



Physiological Responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are a sign of harm. Generally, physiological responses are a reaction to a loud short-term noise such as a rifle shot or a very loud jet over flight.

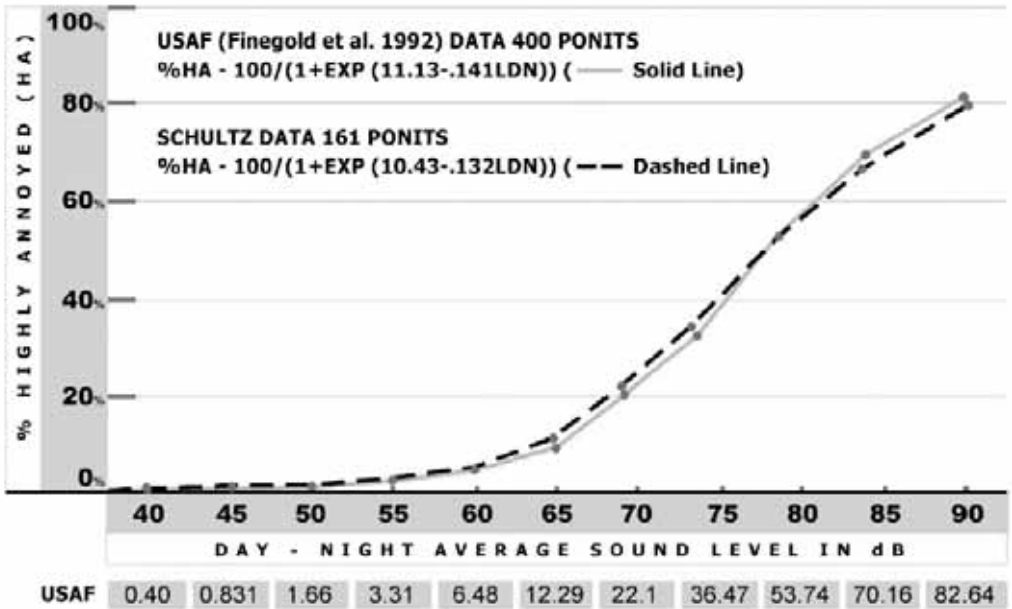
Health effects from noise have been studied around the world for nearly thirty years. Scientists have attempted to determine whether high noise levels can adversely affect human health apart from auditory damage. These research efforts have covered a broad range of potential impacts from cardiovascular response from fetal weight to mortality. While a relationship between noise and health effects seems plausible, it has yet to be convincingly demonstrated—that is, shown in a manner that can be repeated by other researchers while yielding similar results.

While annoyance and sleep/speech interference have been acknowledged, health effects, if they exist, are associated with a wide variety of other environmental stressors. Isolating the effects of aircraft noise alone as a source of long-term physiological change has proved to be nearly impossible. In a review of 30 studies conducted worldwide between 1993 and 1998 a team of international researchers concluded that, while some findings suggest that noise can affect health, improved research concepts and methods are needed to verify or discredit such a relationship. They called for more study of the numerous environmental and behavioral factors than can confound, mediate, or moderate survey findings. Until science refines the research process, a direct link between aircraft noise exposure and non-auditory health effects remains to be demonstrated. Recent studies by Eriksson (2007) and Jarup (2007 Hyena study) have reported higher rates of hypertension with increasing aircraft noise levels. The Hyena study identified the effect occurred only for nighttime aircraft noise.

Annoyance is the most difficult of all noise responses to describe. Annoyance is an individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. The level of annoyance, of course, depends on the characteristics of the noise (i.e.; loudness, frequency, time, and duration), and how much activity interference (e.g. speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that two to ten percent of the population is highly susceptible to annoyance from any noise not of their own making, while approximately twenty percent are unaffected by noise. Attitudes are affected by the relationship between the person and the noise source (Is it our dog barking or the neighbor's dog?). Whether we believe that someone is trying to abate the noise will also affect our level of annoyance.

There is no current research to suggest that there is a better metric than DNL (or CNEL) to relate to annoyance. See Section 1.2.2 for a discussion on noise metrics. Exhibit 6 relates DNL noise levels to community response from two of these surveys. One of the survey curves presented in Exhibit 6 is the well-known Schultz Curve. It displays the percent of a populace that can be expected to be annoyed by various DNL values for residential land use with outdoor activity areas. At 65 DNL, the Schultz Curve predicts approximately 14% of the exposed population reporting themselves to be “highly annoyed.” At 60 DNL, this decreases to approximately 8% of the population.

Exhibit 6 Schultz Curve



USAF	0.40	0.831	1.66	3.31	6.48	12.29	22.1	36.47	53.74	70.16	82.64
SCHULTZ	0.576	1.11	2.12	4.03	7.52	13.59	23.32	37.05	53.25	68.78	81.00

CALCULATED % HIGHLY ANNOYED (HA) POINTS

The Schultz Curve and recent updates include data having a very wide range of scatter with communities near some airports reporting much higher percentages of population highly annoyed at these noise exposure levels. While the precise reasons for this wide range of sensitivity is not identified, it is possible that non-acoustic factors, including political or the socio-economic status of the surveyed population, may have played an important role in increasing the sensitivity of this community during the period of the survey. Annoyance levels have never been correlated statistically to single event noise exposure levels in airport related studies.

School Classroom Effects. Interference with classroom activities and learning due to aircraft noise is an important consideration and has been the subject of much recent research. Studies from around the world indicate that vehicular traffic, railroad, and aircraft noise can have adverse effects on reading ability, concentration, motivation, and long-term learning retention. A complicating factor in this research is the extent of background noise from within the classroom itself. The studies indicating the most adverse effects examine cumulative noise levels equivalent to 65 DNL or higher and single event maximum noise levels ranging from 85 to 95 dBA. In other studies, the level of noise is unstated or ambiguous. According to these studies, a variety of adverse school room effects can be expected from *interior* noise levels equal to or exceeding 65 DNL and or 85 dBA SEL.

Some interference with classroom activities can be expected with noise events that interfere with speech. As discussed in other sections of this report, speech interference begins at 65 dBA, which is the level of normal conversation. Typical construction attenuates outdoor noise by 20 dBA with windows closed and 12 dBA with windows

open. Thus some interference of classroom activities can be expected at outdoor levels of 75 to 85 dBA. These levels are included in the Time Above analysis performed as part of this study. No studies have been identified where observations of student activity were compared to aircraft noise levels during aircraft flyovers. There is a clear need for additional research on the effects of aviation noise on schools and these studies need to include in classroom noise measurements and observation of student responses to aircraft activity.

1.2.2 Noise Assessment Metrics

The description, analysis and reporting of community noise levels around communities is made difficult by the complexity of human response to noise and the myriad of noise metrics that have been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community response. Most of the metrics use the A-Weighted noise level to quantify noise impacts on humans. A-Weighting is a frequency weighting that accounts for human sensitivity to different frequencies.

Noise metrics can be divided into two categories: single event and cumulative. Single-event metrics describe the noise levels from an individual event such as an aircraft fly over or perhaps a heavy equipment pass-by. Cumulative metrics average the total noise over a specific time period, which is typically 1 or 24 hours for community noise problems. For this type of analysis, cumulative noise metrics will be used.

Several rating scales have been developed for measurement of community noise. These account for: (1) the parameters of noise that have been shown to contribute to the effects of noise on man, (2) the variety of noises found in the environment, (3) the variations in noise levels that occur as a person moves through the environment, and (4) the variations associated with the time of day. They are designed to account for the known health effects of noise on people described previously. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. Two of the predominant noise scales are the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the “energy” average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 1 hour. This 1-hour noise level can also be referred to as the Hourly Noise Level (HNL). It is the energy sum of all the events and background noise levels that occur during that time period.

CNEL, Community Noise Equivalent Level, is the predominant rating scale now in use in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5 dBA, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. These

time periods and penalties were selected to reflect increased sensitivity to noise during these time periods. A CNEL noise level may be reported as a "CNEL of 60 dBA", "60 dBA CNEL", or simply "60 CNEL". Typical noise levels in terms of the CNEL scale for different types of communities are presented in Exhibit 7.

Ldn (or DNL), the day-night scale is similar to the CNEL scale. The only difference between Ldn and CNEL is that evening noises are not penalized for the Ldn metric.

L(%) is a statistical method of describing noise which accounts for variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example since 5 minutes is 25% of 20 minutes, L(25) (or L25) is the noise level that is equal to or exceeded for five minutes in a twenty-minute measurement period. It is L(%) that is used for most Noise Ordinance standards. For example most daytime County, state and City Noise Ordinances use an ordinance standard of 55 dBA for 30 minutes per hour or an L(50) level of 55 dBA. In other words, the Noise Ordinance states that no noise level should exceed 55 dBA for more that fifty percent of a given period.

1.3 Noise Criteria

1.3.1 City of Rancho Cucamonga Noise Element

The City of Rancho Cucamonga Noise Element of the General Plan specifies outdoor noise level limits for land uses impacted by transportation noise sources. Generally the City requires that new developments be designed to achieve these standards. Unlike most cities that use a 24-hour noise scale, such as CNEL, the City uses a separate noise limit for daytime and nighttime periods. The Noise Element states that for residential land use, the noise standard for residential exterior areas is 60 dBA from 7 a.m. to 10 p.m. and 55 dBA from 10 p.m. to 7 a.m. The noise standard for residential interior areas is 45 dBA from 7 a.m. to 10 p.m. and 40 dBA from 10 p.m. to 7 a.m. The City's noise standards are specified in Table 1.

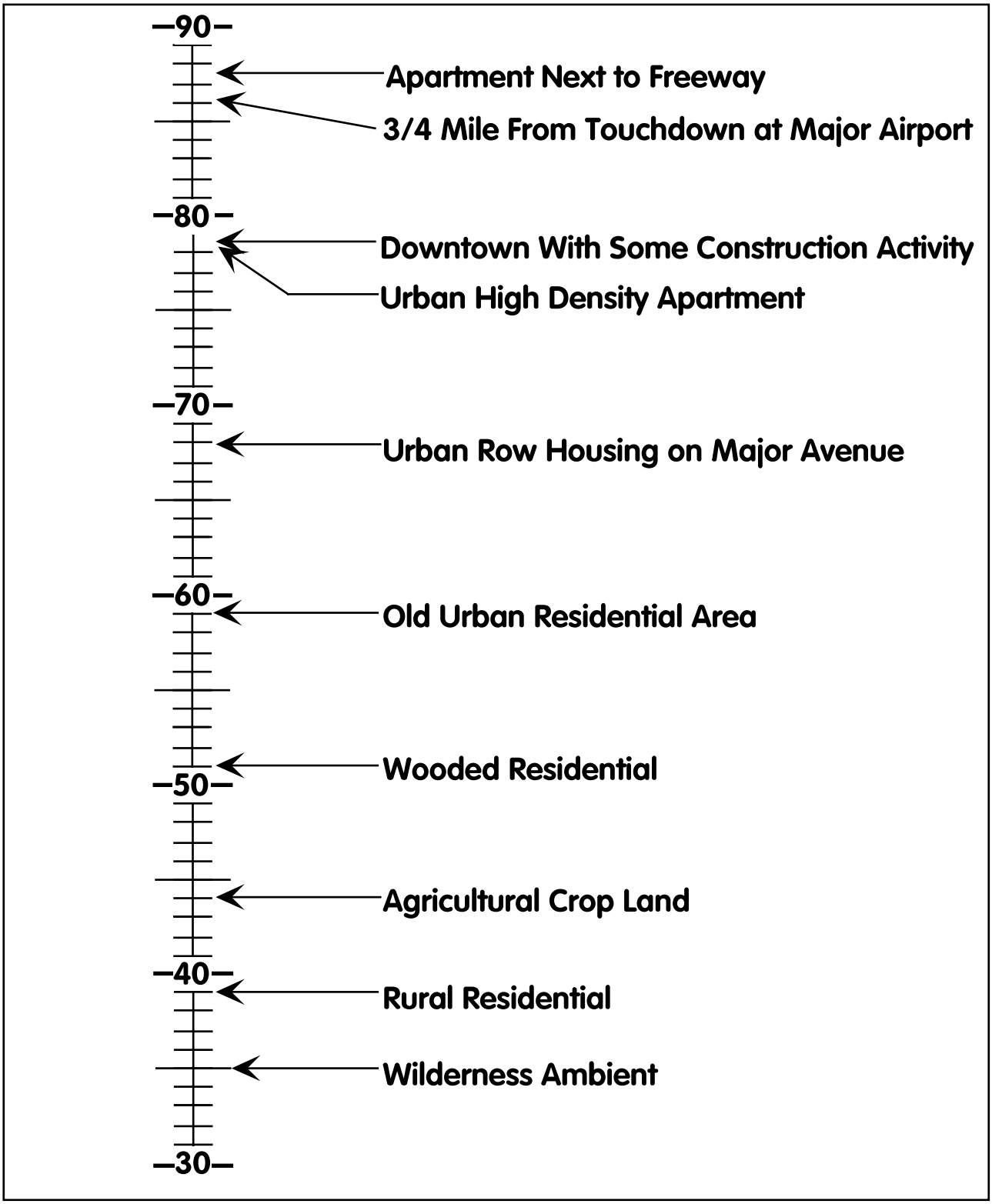
Table 1 City of Rancho Cucamonga Noise Standards

LAND USE NOISE STANDARDS

Land Use	*Interior Standard*	*Exterior Standard*
Residential		
10 pm to 7 am	40 dBA	55 dBA
7 am to 10 pm	45 dBA	60 dBA
Commercial/Office		
10 pm to 7 am	None identified	60 dBA
7 am to 10 pm	None identified	65 dBA
Industrial		
Class A (industrial park)	60 Ldn	65 Ldn
Class B (general industrial)	65 Ldn	75 Ldn
Class C (heavy industrial)	65 Ldn	85 Ldn

dBA = Decibel
Ldn = Day-night average sound level

Source: Rancho Cucamonga General Plan, Section 2.1.9.3.3 (2001).



Source: U.S. Environmental Protection Agency, "Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure," EPA Report NTID 73.4, 1973.

Exhibit 7
Typical Outdoor Noise Levels

The noise standard specified in Table 1 is currently under review by the City and is subject to change according to the following implementation measure, which is being proposed.

> Comprehensively review the noise standards contained in the Development Code, including noise performance standards related to each land use district. Revise as appropriate to reflect the general noise/land use compatibility guidelines in the Public Health and Safety Chapter, other community noise control objectives, and accepted best practices. Based on the revised noise standards, utilize noise technical studies and recommended mitigation measures prepared for development proposals to address potential noise impacts or conflicts with existing noise-sensitive uses, including but not limited to residences, schools, parks, private/public open spaces (e.g., plazas, outdoor dining areas, patios, and courtyards), health care facilities, religious institutions, commercial and industrial employee areas (e.g., break rooms), and other similar uses.

The implementation measure recommends using the land use compatibility guide. That guide, also known as the Noise Compatibility Matrix, is specified by figure PS-8 of the Public Health and Safety Chapter of the General Plan. That figure has been replicated and is shown in Exhibit 8. The guidelines specified by Exhibit 8 will be used instead of the standard specified in Table 1.

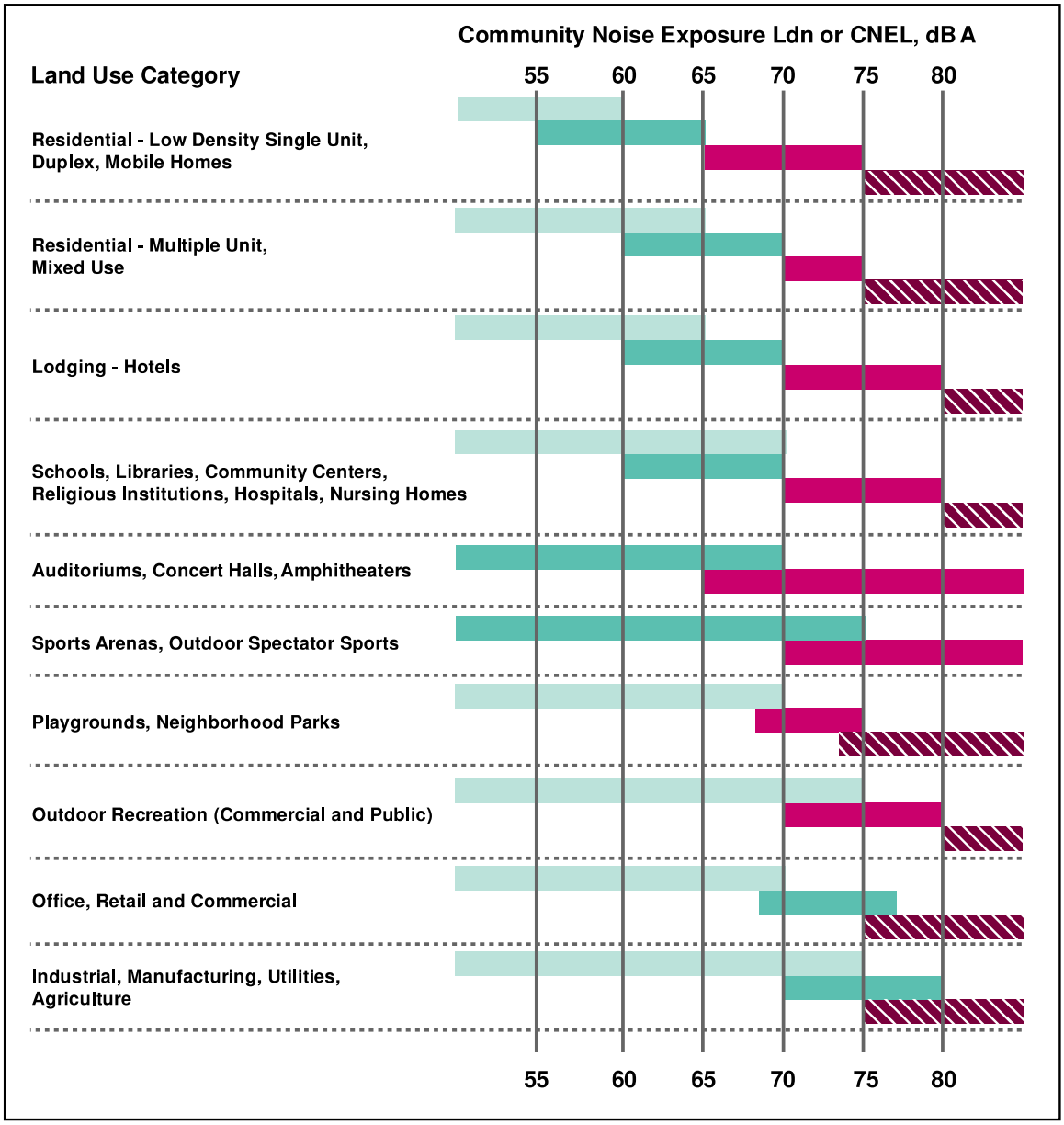
It should be noted that the guidelines presented in Exhibit 8 represent categories of compatibility and not specific noise standards. The implementation measure presented above will result in the City developing specific standards that are based on the compatibility matrix. These exterior noise standards typically apply to outdoor areas where people congregate. In the case of residences, the standards would apply to private yards of single-family homes and patios for multi-family homes. For hotels and motels, the standards would apply to recreational areas. For hospitals, the applicable areas would be patios, and for parks, the applicable areas would be picnic areas. For schools, the applicable areas would be playgrounds. Historically, the City has been using 65 CNEL as a standard for new residential development. That is, for new residential developments the project would need to incorporate features (e.g., setbacks, soundwalls, etc.) to insure that noise sensitive areas such as private backyard and patio areas achieve a 65 CNEL standard.

1.3.2 City of Rancho Cucamonga Noise Ordinance

A noise ordinance is designed to control unnecessary, excessive and annoying sounds from stationary (non-transportation) noise sources. Noise ordinance requirements cannot be applied to mobile noise sources such as heavy trucks when traveling on public roadways. Federal and state laws preempt control of mobile noise sources on public roads. Noise ordinance standards typically apply to industrial and commercial noise sources impacting residential areas. They are also applicable to noise generated at parks and schools impacting residential areas. The City of Rancho Cucamonga's municipal code prohibits the production of excessive noise, and will be applied to this project to determine potential noise impacts.

General Residential and Commercial Exterior Noise Standards

Section 17.02.120 of the City of Rancho Cucamonga's municipal code sets limits on the exterior noise levels that will be tolerated. Noise ordinance limits are specified using the "Basic Noise Level" as its reference criteria. The Basic Noise Level varies by land use and is presented later in Table 3, Table 4, and Table 5. The municipal code defines the Basic Noise Level as "the acceptable noise level within a given district". The City's exterior noise standard puts restrictions on the duration of noises of various magnitudes.



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

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

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

Clearly Unacceptable
New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

Source: Figure PS-8, Chapter 8, Public Health and Safety, Rancho Cucamonga General Plan

Exhibit 8
Noise Compatibility Matrix

The noise ordinance sets the following time limits on noise sources in all residential and commercial districts. All of these restrictions apply to each noise source.

a. Basic Noise Level for a cumulative period of not more than 15 minutes in any one hour; or

b. Basic Noise Level plus 5 dBA for a cumulative period of not more than 10 minutes in any one hour; or

c. Basic Noise Level plus 14 dBA for a cumulative period of not more than 5 minutes in any one hour; or

d. Basic Noise level plus 15 dBA at any time.

Restrictions a,b,c, and d are summarized in Table 2 in terms of L%, and the maximum duration in any given hour. If the noise source is impulsive or simple tone, the noise standard for each of the L% categories is 5 dBA less than what it is for noise sources that are neither impulsive nor pure tone.

Table 2 City of Rancho Cucamonga Exterior Noise Ordinance Standards

	L25	L16.7	L8.3	Lmax
Noise Level Limit*	BNL	BNL+5 dBA	BNL+14 dBA	BNL+15 dBA
Noise Level Limit (impulse or pure tone)	BNL- 5 dBA	BNL	BNL+9 dBA	BNL+10 dBA
Maximum allowable time in any 1-hour period that the noise level can exceed the noise level limit	15 minutes	10 minutes	5 minutes	Never Allowed

BNL=Basic Noise Level (dBA)
* Noise is neither impulsive nor pure tone
L25, L16.7, and L8.3 represent L% values. See Section 1.2.2 for the definition of L%

The noise ordinance exempts certain activities from the standard. These activities include City or school approved activities that take place between 7 a.m. and 10 p.m., outdoor gatherings with a temporary use permit granted by the City, mechanical warning devices that operate within any hour no longer than 30 minutes after they start, and construction activities that abide by the restrictions as specified in the construction noise paragraph (see below).

Residential Noise Standards

The City has adopted performance standards that are applicable in residential districts. Those standards are shown in Table 3.

Table 3 City of Rancho Cucamonga Residential Performance Standards

Location of Measurement	Maximum Allowable	
	10 p.m. to 7 a.m.	7 a.m. to 10 p.m.
1. Exterior	55 dBA	60 dBA
2. Interior*	40 dBA	45 dBA

Source: Municipal Code Chapter 17.08.080
* Fully enclosed interior with windows and doors shut

The City provides exemptions to the standard for emergency vehicles. Temporary construction activities that occur between the hours of 6:30 a.m. and 8:00 p.m., except Sundays and national holidays are also exempt provided that all other required conditions are satisfied (see construction noise standards).

Office and Commercial Noise Standards

The City has adopted standards that are applicable in office and commercial districts. Table 4 shows the maximum allowable exterior noise levels that can be generated by commercial and office activities.

Table 4 City of Rancho Cucamonga Commercial Performance Standards

	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
Lmax (Exterior)	65 dBA	60 dBA

Source: Compiled from information in the Municipal Code, Chapter 17.10.050

In addition to the maximum noise levels tolerated by the City, the ordinance also requires that loading and unloading that occurs between 10 p.m. and 7 a.m. not cause a noise disturbance in residential areas.

Industrial Noise Standards

The City has adopted noise standards that are applicable to industrial districts. The ordinance categorizes industrial districts into three categories. Classes A, B and C represent the industrial park, general industrial, and heavy industrial categories respectively. Table 5 shows the maximum noise levels that are tolerable in each of the three industrial districts.

Table 5 City of Rancho Cucamonga Industrial Performance Standards

	Class A (Industrial Park)	**Class B** (General Industrial)	**Class C** (Heavy Industrial)
Lmax (Exterior)	65 Ldn	75 Ldn	85 Ldn
Lmax (Interior)	60 Ldn*	65 Ldn*	65 Ldn[1]

Source: Compiled from information in the Municipal Code, Chapter 17.30.050
* Structure occupied by more than one use
1. Where use is within 200 feet of a residential zone

Construction Noise Standards

Under item 4 of Special Provisions paragraph Chapter 17.02.120 of the municipal code, noise generated by construction activities are allowed only if construction takes place between 6:30 a.m. and 8:00 p.m. on weekdays or Saturdays. Noise from construction will never be allowed on Sundays or national holidays. In addition to these time-of-day and day-of-week restrictions, construction will only be allowed if the construction noise levels also conform to all conditions specified by the general standards (see above) and Table 2, where the basic noise level that is applied to Table 2 is 65 dBA. This means that all construction noise has to be such that its L25 is less then 65 dBA, its L16.7 is less than 70 dBA, its L8.3 is less than 79 dBA, and its Lmax is less than 80 dBA in order for there to be no construction noise impacts.

Property Maintenance Noise Standards

Under item 6 of the Special Provisions paragraph, Chapter 17.02.120 of the municipal code, noise that results from the maintenance of real property is permitted, provided the activities take place between the hours of 8 a.m. and 8 p.m. on any day except Sunday or between the hours of 9 a.m. and 8 p.m. on Sunday.

Animal Noise Standards

Chapter 6.02.0.40 of the municipal code sets limits on animals that habitually make noise. The ordinance puts restriction on animals from allowing them to "make any other loud noise in such a manner as to at any time, day or night, cause general annoyance or discomfort to a neighboring inhabitant."

1.4 Existing Noise Measurements

Noise measurements were taken to record the actual existing noise levels (as opposed to the modeled existing noise levels) at various locations throughout the city. The noise measurements represent a snapshot of the current noise conditions within the city. The reason a sampling of existing noise levels is needed is provide a baseline noise level from which to measure subsequent changes to the sound environment that will results from project and non-project related changes. With a recorded set of baseline measurements, changes to the noise level at these selected places within the city can then be determined when future noise measurements are then taken. The noise measurements are not used in the noise modeling, so no comparisons will be made between measured and modeled noise levels.

A noise measurement survey of the City was conducted to determine the location of a set of noise measurement sites that would provide a noise profile of the area in the vicinity of the project site. Several criteria were used in the site selection process including, but not limited to, the proximity of a measurement site to sensitive land uses as well as its proximity to significant noise generators. Several of the significant noise generators within the City were the Interstate 210 Freeway, the Interstate 15 Freeway, as well as Base Line Road, and Foothill Boulevard. This was due to a very high volume of automobile and truck traffic at these locations. To provide noise measurement coverage of the area, measurement sites were chosen within the confines of the City and its sphere of influence. After the site selection process was over, a series of short-term noise measurements were taken at the chosen sites.

Twenty-one short-term noise measurements were taken. All twenty-one measurement sites were within the City and its sphere of influence. All twenty-one of the short-term measurements were taken over a three-day period from July 7 to July 9th of 2009. The measurement site locations are enumerated in Table 6 and the measurement data is contained in Table 7. The measurement sites are displayed in Exhibit 9.

All noise measurements in Table 7 report average noise levels in terms of the Leq metric, however some noise standards and other analysis in this document report noise levels in terms of the CNEL noise scale. In order to compute either the CNEL for a noise measurement, at least 24 hours worth of noise data has to be available.

Table 6 Existing Noise Measurement Locations (dBA)

Site	Location
1	Inside apartment complex, central location, adjacent to the I-15 freeway
2	Colonial Drive and Bungalow Way, on sidewalk, adjacent to I-15 Freeway
3	Mueller Court and Dicarlo Place, on sidewalk, adjacent to I-210 Freeway
4	Near end of walking path, off of Silver Sun, adjacent to I-210 Freeway
5	Ring Avenue, north tip of cul-de-sac, on sidewalk, next to I-210 Freeway
6	Beryl Park, west of tennis courts, at edge of soccer field, next to I-210 Freeway
7	Fennel Road, end of cul-de-sac, near Base Line Road
8	Redhill Community Park, (Base Line and Vineyard), north of shuffle board area
9	North side of Humbolt Avenue, near cul-de-sac, on dirt
10	Glenaire Ct, end of cul-de-sac, near complex entrance on Golden Oak
11	On sidewalk inside complex, between Lion and Hellman, on Foothill
12	Intersection of Hillside and Buckthorn Ave, on grass at north-east side
13	Between sidewalks in complex, near Haven Ave, about 390 feet north of Lemon
14	On school ground, next to Archibald, near playground.
15	In park, near intersection of Santa Ynez Pl and Hickcox Ln, on playground pad
16	On walking trail, west side of Etiwanda Ave, between Victoria and Carnesi
17	Walking path, Church St, between Ralph M Lewis Park and Jamboree complex
18	Genova Rd, end of cul-de-sac, between cul-de-sac and Milliken Ave.
19	On sidewalk, in complex near entrance from Archibald, south of Monte Vista
20	Intersection of Carnelian St and Somerset Dr, north-east corner, on sidewalk
21	On school ground, next to Palo Alto, at bus entrance, near Center and Palo Alto

Table 7 Existing Noise Measurements (dBA)

Site	Date	Time	Leq	Lmax	Lmin	L8.3	L50	L90
1	7-7-09	11:48	67.9	73.7	59.1	70.5	67.	63.5
2	7-7-09	11:04	66.2	73.7	61.7	67.5	65.5	63.5
3	7-7-09	9:44	62.2	77.0	57.0	63.0	61.0	59.5
4	7-7-09	14:51	72.3	78.4	66.4	73.5	72.0	70.0
5	7-8-09	8:22	56.6	72.6	51.2	58.0	55.5	53.5
6	7-8-09	11:24	60.0	64.2	56.4	61.5	59.5	58.0
7	7-7-09	12:32	53.0	68.8	40.0	56.5	49.5	44.5
8	7-8-09	14:09	57.5	72.7	45.8	60.5	55.0	49.5
9	7-9-09	12:15	67.8	93.2	46.1	62.0	58.5	54.0
10	7-9-09	13:01	52.9	71.0	42.7	56.0	50.0	46.0
11	7-9-09	10:47	60.8	73.8	46.4	64.5	58.5	52.5
12	7-8-09	13:16	64.3	89.0	39.0	65.5	48.0	41.0
13	7-8-09	9:02	56.9	76.5	44.3	60.5	54.0	48.0
14	7-9-09	11:33	69.7	84.3	52.2	72.5	68.0	60.0
15	7-7-09	8:52	48.9	64.0	43.2	51.5	46.0	44.0
16	7-7-09	10:24	53.1	68.8	38.6	58.0	43.0	40.0
17	7-7-09	13:20	60.7	69.8	45.6	65.0	58.5	51.0
18	7-7-09	14:13	65.9	79.4	43.4	70.5	61.5	51.0
19	7-8-09	9:48	59.1	70.6	41.8	62.5	57.0	48.5
20	7-8-09	12:38	68.7	84.1	47.2	72.5	66.0	55.5
21	7-8-09	10:34	47.9	64.5	38.2	50.5	41.5	40.0

Exhibits 10, 11 and 12 show the results of the noise monitoring.

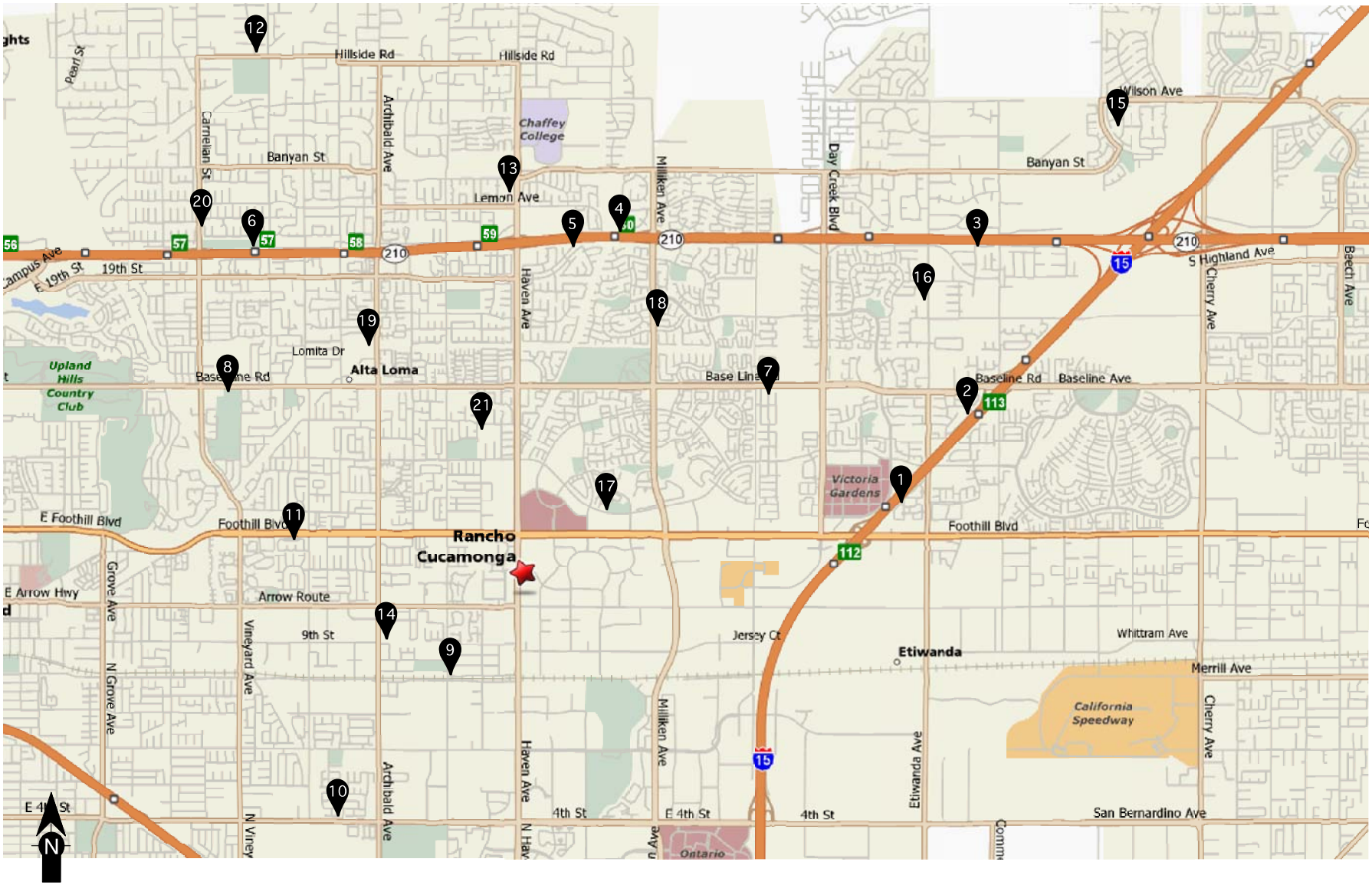
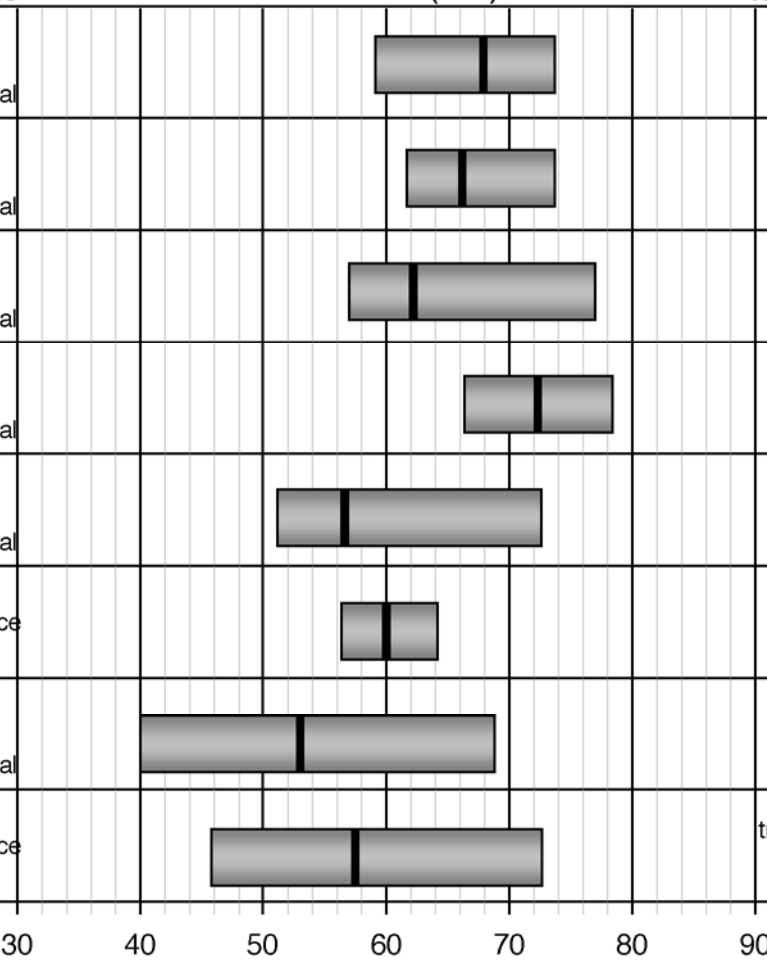


Exhibit 9
Measurement Site Locations

Mestre Greve Associates

Site	Location	Date	Time	Land Use	Noise Sources
1	Apartment Complex on Etiwanda Avenue	7/7	11:48 a.m.	mulit - family residential	freeway traffic
2	Intersection of Bungalow & Colonial, parallel to freeway	7/7	11:04 a.m.	single-family residential	freeway traffic
3	Intersection of Decarlo Pl and Mueller Ct	7/7	9:44 a.m.	single family residential	freeway traffic
4	End of walking path at end of Silver Sun	7/7	2:51 p.m.	single family residential	freeway traffic
5	North edge of cal-de-sac at end of Ring Avenue	7/8	8:22 a.m.	single family residential	barking dog was loudest; other freeway traffic
6	West of tennis courts, edge of soccer field, next to freeway	7/8	11:24 a.m.	park space	Trucks were loudest, other freeway traffic
7	North tip of cal-de-sac on Fennel Road, near Base Line	7/7	12:32 p.m.	single family residential	traffic
8	Park adjacent to Base Line	7/8	2:09 p.m.	park space	truck was loudest; other traffic

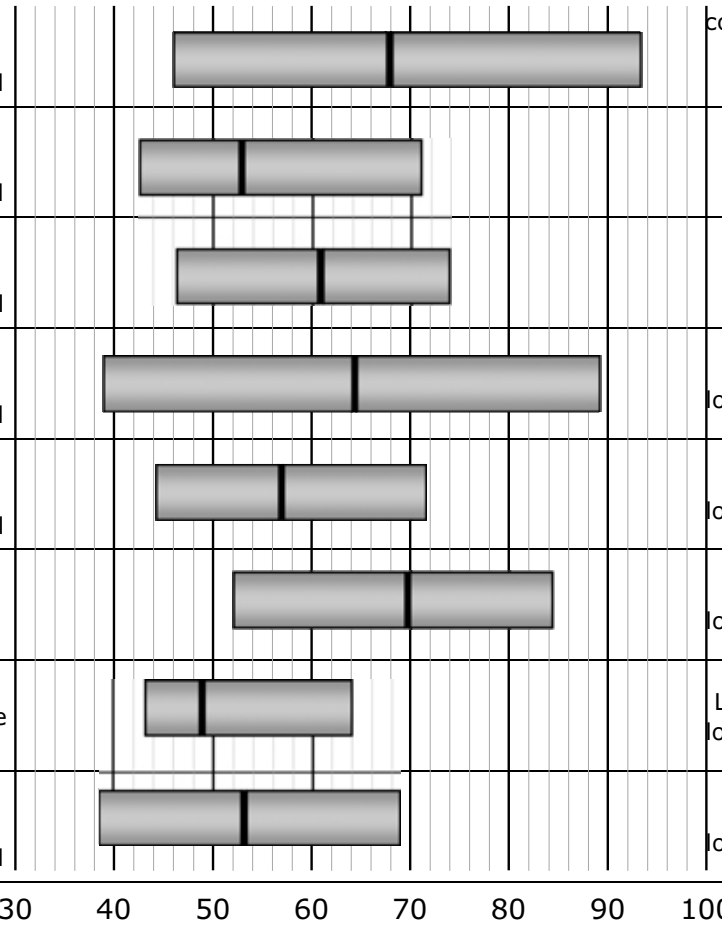


Legend Lmin LEQ Lmax

City of Rancho Cucamonga Noise Element
Mestre Greve Associates

Exhibit 10
Measurement Site Locations 1 Through 8

Site	Location	Date	Time	Land Use	Sound Level (dBA)	Noise Sources
9	On Humbolt, near cul-de-sac, adjacent to railroad	7/9	12:15 p.m.	single family residential		commuter train was loudest; other traffic
10	End of cul-de-sac, near gate at entrance of complex	7/9	1:01 p.m.	single family residential		traffic (at gate)
11	Inside apartment complex along Foothill Blvd	7/9	10:47 a.m.	multi - family residential		traffic on Foothill
12	At Intersection of Hillside and Buckthorn	7/8	1:16 p.m.	single family residential		Motorcycle was loudest;other traffic
13	Inside apartment complex along Haven	7/8	9:02 a.m.	multi - family residential		Trucks were loudest;other traffic
14	School ground adjacent to Archibald	7/9	11:33 a.m.	school		Motorcycle was loudest;other traffic
15	In Park, End of Hickox Ln	7/7	8:52 a.m.	park space		Lawn trimmer was loudest;other traffic
16	On walking path near Etiwanda	7/7	10:24 a.m.	single family residential		School bus was loudest;other traffic

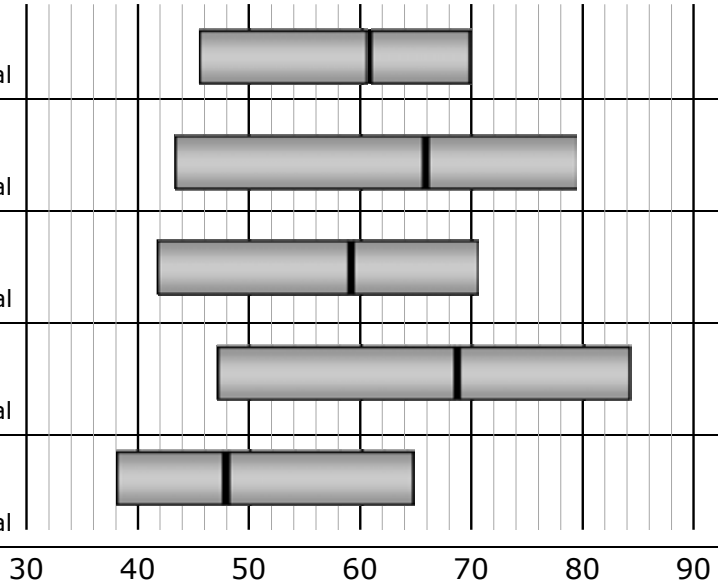


Legend	Lmin LEQ Lmax

Exhibit 11
Measurement Site Locations 9 Through 16

Mestre Greve Associates

Site	Location	Date	Time	Land Use	Sound Level (dBA)	Noise Sources
17	On walking path between park and apartments	7/7	1:20 p.m.	multi - family residential		traffic
18	End of cul-de-sac at end of Genova Road, ajacent to Milliken Ave.	7/7	2:13 p.m.	single family residential		traffic
19	On sidewalk, leading to complex, near entrance and Archibald	7/8	9:48 a.m.	multi - family residential		Trucks were loudest; other traffic
20	At intersection of Somerset and Carnelian	7/8	12:38 p.m.	single family residential		traffic
21	School ground near Center and Palo Alto at bus entrance	7/8	10:34 a.m.	single family residential		traffic



Legend Lmin LEQ Lmax

Exhibit 12

Measurement Site Locations 17 Through 21

Mestre Greve Associates

The duration of each of the noise measurements are all less than 24 hours. As a general rule-of-thumb, a representative daytime Leq noise measurement is roughly equivalent to the CNEL level experienced at that site.

Site 1: Inside complex, central location, on grassy knoll, adjacent to the I-15 freeway

Site 1 is located on a grassy knoll at a central location of a condominium complex, adjacent to the Interstate 15 Freeway. The complex entrance is located off of Etiwanda Avenue, just south of Garcia Drive. A heavy flow of freeway traffic was observed at this location. During the measurement period, several large trucks passed by. The Lmax was 73.7 dBA, which was due to a very high volume of truck traffic. The Leq at this site measured 67.9 dBA.

Site 2: Intersection of Colonial Drive and Bungalow Way, on sidewalk, adjacent to I-15 Freeway

Site 2 is located on the sidewalk at the southwest corner of Colonial Drive and Bungalow Way. A sound wall was observed the freeway. This sound wall was approximately 15 feet in height. During the measurement period, several trucks, and motorcycles were heard traveling on the freeway. Local traffic from was minimal, and was insignificant next to the freeway traffic. The Lmax was 73.7 dBA. This was due to a loud motorcycle traveling on one of the southbound lanes of the freeway. The Leq at this site measured 66.2 dBA.

Site 3: Intersection of Mueller Court and Dicarlo Place, on sidewalk near southwest corner, adjacent to I-210 Freeway

Site 3 is located on the sidewalk, near the southwest corner of the intersection of Mueller Court and Dicarlo Place. The noise measurement was taken approximately 60 feet from the sound wall running adjacent to the freeway. The sound wall was approximately 8 feet in height. A constant flow of freeway traffic was observed. Many large vehicles passed along the freeway during the measurement period. Dogs and birds also contributed to the noise levels at this site. The Lmax was 77.0 dBA. This was due to a dog barking in a backyard very close to the measurement site. The Leq was measured at 62.2 dBA.

Site 4: Near end of walking path, very close to the Interstate 210 Freeway, leading off of the cul-de-sac at Silver Sun

Site 4 is located at a grassy area that is just off of a sidewalk of a short walking trail, very near to the Interstate 210 Freeway. The entrance to this walking path leads off from the cul-de-sac of Silver Sun. A constant, heavy flow of automobiles, trucks, and other vehicles could be heard at this location. A passing motorcycle accounted for the Lmax, which was 78.4 dBA. The Leq at this site measured 72.3 dBA. According to the data collected, this site was by far the loudest of all the measurement locations. The Lmin was 66.4 dBA.

Site 5: On Ring Avenue, at the north tip of the cul-de-sac, on a sidewalk, about 225 feet from the centerline of the Interstate 210 Freeway

Site 5 is located at Ring Avenue, on the sidewalk at the north tip of the cul-de-sac. The measurement was taken approximately 225 feet from the centerline of the freeway. A large sound wall ran adjacent to the freeway. Another smaller masonry wall lined the edge of the properties at the end of Ring Avenue. Freeway traffic was not extreme at this location due to the sound wall and the masonry wall at the properties edge. Local traffic on Ring Avenue was

minimal. An occasional high-altitude aircraft flyover could be heard. A nearby barking dog accounted for the Lmax, which was 72.6 dBA. The Leq at this site measured 56.6 dBA.

Site 6: At Beryl Park, west of the tennis courts, at the southeast edge of soccer field, next to I-210 Freeway

Site 6 is located at Beryl Park, adjacent to the Interstate 210 Freeway. The measurement was taken at the southeast edge of the soccer field, just west of the tennis courts. The meter was approximately 225 feet from the centerline of the freeway. A large sound wall ran adjacent to the freeway. The wall was approximately 16 feet in height. Freeway traffic was the most predominate noise source at this location. A truck traveling on the westbound lanes of the freeway accounted for the Lmax, which was 64.2 dBA. The Leq at this site measured 60.0 dBA.

Site 7: On Fennel Road, north end of the cul-de-sac, near Base Line Road

Site 7 is located on Fennel Road at the north end of the cul-de-sac, near Base Line Road. Local traffic on Base Line Road was the most significant noise source at this location. Aircraft flyovers could be heard at this location. A helicopter flew overhead about 5 minutes into the measurement. Traffic on Base Line Road accounted for the Lmax, which was 68.8 dBA. The Leq at this site measured 53.0 dBA.

Site 8: At Redhill Community Park, (Base Line and Vineyard), on the grass north of shuffleboard area

Site 8 is located in Redhill Community Park. The noise meter was located on the grass, just north of the shuffleboard area, and close to Base Line Road. There were many noise impacts at this location. Kids could be heard playing within the playground at the park, which about 190 feet from the measurement site. A skateboarder could be heard for a short time during the measurement period. Local traffic on Base Line Road accounted for most of the noise. The Lmax was 72.7 dBA, and was due to a truck traveling east bound on Base Line. The Leq was 57.5 dBA.

Site 9: On north side of Humbolt Avenue, near cul-de-sac, on dirt near the sidewalk

Site 9 is located on the north side of Humbolt Avenue. The noise measurement was performed on a strip of dirt adjacent to the sidewalk and the street. This site was close to the intersection of Hermosa Avenue and 8th Street. The Atchison, Topeka, and Santa Fe Railroad runs parallel between 8th Street and Humbolt Avenue. Local traffic was minimal. If it were not for an occasional train at this location, noise levels would have been nominal. Both the Lmax and the Leq were driven by train noise. The Lmax was 93.2 dBA. The Leq was 67.8 dBA.

Site 10: On Glenaire Ct, at the end of the cul-de-sac, near the entrance to the complex, which is on Golden Oak

Site 10 is located on Glenaire Court, at the eastern end of the cul-de-sac. The end of the cul-de-sac is located close to the entrance to the single-family complex. The entrance is located off of East 4th Street. Occasional aircraft noise could be heard from the LA/Ontario International Airport, which is south of the site. The majority of noise at this location was due to local traffic entering and exiting the single-family housing complex. An unusually loud car was responsible for the Lmax, which was 71.0 dBA. The Leq was 52.9 dBA.

Site 11: On the sidewalk inside the apartment complex, between Lion and Hellman, on Foothill

Site 11 is located inside an apartment complex on Foothill Boulevard. The complex is located at the southwest corner of Foothill Boulevard and Hellman Avenue. The noise measurement site was located about one-half of the way between Hellman Avenue and Lion Street (or the entrance to this complex). The noise meter was about 80 feet from the centerline of Foothill Boulevard. Adjacent to the sidewalk on Foothill was a 5-foot masonry fence topped with a wrought iron fence. There was a difference of about 5 feet between the street and the pad elevations. Many noise impacts were present. There were aircraft flyovers, a helicopter flyover, and the sound of gardening equipment. Care was taken to try to pause out the noise of the gardening equipment. The majority of noise at the site was due to traffic on Foothill Boulevard, despite the above-mentioned noise impacts. The Lmax was 73.8 dBA, and was due to a loud car with a failing muffler. The Leq was 60.8 dBA.

Site 12: At the intersection of Hillside and Buckthorn Ave, on the grass at northeast corner

Site 12 is located on Buckthorn Avenue, on an area of grass at the northeast corner of Hillside Road and Buckthorn Avenue. The site is also directly north of Heritage Community Park. The majority of noise impacts at this site were due to local traffic, much of which turned off of Hillside onto Buckthorn. A passing motorcycle was responsible for the Lmax, which was 89.0 dBA. The Leq was 64.3 dBA.

Site 13: Inside apartment complex, between sidewalks, near Haven Avenue, about 390 feet north of Lemon Avenue

Site 13 is located inside an apartment complex, on a grassy area between two sidewalks, about 110 feet from the centerline of Haven Avenue. The apartment complex is located at the northwest corner of Haven Avenue and Lemon Avenue. Much of the noise at this location was due to local traffic. The Lmax was 76.5 dBA, and was due to a large truck passing in the southbound lane of Haven Avenue. The Leq was 56.9 dBA.

Site 14: On Archibald, at edge of school ground, near fenced playground

Site 14 is located along side Archibald Avenue, on the school ground and in front of the playground. The noise meter was located on the east side of Archibald Avenue, approximately 300 feet north of Pine Crest Place. Road construction was taking place just south of the location on Archibald. The sound of jackhammering could be heard during the noise measurement period. Every attempt was made to pause out this noise when traffic noise from Archibald was not present. The Atchison, Topeka, and Santa Fe Railroad line is also south of the site, and an occasional train horn could be heard during the measurement. The most significant noise source was from traffic on Archibald. The Lmax was 84.3 dBA, and was due to a passing motorcycle in the northbound lane of Archibald. The Leq was 69.7 dBA.

Site 15: In a park, near the intersection of Santa Ynez Place and Hickcox Lane, on the easternmost playground equipment pad

Site 15 is located inside a park located at the intersection of Santa Ynez Place and Hickcox Lane. The noise meter was placed on one of three playground equipment pads, which was the easternmost of the three. During the measurement, high altitude aircraft flyovers were noted. Gardening equipment was also heard, and an attempt was made to pause out as much of the

unwanted gardening noise as possible. Despite this effort, a lawn edge trimmer was responsible for an Lmax of 64.0 dBA. The Leq was 48.9 dBA.

Site 16: On a walking trail, leading off of the west side of Etiwanda Avenue, between Victoria Street and Carnesi Drive

Site 16 is located on a walking path, the entrance of which is off of Etiwanda Avenue. The walking path is about half way between Victoria Street and Carnesi Drive, on the west side of the street. The noise meter was located on the path, about 70 feet from the centerline of Etiwanda. Local traffic from Etiwanda was the dominant noise source at this site. The Lmax was 68.8 dBA, and was due to a school bus passing on Etiwanda. The Leq was 53.1 dBA.

Site 17: On a walking path at the west edge of Ralph M Lewis Park, near the Jamboree complex

Site 17 is located on a walking path, at the west side of Ralph M. Lewis Park, off of Church Street. The noise meter was located about 70 feet from the centerline of Church Street, and about 35 feet from the entrance to the Jamboree Apartment and Townhomes complex. Local traffic from Church Street was the most significant noise source at this site. The Lmax was 69.8 dBA, and was due to local traffic on Church Street. The Leq was 60.7 dBA.

Site 18: On Genova Rd, at the cul-de-sac, on the sidewalk between the cul-de-sac and Milliken Ave

Site 18 is located on a sidewalk, which is between the cul-de-sac of Genova Road and Milliken Avenue. The measurement site is also near to the intersection of Milliken Avenue and Fairmont Way. Local traffic on Milliken was the most significant noise source at the site. The Lmax was 79.4 dBA, and was due to local traffic in general. The Leq was 65.9 dBA.

Site 19: On a sidewalk, near entrance from Archibald, inside an apartment complex, south of Monte Vista Street

Site 19 is located on a sidewalk, south of the main entrance to an apartment complex, which is located on Archibald Avenue, just south of Monte Vista Street. The noise monitor was positioned about 90 feet from the centerline of Archibald Avenue. Local traffic on Archibald Avenue was the significant noise source at this location. The Lmax was 70.6 dBA, and was due to a large truck passing by on the southbound lane of Archibald. The Leq was 59.1 dBA.

Site 20: On the sidewalk, at the Intersection of Carnelian St and Somerset Dr, on the northeast corner

Site 20 is located on a sidewalk, at the northeast corner of the intersection of Carnelian Street and Somerset Drive. Traffic noise was significant at this site. There was also a large crack in the road running from Somerset Drive to the west side of Carnelian. This crack generated quite a bit of tire noise. The Lmax was 84.1 dBA, and was due to a loud pickup truck traveling on the northbound lane of Carnelian Street. The Leq was 68.7 dBA.

Site 21: On Palo Alto Street, in the school ground, at bus entrance, and near the intersection of Center Avenue and Palo Alto Street

Site 21 is located on a grassy area on the school grounds, near the school bus entrance. This site is also located close to the intersection of Center Avenue and Palo Alto Street. A leaf blower

could be heard at a distant location, during portions of the noise measurement period. Local traffic was minimal. The Lmax was 64.5 dBA, and was due to a pickup truck passing along the eastbound lane of Palo Alto Street. The Leq was 47.9 dBA. The Lmin at this site was 38.2 dBA. This site was by far the quietest of all twenty-one sites.

1.5 Existing Traffic Noise Levels

The highway noise levels projected in this report were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December, 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise level." A computer code has been written which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. CNEL contours are found by iterating over many distances until the distances to the 55, 60, 65, and 70 CNEL contours are found. For the roadway analysis, worst-case assumptions about future motor vehicle traffic and noise levels have been made and were incorporated in the modeling effort. Specifically, no reductions in motor vehicle noise have been assumed in spite of legislation requiring quieter vehicles at the time of manufacture.

Traffic volumes and estimated speeds were used with the FHWA Model to estimate the noise levels in terms of CNEL. Soft site conditions were assumed. Existing traffic volumes for arterials utilized were obtained from the traffic study prepared by Kunzman Associates Inc. The distances to the CNEL contours for the roadways in the vicinity of the project site are given in Table 8. These numbers represent the distance from the centerline of the road to the contour value shown. Note that the values given in Table 8 do not take into account the effect of any noise barriers or topography that may affect ambient noise levels. Table 8 shows the major noise corridors occur along Vineyard Avenue, Haven Avenue, and Milliken Avenue. Other lesser noise corridors within the boundaries of the City are also included in the table.

Table 8 Modeled Existing Roadway Traffic Noise Levels

		Distance To CNEL Contour from Centerline of Roadway (feet)			
Roadway Segment	**CNEL @ 100' †**	**55 CNEL**	**60 CNEL**	**65 CNEL**	**70 CNEL**
19th Street					
City Border To Carnelian Street	67.8	715	332	154	71
Carnelian Street To Hellman Avenue	68.3	767	356	165	77
Hellman Avenue To Archibald Avenue	68.1	751	348	162	75
Archibald Avenue To Hermosa Avenue	67.7	698	324	150	70
Base Line Road					
City Border To Carnelian Street	69.4	910	422	196	91
Carnelian Street To Hellman Avenue	69.4	915	425	197	92
Hellman Avenue To Archibald Avenue	69.9	987	458	213	99
Archibald Avenue To Hermosa Avenue	69.6	939	436	202	94
Hermosa Avenue To Haven Avenue	70.3	1,049	487	226	105

Table 8 Modeled Existing Roadway Traffic Noise Levels (Cont.)

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 55 CNEL	60 CNEL	65 CNEL	70 CNEL
Base Line Road					
Haven Avenue To Spruce Avenue	70.5	1,072	498	231	107
Spruce Avenue To Milliken Avenue	71.2	1,200	557	259	120
Milliken Avenue To Rochester Avenue	70.6	1,102	512	237	110
Victoria Park Lane To Etiwanda Avenue	70.4	1,071	497	231	107
Etiwanda Avenue To East Avenue	70.9	1,144	531	247	114
East Avenue To Americana Way	72.5	1,470	682	317	147
Americana Way To Cherry Avenue	71.7	1,291	599	278	129
Foothill Boulevard					
Campus Avenue To Grove Avenue	71.2	1,195	555	257	120
Grove Avenue To Baker Avenue	72.1	1,386	643	299	139
Baker Avenue To Vineyard Avenue	72.0	1,360	631	293	136
Vineyard Avenue To Hellman Avenue	71.6	1,282	595	276	128
Hellman Avenue To Archibald Avenue	71.9	1,342	623	289	134
Archibald Avenue To Hermosa Avenue	71.6	1,279	593	275	128
Hermosa Avenue To Haven Avenue	71.2	1,198	556	258	120
Haven Avenue To Spruce Avenue	72.3	1,427	662	307	143
Spruce Avenue To Milliken Avenue	72.5	1,458	677	314	146
Milliken Avenue To Rochester Avenue	73.6	1,744	809	376	174
Day Creek Boulevard To I-15 Freeway	75.1	2,198	1,020	473	220
I-15 Freeway To Etiwanda Avenue	72.3	1,415	657	305	142
Etiwanda Avenue To East Avenue	72.1	1,389	645	299	139
Arrow Route					
Campus Avenue To Grove Avenue	64.5	431	200	93	43
Grove Avenue To Baker Avenue	67.9	723	335	156	72
Baker Avenue To Vineyard Avenue	68.9	851	395	183	85
Vineyard Avenue To Hellman Avenue	69.1	869	404	187	87
Hellman Avenue To Archibald Avenue	69.5	920	427	198	92
Archibald Avenue To Hermosa Avenue	71.4	1,239	575	267	124
Hermosa Avenue To Haven Avenue	71.6	1,288	598	277	129
Haven Avenue To Milliken Avenue	71.5	1,266	588	273	127
Milliken Avenue To Rochester Avenue	71.0	1,163	540	251	116
Rochester Avenue To Etiwanda Avenue	71.0	1,167	542	251	117
Etiwanda Avenue To East Avenue	69.3	900	418	194	90
4th Street					
Hellman Avenue To Archibald Avenue	69.4	917	426	198	92
Archibald Avenue To Hermosa Avenue	69.3	900	418	194	90
Haven Avenue To Milliken Avenue	72.5	1,459	677	314	146
Milliken Avenue To I-15 Freeway	72.6	1,496	694	322	150
Grove Avenue					
14th Street To Foothill Boulevard	63.0	341	159	74	34
Foothill Boulevard To Arrow Route	67.9	726	337	156	73
Arrow Route To 8th Street	68.1	746	346	161	75
Vineyard Avenue/Carnelian Street					
Lemmon Avenue To SR-210 Freeway	70.2	1,035	481	223	104
SR-210 Freeway To 19th Street	71.3	1,223	568	264	122
19th Street To Base Line Road	71.6	1,285	596	277	128

Table 8 Modeled Existing Roadway Traffic Noise Levels (Cont.)

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 55 CNEL	60 CNEL	65 CNEL	70 CNEL
Vineyard Avenue/Carnelian Street					
Base Line Road To Red Hill Country Club Drive	70.9	1,141	530	246	114
Red Hill Country Club Drive To Foothill Boulevard	72.2	1,412	655	304	141
Foothill Boulevard To Arrow Route	71.1	1,189	552	256	119
Arrow Route To 8th Street	70.8	1,138	528	245	114
Archibald Avenue					
Lemmon Avenue To SR-210 Freeway	68.5	790	367	170	79
SR-210 Freeway To 19th Street	71.2	1,211	562	261	121
19th Street To Base Line Road	70.2	1,028	477	222	103
Base Line Road To Church Street	70.6	1,102	511	237	110
Church Street To Foothill Boulevard	70.5	1,085	504	234	109
Foothill Boulevard To Arrow Route	71.1	1,179	547	254	118
Arrow Route To 8th Street	71.6	1,282	595	276	128
6th Street To 4th Street	71.9	1,342	623	289	134
4th Street To Inland Empire Boulevard	71.6	1,269	589	273	127
Haven Avenue					
Lemmon Avenue To SR-210 Freeway	73.4	1,694	786	365	169
SR-210 Freeway To 19th Street	72.2	1,412	655	304	141
19th Street To Base Line Road	73.4	1,694	786	365	169
Base Line Road To Church Street	72.7	1,506	699	324	151
Church Street To Foothill Boulevard	72.7	1,522	707	328	152
Foothill Boulevard To Arrow Route	72.8	1,549	719	334	155
Arrow Route To 8th Street	73.3	1,648	765	355	165
Milliken Avenue					
Banyan Street To SR-210 Freeway	69.5	926	430	199	93
SR-210 Freeway To Victoria Park Lane	72.7	1,506	699	324	151
Victoria Park Lane To Base Line Road	72.6	1,499	696	323	150
Base Line Road To Terra Vista Parkway	72.3	1,419	659	306	142
Terra Vista Parkway To Foothill Boulevard	72.3	1,433	665	309	143
Foothill Boulevard To Arrow Route	73.2	1,641	762	354	164
Arrow Route To 6th Street	73.7	1,753	814	378	175
6th Street To 4th Street	73.8	1,798	835	387	180
4th Street To Inland Empire Boulevard	72.9	1,573	730	339	157
Rochester Avenue					
Foothill Boulevard To Arrow Route	70.0	998	463	215	100
Arrow Route To 6th Street	69.3	891	414	192	89
Day Creek Boulevard					
Banyan Street To SR-210 Freeway	69.5	928	431	200	93
SR-210 Freeway To Highland Avenue	71.9	1,339	621	288	134
Etiwanda Avenue					
Victoria Street To Base Line Road	65.1	468	217	101	47
Base Line Road To Miller Avenue	68.0	731	339	157	73
Miller Avenue To Foothill Boulevard	68.1	747	347	161	75
Foothill Boulevard To Arrow Route	70.2	1,024	475	221	102
Arrow Route To City Boundary	70.3	1,052	488	227	105

Table 8 Modeled Existing Roadway Traffic Noise Levels (Cont.)

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 55 CNEL	60 CNEL	65 CNEL	70 CNEL
East Avenue					
Victoria Street To Base Line Road	65.6	507	236	109	51
Base Line Road To Miller Avenue	65.6	512	238	110	51
Americana Way					
North of Base Line Road	59.6	203	94	44	20
South of Base Line Road	61.5	272	126	59	27
Beach Avenue					
Cherry Avenue To I-15 Freeway	67.8	711	330	153	71
I-15 Freeway To SR-210 Freeway	68.1	742	344	160	74
I-15 Freeway					
Wilson Avenue To I-210 Freeway	78.0	3,425	1,590	738	342
I-210 Freeway To Base Line Road	78.8	3,838	1,781	827	384
Base Line Road To Foothill Boulevard	79.3	4,154	1,928	895	415
Foothill Boulevard To Arrow Route	80.6	5,099	2,367	1,099	510
Arrow Route To San Bernardino Avenue	80.1	4,712	2,187	1,015	471
I-210 Freeway					
City Border To Carnelian Street	80.6	5,106	2,370	1,100	511
Carnelian Street To Archibald Avenue	80.4	4,950	2,297	1,066	495
Archibald Avenue To Haven Avenue	80.4	4,947	2,296	1,066	495
Haven Avenue To Milliken Avenue	80.0	4,677	2,171	1,008	468
Milliken Avenue To Day Creek Boulevard	80.0	4,653	2,160	1,002	465
Day Creek Boulevard To I-15 Freeway	79.7	4,423	2,053	953	442

† From roadway centerline
RW – Noise contour falls within roadway right-of-way.

1.6 Existing Aircraft Noise Levels

The closest major airport to Rancho Cucamonga is the LA/Ontario International Airport (ONT), which is located to the south of the City. At its closest distance, the LA/Ontario International Airport is only one mile from the Rancho Cucamonga's southern border. According to the latest noise contour (4th Quarter 2007 at Los Angeles World Airports), the City of Rancho Cucamonga is well outside the LA/Ontario International Airport's 65 dBA CNEL noise contour. Aircraft noise does not significantly impact the City of Rancho Cucamonga.

1.7 Existing Railroad Noise Levels

The Alameda Corridor East is the main east/west rail line passing through San Bernardino County. The rail line serves about 140 trains per day. The Alameda Corridor East does not pass through the City of Rancho Cucamonga. The Alameda Corridor East lies about 4400 feet south of the City of Rancho Cucamonga's southern border. The modeled train noise impact to the City of Rancho Cucamonga from the Alameda Corridor is estimated to be less than 65 CNEL.

Metrolink and BNSF trains also pass through the City of Rancho Cucamonga via two railroad tracks that are parallel and adjacent to 8th Street. Metrolink trains run on one of the tracks, and

BNSF trains run on the other track. Currently, there are a total of 38 Metrolink trains that pass through the City of Rancho Cucamonga on a daily basis. The majority of the scheduled train operations occur during the daytime hours (7 a.m to 7 p.m.) with less than one third of the total daily operations occurring during the evening and nighttime periods. It is estimated that roughly 2 BNSF freight trains run during daytime hours. The noise level near the railroad tracks depends upon a number of train-related factors, with the absence or presence of train horn noise being one such factor. Trains blow their horns when approaching railroad crossings, so at a given constant distance away from the railroad tracks, those portions along the railroad track that are near railroad crossings tend to be louder than other portions of the railroad tracks that are in far away from railroad crossings. The modeled existing CNEL noise level due to both Metrolink and BNSF operations at those portions along the railroad tracks near railroad crossings can be as high as 81.6 dBA at 50 feet from the center of the two tracks. At other portions along the railroad track away from the railroad crossings, it is estimated that the CNEL noise level is as low as 67.1 dBA at 50 feet from the tracks.

2.0 POTENTIAL NOISE IMPACTS

Potential noise impacts are commonly divided into two groups: temporary and long term. Temporary impacts are usually associated with noise generated by construction activities. Long-term impacts are those that occur after development is completed.

2.1 Noise Impact Criteria

Both short-term and long-term noise operational impacts are measured against the Noise Ordinance criteria discussed in Section 1.3.2. Construction activities for the proposed project and any noise-generating activities associated with the operation of the project will be required to meet the Noise Ordinance standards. Inability to comply with the restrictions in the Noise Ordinance and GP Noise/Land Use Compatibility standards would result in a significant impact.

Long-term impacts from traffic noise are measured against two criteria. Both criteria must be met for a significant impact to be identified. First, traffic must cause a substantial noise level increase (greater than 3 dB) on a roadway segment adjacent to a noise sensitive land use. Second the resulting future with noise level must exceed the criteria level for the noise sensitive land use. In this case, the criteria level is 65 CNEL for residential land uses.

In community noise assessment, changes in noise levels greater than 3 dB are often identified as significant, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. Note that there is no scientific evidence is available to support the use of 3 dB as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. In a community noise situation, however, noise exposures are over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB appears to be appropriate for most people. This analysis has gone further and has also identified any noise increases of 1 dB or greater as being potentially significant when they impact a sensitive land uses such as residential areas.

2.2 Temporary Impacts

2.2.1 Demolition And Construction Noise

Over the long term, the General Plan will facilitate the completion of various construction projects at numerous places throughout the City. These projects can occur in any zoned area, including residential, commercial/office, industrial and mixed-use area. At this stage it is unknown when and where specific construction may occur, and therefore, potential impacts can only be addressed in a generic manner.

Construction activity generates noise that has a short-term impact on ambient noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and

portable generators, can reach high levels and have the potential to impact nearby sensitive land uses.

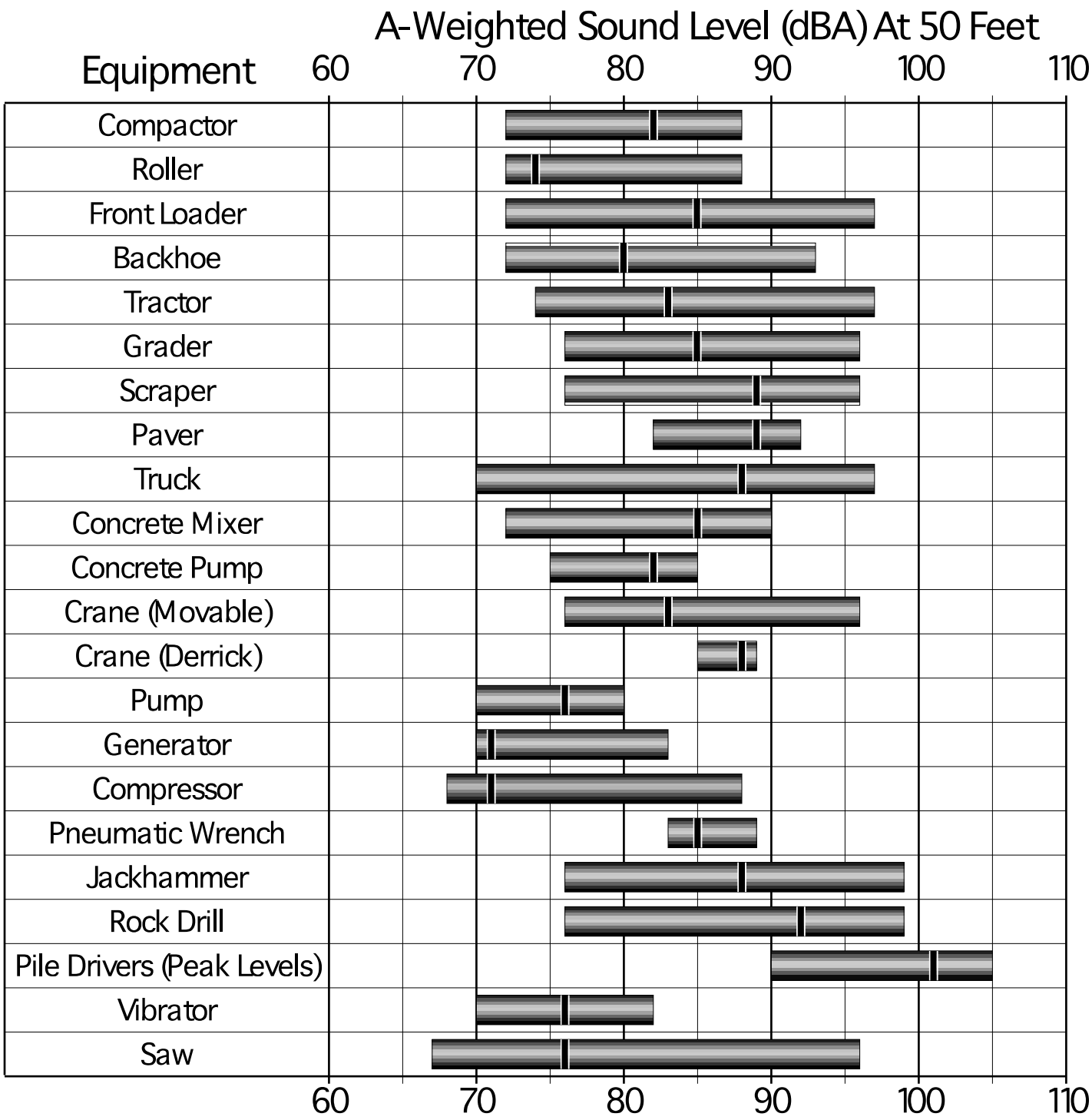
Every construction project that is planned within the City would be subject to rules of the noise ordinance. The construction noise impacts to a particular neighborhood are dependent upon a number of factors specific to the project. Some of the factors include proximity to sensitive land use, time of day, intervening barriers, level of construction (i.e. number and type of construction equipment that is operating simultaneously), and the duration of the project's construction phase.

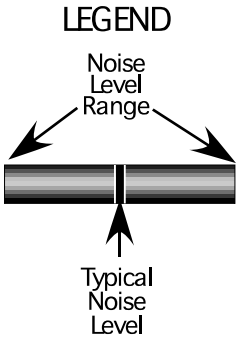
Worst-case examples of construction noise at 50 feet are presented in Exhibit 13. The peak noise level for most of the equipment that would be used during construction is in the range of 70 to 95 dBA at a distance of 50 feet. Noise levels at further distances are less. For example, at 200 feet, the peak construction noise levels range of 58 to 83 dBA.

Noise measurements made by Mestre Greve Associates for other projects show that the noise levels generated by commonly used grading equipment (i.e., loaders, graders and trucks) generate noise levels that typically do not exceed the middle of the range shown in Exhibit 13. That is, the measurements show that construction noise levels are usually in the low range to mid range shown in the table. However, the noise levels shown in Exhibit 13 will be used as the basis for the estimates presented here, and represent a worst-case estimate.

Those projects that are planned to occur near residential or mixed-use neighborhoods tend to be at the highest risk for causing noise impacts because the distance from construction activity to sensitive land uses is least in those neighborhoods, and also because residential neighborhoods have the lowest noise standard thresholds. Without knowing the details of the project in question, only an rough estimate of the construction noise impacts due to a project can be obtained. For a typical construction project that is as close as 50 feet from residential land uses, the worst-case unmitigated peak construction noise levels could be as high 95 dBA. The average noise levels are typically 5 to 15 dB lower than the peak noise levels, so average noise levels (Leq) at the nearest residences could be in the range of 85 dBA (Leq). These noise levels would be in excess of that which is permitted by the noise ordinance. Construction activity could be closer than 50 feet, in which case the noise impacts would be even greater. Projects that are farther away than 50 feet from sensitive land uses can still generate noise levels that exceed the noise standard thresholds.

It should be noted that the Rancho Cucamonga noise ordinance exempts construction noise that occurs between the hours of 6:30 a.m. and 8:00 p.m. on any day except Sundays and national holidays if the noise level does not exceed the noise level specified by Table 2 where the basic noise level used to determine the noise threshold is 65 dBA. This means that for non-impulsive noise, the L25 has to be less than 65 dBA, the L16.7 has to be less than 70 dBA, the L8.3 has to be less than 79 dBA, and Lmax has to be less than 80 dBA. Noisy construction projects may exceed one or more of these noise limits. The determination of whether or not a particular project would violate the noise standards would need to be analyzed on a case-by-case basis. If any of these noise thresholds were to be violated for unmitigated noise levels, appropriate mitigation measures would have to be designed to bring the noise level down to an acceptable level.





Sources: "Handbook of Noise Control," by Cyril Harris, 1979
"Transit Noise and Vibration Impact Assessment" by Federal Transit Administration, 1995

Exhibit 13

Typical Construction Equipment Noise Levels

Mestre Greve Associates

Projects that use an inordinate amount of noisy construction equipment simultaneously, or are very close to sensitive land uses can produce noise level that violate these noise standards, however, in most cases, if a project complies with the noise ordinance; construction noise impacts are usually eliminated.

2.3 Long-Term Impacts

The General Plan largely provides for a continuation of established land use patterns, with the exception of introducing mixed-use development along Foothill Boulevard. Also, intensification of uses will occur as development continues on infill sites. Increased traffic along the roadways in the City could increase the traffic noise level at land uses near the roadways experiencing the increased traffic flow.

This section examines the long-term traffic noise impacts that will occur at various locations throughout the City due to changes in traffic volume. In particular, this section will examine the noise impacts that will occur with long-term implementation of land use policy. This section will also examine how those changes differ from what would have occurred if the previous General Plan were to be implemented.

2.3.1 Traffic Noise Impacts Due to the new General Plan Buildout

Traffic volumes were compared in order to determine potential traffic noise increases. The traffic study prepared for the new General Plan provided traffic volumes for both existing conditions as well as traffic volumes for the buildout date (year 2030). The existing General Plan from 2001 provided future traffic volumes for buildout, which was assumed to occur in the year 2020. Table 9 shows the expected incremental traffic noise level increases on adjacent roadways. The data under the column labeled "Cumulative" represents the increase in noise from existing conditions to the year 2030. Table 9 also shows the noise increase that is due to the change in the General Plan. The column labeled "Project Impact" represents the change in noise levels that will occur with the buildout of the proposed General Plan from what would have occurred with the buildout of the existing General Plan. The last column shows the neighborhood for all roadway segments that are projected to experience a cumulative noise increase of 1 dB or more. The noise level increases were calculated using the traffic volumes provided by both Kunzman Associates Inc (December 2009) and Urban Crossroad (October 2001).

The traffic report from the 2009 General Plan analyzed a different set of roadway segments than were analyzed in the traffic report from the previous General Plan that was prepared in 2001. Some of the roadway segments were common to both reports, while others were unique to only one of the reports. The <u>project impact</u> which compares the changes in traffic noise between the two General Plans could only be computed for those roadway segments that were common to both traffic reports, while the <u>cumulative</u> increase, which computes the future noise increase due to the 2009 General Plan, could only be computed for those roadway segments exclusive to the 2009 traffic report. Although a total of 114 roadway segments were examined overall, only 44 of the 114 roadway segments could be used to estimate the <u>project impact</u> noise increase and only 94 of the 114 roadway segments could be used to estimate the <u>cumulative</u> noise increase. When data was not available to make a comparison to compute the noise increase, the table entry was labeled "N/A".

Table 9 Traffic Noise CNEL Increases in 2030 (dB)

Roadway Segment	Cumulative (dB)	Project Impact (dB)	Impacted Neighborhood
19th Street			
City Border To Carnelian Street	**1.6**	-0.2	Residential
Carnelian Street To Hellman Avenue	**1.0**	-0.4	Residential, Retail
Hellman Avenue To Archibald Avenue	**1.1**	N/A	Residential
Archibald Avenue To Hermosa Avenue	0.7	N/A	
Base Line Road			
City Border To Carnelian Street	**2.0**	-0.6	Residential
Carnelian Street To Hellman Avenue	0.9	-1.2	
Hellman Avenue To Archibald Avenue	0.5	N/A	
Archibald Avenue To Hermosa Avenue	0.4	-1.5	
Hermosa Avenue To Haven Avenue	0.9	-1.6	
Haven Avenue To Spruce Avenue	0.7	-1.3	
Spruce Avenue To Milliken Avenue	**1.0**	N/A	Residential
Milliken Avenue To Rochester Avenue	**1.0**	N/A	Residential
Victoria Park Lane To Etiwanda Avenue	**1.4**	N/A	Residential
Etiwanda Avenue To East Avenue	**1.3**	N/A	Residential
East Avenue To Americana Way	0.4	N/A	
Americana Way To Cherry Avenue	0.4	N/A	
Foothill Boulevard			
Campus Avenue To Grove Avenue	0.6	N/A	
Grove Avenue To Baker Avenue	0.4	N/A	
Baker Avenue To Vineyard Avenue	0.9	-0.8	
Vineyard Avenue To Hellman Avenue	**1.2**	-0.5	Residential
Hellman Avenue To Archibald Avenue	**1.1**	-0.5	Residential
Archibald Avenue To Hermosa Avenue	**1.1**	-1.5	Residential
Hermosa Avenue To Haven Avenue	0.8	-2.1	
Haven Avenue To Spruce Avenue	**1.4**	-0.4	Residential
Spruce Avenue To Milliken Avenue	**1.1**	N/A	Residential
Milliken Avenue To Rochester Avenue	**1.0**	N/A	Residential
Day Creek Boulevard To I-15 Freeway	0.4	N/A	
I-15 Freeway To Etiwanda Avenue	**2.4**	N/A	Residential
Etiwanda Avenue To East Avenue	**2.1**	N/A	Residential
Arrow Route			
Campus Avenue To Grove Avenue	**1.0**	N/A	Residential
Grove Avenue To Baker Avenue	0.4	N/A	
Baker Avenue To Vineyard Avenue	0.7	-0.4	
Vineyard Avenue To Hellman Avenue	0.7	-1.0	
Hellman Avenue To Archibald Avenue	0.7	-0.5	
Archibald Avenue To Hermosa Avenue	0.4	-0.3	
Hermosa Avenue To Haven Avenue	0.5	0.8	

Table 9 Traffic Noise CNEL Increases in 2030 (dB) (Cont.)

Roadway Segment	Cumulative (dB)	Project Impact (dB)	Impacted Neighborhood
Arrow Route			
Haven Avenue To Milliken Avenue	0.4	-0.6	
Milliken Avenue To Rochester Avenue	**1.6**	N/A	Industrial, Ball Park
Rochester Avenue To Etiwanda Avenue	**3.8**	N/A	Office, Industrial
Etiwanda Avenue To East Avenue	0.9	N/A	
4th Street			
Hellman Avenue To Archibald Avenue	**2.6**	N/A	Residential
Archibald Avenue To Hermosa Avenue	**2.7**	-1.2	Residential, Industrial
Haven Avenue To Milliken Avenue	**1.2**	-0.7	Residential
Milliken Avenue To I-15 Freeway	0.9	N/A	
Grove Avenue			
14th Street To Foothill Boulevard	0.5	N/A	
Foothill Boulevard To Arrow Route	0.4	N/A	
Arrow Route To 8th Street	0.8	N/A	
Vineyard Avenue/Carnelian Street			
Lemmon Avenue To SR-210 Freeway	0.4	-0.2	
SR-210 Freeway To 19th Street	0.5	1.5	
19th Street To Base Line Road	0.7	2.0	
Base Line Road To Red Hill Country Club Drive	**1.0**	0.9	Residential
Red Hill Country Club Drive To Foothill Boulevard	0.8	2.1	
Foothill Boulevard To Arrow Route	0.7	0.5	
Arrow Route To 8th Street	**1.1**	1.1	Offices, Industrial
Archibald Avenue			
Lemmon Avenue To SR-210 Freeway	0.4	1.9	
SR-210 Freeway To 19th Street	0.4	-0.3	
19th Street To Base Line Road	**1.2**	1.1	Residential
Base Line Road To Church Street	**1.5**	1.3	Residential
Church Street To Foothill Boulevard	**1.0**	0.8	Residential, Retail
Foothill Boulevard To Arrow Route	**1.3**	0.9	Residential, School, Commercial
Arrow Route To 8th Street	0.9	0.7	
6th Street To 4th Street	0.9	1.9	
4th Street To Inland Empire Boulevard	0.8	1.2	
Haven Avenue			
Lemmon Avenue To SR-210 Freeway	**1.6**	**4.7**	Retail
SR-210 Freeway To 19th Street	**1.7**	1.8	Residential
19th Street To Base Line Road	**1.1**	1.3	Residential, Retail
Base Line Road To Church Street	**1.3**	0.5	Residential
Church Street To Foothill Boulevard	**1.6**	0.8	Retail, Offices
Foothill Boulevard To Arrow Route	**2.5**	1.4	Retail, Univ, Fire Depart.

Table 9 Traffic Noise CNEL Increases in 2030 (dB) (Cont.)

Roadway Segment	Cumulative (dB)	Project Impact (dB)	Impacted Neighborhood
Haven Avenue			
Arrow Route To 8th Street	**2.1**	0.3	Commercial, Offices
Milliken Avenue			
Banyan Street To SR-210 Freeway	**1.3**	N/A	Residential
SR-210 Freeway To Victoria Park Lane	0.4	N/A	
Victoria Park Lane To Base Line Road	0.8	N/A	
Base Line Road To Terra Vista Parkway	0.9	N/A	
Terra Vista Parkway To Foothill Boulevard	**1.4**	N/A	Residential, Medical Center
Foothill Boulevard To Arrow Route	0.9	N/A	
Arrow Route To 6th Street	0.4	N/A	
6th Street To 4th Street	0.4	N/A	
4th Street To Inland Empire Boulevard	0.4	N/A	
Rochester Avenue			
Foothill Boulevard To Arrow Route	**2.6**	N/A	Residential, Retail, Commercial, Ball Park
Arrow Route To 6th Street	**1.3**	N/A	Commercial, Offices
Day Creek Boulevard			
Banyan Street To SR-210 Freeway	0.4	N/A	
SR-210 Freeway To Highland Avenue	0.4	N/A	
Etiwanda Avenue			
Victoria Street To Base Line Road	**1.5**	N/A	Residential, School, Historic Site
Base Line Road To Miller Avenue	0.7	N/A	
Miller Avenue To Foothill Boulevard	**1.2**	N/A	Residential
Foothill Boulevard To Arrow Route	0.8	N/A	
Arrow Route To City Boundary	0.7	N/A	
East Avenue			
Victoria Street To Base Line Road	**2.1**	N/A	Residential
Base Line Road To Miller Avenue	**1.1**	N/A	Residential
Americana Way			
North of Base Line Road	0.8	N/A	
South of Base Line Road	0.5	N/A	
Beach Avenue			
Cherry Avenue To I-15 Freeway	**2.5**	N/A	Residential
I-15 Freeway To SR-210 Freeway	**2.7**	N/A	Residential, Some Retail
I-15 Freeway			
Wilson Avenue To I-210 Freeway	**2.7**	N/A	Commercial Site
I-210 Freeway To Base Line Road	**2.1**	N/A	Residential, Hotel, Retail
Base Line Road To Foothill Boulevard	**1.9**	N/A	Residential, Retail
Foothill Boulevard To Arrow Route	0.6	N/A	
Arrow Route To San Bernardino Avenue	**2.0**	N/A	Industrial

Table 9 Traffic Noise CNEL Increases in 2030 (dB) (Cont.)

Roadway Segment	Cumulative (dB)	Project Impact (dB)	Impacted Neighborhood
I-210 Freeway			
City Border To Carnelian Street	0.9	N/A	
Carnelian Street To Archibald Avenue	**1.1**	N/A	Residential, Retail, Park
Archibald Avenue To Haven Avenue	**1.1**	N/A	Residential, School, Retail
Haven Avenue To Milliken Avenue	**1.2**	N/A	Residential, Retail
Milliken Avenue To Day Creek Boulevard	**1.3**	N/A	Residential, Retail
Day Creek Boulevard To I-15 Freeway	**1.6**	N/A	Residential

† From Roadway Centerline
N/A - Not Available

Examining the cumulative noise increases shows that only one roadway segment will experience a noise increase that exceeds 3 dB. That roadway segment is Arrow Route from Rochester Avenue to Etiwanda Avenue. The land use along this roadway segment is mainly industrial and some commercial offices interspersed with vacant lots. There are no residential units. The noise increase along that roadway segment is projected to be 3.8 dB. Since there are no residential land uses along this roadway segment, the noise impacts are not predicted to be significant even though the increase in noise exceeds 3 dB.

For the project only increase, only one roadway segment is projected to experience a noise increase in excess of 3 dB. That roadway segment is Haven Avenue from Lemmon Avenue to the SR-210 Freeway. The land use along this roadway segment is retail, and includes eating establishments, a gas station, and a drug store.

The noise increase along this roadway segment is projected to be 4.7 dB. There are no residential land uses along this roadway segment, so residential land uses will not be impacted. It should also be noted that although the noise level along this roadway segment will increase by more than 3 dB at buildout of the proposed General Plan in comparison to the buildout from the existing General Plan, the actual noise increase along this roadway segment will only be 1.6 dB above the current noise level. Therefore, the projected future noise impact along this roadway segment will not be significant. Of the 44 roadways segments that were compared between the existing and proposed General Plans, 22 of the roadway segments are projected to experience a reduction in noise level.

Any small noise increase (as measured on the decibel scale) in an area where the existing noise level is high would be judged to have a greater impact than it would on those areas where the existing noise level is low. Since it is not known what the actual CNEL noise level is at every sensitive receptor within the city, it is possible that some sensitive receptors may already be experiencing noise levels that are in excess of the limit specified by the noise ordinance standards. If that is the case, a small noise increase in those areas may cause a significant impact. For the purposes of identifying those areas that may potentially be impacted by small noise level

increases, all roadway segments that are projected to experience a noise increase of 1 dB or more have been identified.

There are a total of 54 roadway segments that will experience a cumulative noise increase of 1 dB or more. The neighborhoods surrounding 45 of the 54 roadway segments contains residential units or schools. Residential and school neighborhoods are considered to be more sensitive than other neighborhoods. For every one of the 45 roadway segments that has a sensitive receptor that is currently experiencing noise levels that are in excess of the standards, the project would cause an impact along that roadway segment. The neighborhoods surrounding the remaining 9 roadway segments would consist of office, industrial, retail, commercial, or parks. These neighborhoods are less sensitive to small increases in noise than residential or school neighborhoods, and would therefore be less likely to experience a significant impact.

Table 10 shows the projected noise levels for the 2030 General Plan buildout. These noise levels were estimated using soft site conditions. The table shows the CNEL noise level at 100 feet from the centerline of the roadway for each of the roadway segment as well as the 55, 60, 65 and 70 CNEL noise contours. These contours do not take into account the effect of any noise barriers or topography that may reduce traffic noise levels. The noise levels were calculated using traffic volumes presented in the previously referenced traffic study prepared for the project by Kunzman Associates Inc. The CNEL calculations utilized a generic traffic mix. The traffic volumes and the traffic mix that are used in the calculations are presented in the appendix.

Table 10 Future 2030 With Project Traffic Noise Levels

		Distance To CNEL Contour from Centerline of Roadway (feet)			
Roadway Segment	**CNEL @ 100' †**	**55 CNEL**	**60 CNEL**	**65 CNEL**	**70 CNEL**
19th Street					
City Border To Carnelian Street	69.4	913	424	197	91
Carnelian Street To Hellman Avenue	69.3	899	417	194	90
Hellman Avenue To Archibald Avenue	69.2	888	412	191	89
Archibald Avenue To Hermosa Avenue	68.4	782	363	169	78
Base Line Road					
City Border To Carnelian Street	71.4	1,236	574	266	124
Carnelian Street To Hellman Avenue	70.3	1,047	486	226	105
Hellman Avenue To Archibald Avenue	70.5	1,073	498	231	107
Archibald Avenue To Hermosa Avenue	70.0	1,001	465	216	100
Hermosa Avenue To Haven Avenue	71.2	1,195	555	257	120
Haven Avenue To Spruce Avenue	71.2	1,195	555	257	120
Spruce Avenue To Milliken Avenue	72.2	1,392	646	300	139
Milliken Avenue To Rochester Avenue	71.7	1,291	599	278	129
Victoria Park Lane To Etiwanda Avenue	71.8	1,319	612	284	132
Etiwanda Avenue To East Avenue	72.2	1,402	651	302	140
East Avenue To Americana Way	72.9	1,565	726	337	156
Americana Way To Cherry Avenue	72.1	1,374	638	296	137

Table 10 Future 2030 With Project Traffic Noise Levels (Cont.)

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 55 CNEL	60 CNEL	65 CNEL	70 CNEL
Foothill Boulevard					
Campus Avenue To Grove Avenue	71.7	1,303	605	281	130
Grove Avenue To Baker Avenue	72.5	1,478	686	318	148
Baker Avenue To Vineyard Avenue	72.9	1,556	722	335	156
Vineyard Avenue To Hellman Avenue	72.8	1,534	712	331	153
Foothill Boulevard					
Hellman Avenue To Archibald Avenue	73.1	1,597	741	344	160
Archibald Avenue To Hermosa Avenue	72.7	1,503	698	324	150
Hermosa Avenue To Haven Avenue	72.0	1,357	630	292	136
Haven Avenue To Spruce Avenue	73.7	1,772	823	382	177
Spruce Avenue To Milliken Avenue	73.5	1,718	797	370	172
Milliken Avenue To Rochester Avenue	74.7	2,044	949	440	204
Day Creek Boulevard To I-15 Freeway	75.5	2,342	1,087	505	234
I-15 Freeway To Etiwanda Avenue	74.7	2,049	951	441	205
Etiwanda Avenue To East Avenue	74.3	1,932	897	416	193
Arrow Route					
Campus Avenue To Grove Avenue	65.6	505	235	109	51
Grove Avenue To Baker Avenue	68.3	773	359	167	77
Baker Avenue To Vineyard Avenue	69.6	942	437	203	94
Vineyard Avenue To Hellman Avenue	69.8	966	449	208	97
Hellman Avenue To Archibald Avenue	70.2	1,032	479	222	103
Archibald Avenue To Hermosa Avenue	71.8	1,321	613	285	132
Hermosa Avenue To Haven Avenue	72.2	1,392	646	300	139
Haven Avenue To Milliken Avenue	72.0	1,351	627	291	135
Milliken Avenue To Rochester Avenue	72.6	1,480	687	319	148
Rochester Avenue To Etiwanda Avenue	74.8	2,099	974	452	210
Etiwanda Avenue To East Avenue	70.2	1,028	477	221	103
4th Street					
Hellman Avenue To Archibald Avenue	72.1	1,371	636	295	137
Archibald Avenue To Hermosa Avenue	72.0	1,357	630	292	136
Haven Avenue To Milliken Avenue	73.6	1,746	810	376	175
Milliken Avenue To I-15 Freeway	73.6	1,725	801	372	173
Grove Avenue					
14th Street To Foothill Boulevard	63.5	370	172	80	37
Foothill Boulevard To Arrow Route	68.3	773	359	167	77
Arrow Route To 8th Street	68.8	838	389	180	84
Vineyard Avenue/Carnelian Street					
Lemmon Avenue To SR-210 Freeway	70.6	1,102	511	237	110
SR-210 Freeway To 19th Street	71.8	1,324	614	285	132
19th Street To Base Line Road	72.3	1,429	663	308	143
Base Line Road To Red Hill Country Club Drive	71.8	1,327	616	286	133
Red Hill Country Club Drive To Foothill Boulevard	73.1	1,600	743	345	160
Foothill Boulevard To Arrow Route	71.8	1,321	613	285	132
Arrow Route To 8th Street	72.0	1,354	628	292	135

Table 10 Future 2030 With Project Traffic Noise Levels (Cont.)

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 55 CNEL	60 CNEL	65 CNEL	70 CNEL
Archibald Avenue					
Lemmon Avenue To SR-210 Freeway	68.9	843	391	182	84
SR-210 Freeway To 19th Street	71.7	1,291	599	278	129
19th Street To Base Line Road	71.4	1,245	578	268	124
Base Line Road To Church Street	72.1	1,377	639	297	138
Church Street To Foothill Boulevard	71.5	1,266	588	273	127
Foothill Boulevard To Arrow Route	72.3	1,429	663	308	143
Arrow Route To 8th Street	72.5	1,467	681	316	147
6th Street To 4th Street	72.8	1,545	717	333	155
4th Street To Inland Empire Boulevard	72.4	1,441	669	310	144
Haven Avenue					
Lemmon Avenue To SR-210 Freeway	75.0	2,160	1,003	465	216
SR-210 Freeway To 19th Street	74.0	1,844	856	397	184
19th Street To Base Line Road	74.5	1,995	926	430	199
Base Line Road To Church Street	73.9	1,828	849	394	183
Church Street To Foothill Boulevard	74.3	1,932	897	416	193
Foothill Boulevard To Arrow Route	75.3	2,258	1,048	487	226
Arrow Route To 8th Street	75.4	2,288	1,062	493	229
Milliken Avenue					
Banyan Street To SR-210 Freeway	70.8	1,125	522	242	113
SR-210 Freeway To Victoria Park Lane	73.1	1,606	746	346	161
Victoria Park Lane To Base Line Road	73.4	1,691	785	364	169
Base Line Road To Terra Vista Parkway	73.2	1,641	762	354	164
Terra Vista Parkway To Foothill Boulevard	73.7	1,768	821	381	177
Foothill Boulevard To Arrow Route	74.1	1,888	876	407	189
Arrow Route To 6th Street	74.1	1,867	867	402	187
6th Street To 4th Street	74.2	1,917	890	413	192
4th Street To Inland Empire Boulevard	73.4	1,675	778	361	168
Rochester Avenue					
Foothill Boulevard To Arrow Route	72.6	1,486	690	320	149
Arrow Route To 6th Street	70.6	1,092	507	235	109
Day Creek Boulevard					
Banyan Street To SR-210 Freeway	69.9	987	458	213	99
SR-210 Freeway To Highland Avenue	72.3	1,427	662	307	143
Etiwanda Avenue					
Victoria Street To Base Line Road	66.5	587	272	126	59
Base Line Road To Miller Avenue	68.7	813	377	175	81
Miller Avenue To Foothill Boulevard	69.3	895	415	193	90
Foothill Boulevard To Arrow Route	70.9	1,152	535	248	115
Arrow Route To City Boundary	71.0	1,172	544	253	117
East Avenue					
Victoria Street To Base Line Road	67.7	698	324	150	70
Base Line Road To Miller Avenue	66.7	604	281	130	60

Table 10 Future 2030 With Project Traffic Noise Levels (Cont.)

Roadway Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 55 CNEL	60 CNEL	65 CNEL	70 CNEL
Americana Way					
North of Base Line Road	60.4	230	107	50	23
South of Base Line Road	62.0	292	135	63	29
Beach Avenue					
Cherry Avenue To I-15 Freeway	70.3	1,042	484	224	104
I-15 Freeway To SR-210 Freeway	70.8	1,130	524	243	113
I-15 Freeway					
Wilson Avenue To I-210 Freeway	80.7	5,181	2,405	1,116	518
I-210 Freeway To Base Line Road	80.9	5,327	2,472	1,148	533
Base Line Road To Foothill Boulevard	81.2	5,554	2,578	1,197	555
Foothill Boulevard To Arrow Route	81.2	5,554	2,578	1,197	555
Arrow Route To San Bernardino Avenue	82.1	6,375	2,959	1,373	637
I-210 Freeway					
City Border To Carnelian Street	81.5	5,822	2,702	1,254	582
Carnelian Street To Archibald Avenue	81.5	5,865	2,723	1,264	587
Archibald Avenue To Haven Avenue	81.5	5,832	2,707	1,256	583
Haven Avenue To Milliken Avenue	81.3	5,652	2,623	1,218	565
Milliken Avenue To Day Creek Boulevard	81.3	5,705	2,648	1,229	571
Day Creek Boulevard To I-15 Freeway	81.3	5,629	2,613	1,213	563

3.0 REFERENCES

National Association of Noise Control Officials, "Noise Effects Handbook," 1981.

Department of Transportation, "Report of a Field Study of Aircraft Noise and Sleep Disturbance," Department of Safety, Environment and Engineering Civil Aviation Authority, December 1992.

1992 British + Horne JA, Pankhurst FL, Reyner LA, Hume K, Diamond ID, “A Field Study Of Sleep Disturbance: Effects Of Aircraft Noise And Other Factors On 5,742 Nights Of Actimetrically Monitored Sleep In A Large Subject Sample. Sleep 1994 Mar;17(2):146-59.

Federal Interagency Committee on Noise (FICON), August 21, 1992.

Federal Interagency Committee on Aircraft Noise (FICAN). (The full FICAN report can be found on the internet at www.fican.org.)

Lercher P, Stansfield S. A., Thompson S.J., Non Auditory Health Effects of Noise; Review of the 1993-1998 Period, Noise Effects-98 conference Proceedings, p. 213. 1998.

Los Angeles Economic Development Corporation, “On-Trac Trade Impact Study: National Economic Significance of Rail Capacity and Homeland Security on the Alameda Corridor East”, September 11, 2003

APPENDIX

Table A-1 Traffic Volumes Used For Noise Modeling (ADTs)

Road Segment	Speed (mph)	Existing	New General Plan 2030	Old General Plan 2020
19th Street				
City Border To Carnelian Street	45	11700	16900	17600
Carnelian Street To Hellman Avenue	45	13000	16500	18200
Hellman Avenue To Archibald Avenue	45	12600	16200	N/A
Archibald Avenue To Hermosa Avenue	45	11300	13400	N/A
Base Line Road				
City Border To Carnelian Street	45	16800	26600	30800
Carnelian Street To Hellman Avenue	40	20100	24600	32600
Hellman Avenue To Archibald Avenue	40	22500	25500	N/A
Archibald Avenue To Hermosa Avenue	40	20900	23000	32400
Hermosa Avenue To Haven Avenue	45	20800	25300	36200
Haven Avenue To Spruce Avenue	45	21500	25300	34300
Spruce Avenue To Milliken Avenue	50	21700	27100	N/A
Milliken Avenue To Rochester Avenue	50	19100	24200	N/A
Victoria Park Lane To Etiwanda Avenue	50	18300	25000	N/A
Etiwanda Avenue To East Avenue	50	20200	27400	N/A
East Avenue To Americana Way	50	29400	32300	N/A
Americana Way To Cherry Avenue	45	28400	31200	N/A
Foothill Boulevard				
Campus Avenue To Grove Avenue	45	25300	28800	N/A
Grove Avenue To Baker Avenue	45	31600	34800	N/A
Baker Avenue To Vineyard Avenue	45	30700	37600	45500
Vineyard Avenue To Hellman Avenue	45	28100	36800	41700
Hellman Avenue To Archibald Avenue	45	30100	39100	43600
Archibald Avenue To Hermosa Avenue	45	28000	35700	50600
Hermosa Avenue To Haven Avenue	45	25400	30600	49700
Haven Avenue To Spruce Avenue	45	33000	45700	50300
Spruce Avenue To Milliken Avenue	45	34100	43600	N/A
Milliken Avenue To Rochester Avenue	45	44600	56600	N/A
Day Creek Boulevard To I-15 Freeway	45	63100	69400	N/A
I-15 Freeway To Etiwanda Avenue	45	32600	56800	N/A
Etiwanda Avenue To East Avenue	45	31700	52000	N/A
Arrow Route				
Campus Avenue To Grove Avenue	35	7800	9900	N/A
Grove Avenue To Baker Avenue	40	14100	15600	N/A
Baker Avenue To Vineyard Avenue	45	15200	17700	19400
Vineyard Avenue To Hellman Avenue	45	15700	18400	22900
Hellman Avenue To Archibald Avenue	45	17100	20300	22900
Archibald Avenue To Hermosa Avenue	45	26700	29400	31300
Hermosa Avenue To Haven Avenue	45	28300	31800	26200
Haven Avenue To Milliken Avenue	50	23500	25900	30000
Milliken Avenue To Rochester Avenue	50	20700	29700	N/A
Rochester Avenue To Etiwanda Avenue	50	20800	50200	N/A
Etiwanda Avenue To East Avenue	50	14100	17200	N/A

Table A-1 Traffic Volumes Used For Noise Modeling (ADTs) (Cont.)

Road Segment	Speed (mph)	Existing	New General Plan 2030	Old General Plan 2020
8th Street				
Baker Avenue To Vineyard Avenue	45	N/A	N/A	6900
Vineyard Avenue To Hellman Avenue	45	N/A	N/A	8800
Hellman Avenue To Archibald Avenue	45	N/A	N/A	3900
Archibald Avenue To Hermosa Avenue	45	N/A	N/A	8800
Hermosa Avenue To Haven Avenue	45	N/A	N/A	5500
6th Street				
Hellman Avenue To Archibald Avenue	35	N/A	N/A	11600
4th Street				
Hellman Avenue To Archibald Avenue	50	14500	26500	N/A
Archibald Avenue To Hermosa Avenue	50	14100	26100	34600
Haven Avenue To Milliken Avenue	55	25000	32700	38000
Milliken Avenue To I-15 Freeway	50	30200	37400	N/A
Grove Avenue				
14th Street To Foothill Boulevard	35	5500	6200	N/A
Foothill Boulevard To Arrow Route	40	14200	15600	N/A
Arrow Route To 8th Street	40	14800	17600	N/A
Vineyard Avenue/Carnelian Street				
Lemmon Avenue To SR-210 Freeway	45	20400	22400	23300
SR-210 Freeway To 19th Street	45	26200	29500	20900
19th Street To Base Line Road	45	28200	33100	20900
Base Line Road To Red Hill Country Club Drive	45	23600	29600	24000
Red Hill Country Club Drive To Foothill Boulevard	45	32500	39200	24000
Foothill Boulevard To Arrow Route	45	25100	29400	26200
Arrow Route To 8th Street	45	23500	30500	23900
8th Street To 6th Street	50	N/A	N/A	26400
6th Street To 4th Street	50	N/A	N/A	29800
4th Street To Inland Empire Boulevard	50	N/A	N/A	42500
Hellman Avenue				
19th Street To Base Line Road	35	N/A	N/A	5100
Arrow Route To 8th Street	45	N/A	N/A	11400
Archibald Avenue				
Lemmon Avenue To SR-210 Freeway	45	13600	15000	9700
SR-210 Freeway To 19th Street	45	25800	28400	30200
19th Street To Base Line Road	45	20200	26900	20900
Base Line Road To Church Street	45	22400	31300	23100
Church Street To Foothill Boulevard	45	21900	27600	23100
Foothill Boulevard To Arrow Route	45	24800	33100	27000
Arrow Route To 8th Street	45	28100	34400	29200
8th Street To 6th Street	45	N/A	N/A	25100
6th Street To 4th Street	45	30100	37200	24200
4th Street To Inland Empire Boulevard	45	27700	33500	25600

Table A-1 Traffic Volumes Used For Noise Modeling (ADTs) (Cont.)

Road Segment	Speed (mph)	Existing	New General Plan 2030	Old General Plan 2020
Hermosa Avenue				
19th Street To Base Line Road	45	N/A	N/A	15400
Base Line Road To Foothill Boulevard	45	N/A	N/A	11100
Foothill Boulevard To Arrow Route	45	N/A	N/A	13400
Arrow Route To 8th Street	45	N/A	N/A	11000
6th Street To 4th Street	45	N/A	N/A	7000
Haven Avenue				
Lemmon Avenue To SR-210 Freeway	45	42700	61500	20900
SR-210 Freeway To 19th Street	45	32500	48500	31800
19th Street To Base Line Road	50	36400	46500	34100
Base Line Road To Church Street	50	30500	40800	36700
Church Street To Foothill Boulevard	50	31000	44300	36700
Foothill Boulevard To Arrow Route	50	31800	56000	40400
Arrow Route To 8th Street	50	34900	57100	53500
8th Street To 6th Street	50	N/A	N/A	54400
6th Street To 4th Street	50	N/A	N/A	56800
4th Street To Inland Empire Boulevard	50	N/A	N/A	49500
Milliken Avenue				
Banyan Street To SR-210 Freeway	50	14700	19700	N/A
SR-210 Freeway To Victoria Park Lane	50	30500	33600	N/A
Victoria Park Lane To Base Line Road	50	30300	36300	N/A
Base Line Road To Terra Vista Parkway	50	27900	34700	N/A
Terra Vista Parkway To Foothill Boulevard	50	28300	38800	N/A
Foothill Boulevard To Arrow Route	50	34700	42800	N/A
Arrow Route To 6th Street	50	38300	42100	N/A
6th Street To 4th Street	50	39800	43800	N/A
4th Street To Inland Empire Boulevard	45	38200	42000	N/A
Rochester Avenue				
Foothill Boulevard To Arrow Route	45	19300	35100	N/A
Arrow Route To 6th Street	45	16300	22100	N/A
Day Creek Boulevard				
Banyan Street To SR-210 Freeway	45	17300	19000	N/A
SR-210 Freeway To Highland Avenue	45	30000	33000	N/A
Etiwanda Avenue				
Victoria Street To Base Line Road	45	6200	8700	N/A
Base Line Road To Miller Avenue	45	12100	14200	N/A
Miller Avenue To Foothill Boulevard	45	12500	16400	N/A
Foothill Boulevard To Arrow Route	50	17100	20400	N/A
Arrow Route To City Boundary	55	15300	18000	N/A
East Avenue				
Victoria Street To Base Line Road	45	7000	11300	N/A
Base Line Road To Miller Avenue	45	7100	9100	N/A

Table A-1 Traffic Volumes Used For Noise Modeling (ADTs) (Cont.)

Road Segment	Speed (mph)	Existing	New General Plan 2030	Old General Plan 2020
Americana Way				
North of Base Line Road	25	2900	3500	N/A
South of Base Line Road	25	4500	5000	N/A
Beach Avenue				
Cherry Avenue To I-15 Freeway	45	11600	20600	N/A
I-15 Freeway To SR-210 Freeway	35	17600	33100	N/A
I-15 Freeway				
Wilson Avenue To I-210 Freeway	65	96803	180128	N/A
I-210 Freeway To Base Line Road	65	114848	187788	N/A
Base Line Road To Foothill Boulevard	65	129312	199963	N/A
Foothill Boulevard To Arrow Route	65	175901	199963	N/A
Arrow Route To San Bernardino Avenue	65	156234	245864	N/A
I-210 Freeway				
City Border To Carnelian Street	65	157342	191585	N/A
Carnelian Street To Archibald Avenue	65	150196	193749	N/A
Archibald Avenue To Haven Avenue	65	150090	192094	N/A
Haven Avenue To Milliken Avenue	65	137958	183251	N/A
Milliken Avenue To Day Creek Boulevard	65	136879	185870	N/A
Day Creek Boulevard To I-15 Freeway	65	126876	182146	N/A

Table A-2 Vehicle Mix Used For Noise Modeling (Surface Streets)

	Day	Eve	Night
Auto	69.50%	12.90%	9.60%
Medium Truck	1.44%	0.06%	1.50%
Heavy Truck	2.40%	0.10%	2.50%

Table A-3 Vehicle Mix Used For Noise Modeling (I-15 Freeway)

	Day	Eve	Night
Auto	64.94%	14.23%	15.84%
Medium Truck	1.28%	0.28%	0.31%
Heavy Truck	2.14%	0.47%	0.52%

Table A-4 Vehicle Mix Used For Noise Modeling (I-210 Freeway)

	Day	Eve	Night
Auto	63.87%	10.93%	20.20%
Medium Truck	1.26%	0.22%	0.40%
Heavy Truck	2.10%	0.36%	0.66%