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TUSCANA VILLAGE SPECIFIC PLAN
NOISE ANALYSIS
CITY OF ONTARIO, CALIFORNIA

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1.0 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Tuscana Village Specific Plan project. This noise study briefly describes the proposed project, provides information regarding noise fundamentals, describes the local noise guidelines, provides the study methods and procedures for traffic noise analysis, and evaluates the future off-site and on-site exterior noise environment. Included in this study is an analysis of the potential off-site and on-site project-related noise impacts during construction activities and the predicted future noise environment that can be expected within the noise sensitive residential community.

1.1 Site Location and Study Area

The project will provide for the development on the 44-acre site located in the City of Ontario in San Bernardino County, California. Specifically, the project will be bounded by State Route 60 (SR-60) on the north, Milliken (also known as Hamner) Avenue on the east and Riverside Drive to the south. The location of the Project is provided on Exhibit 1-A.

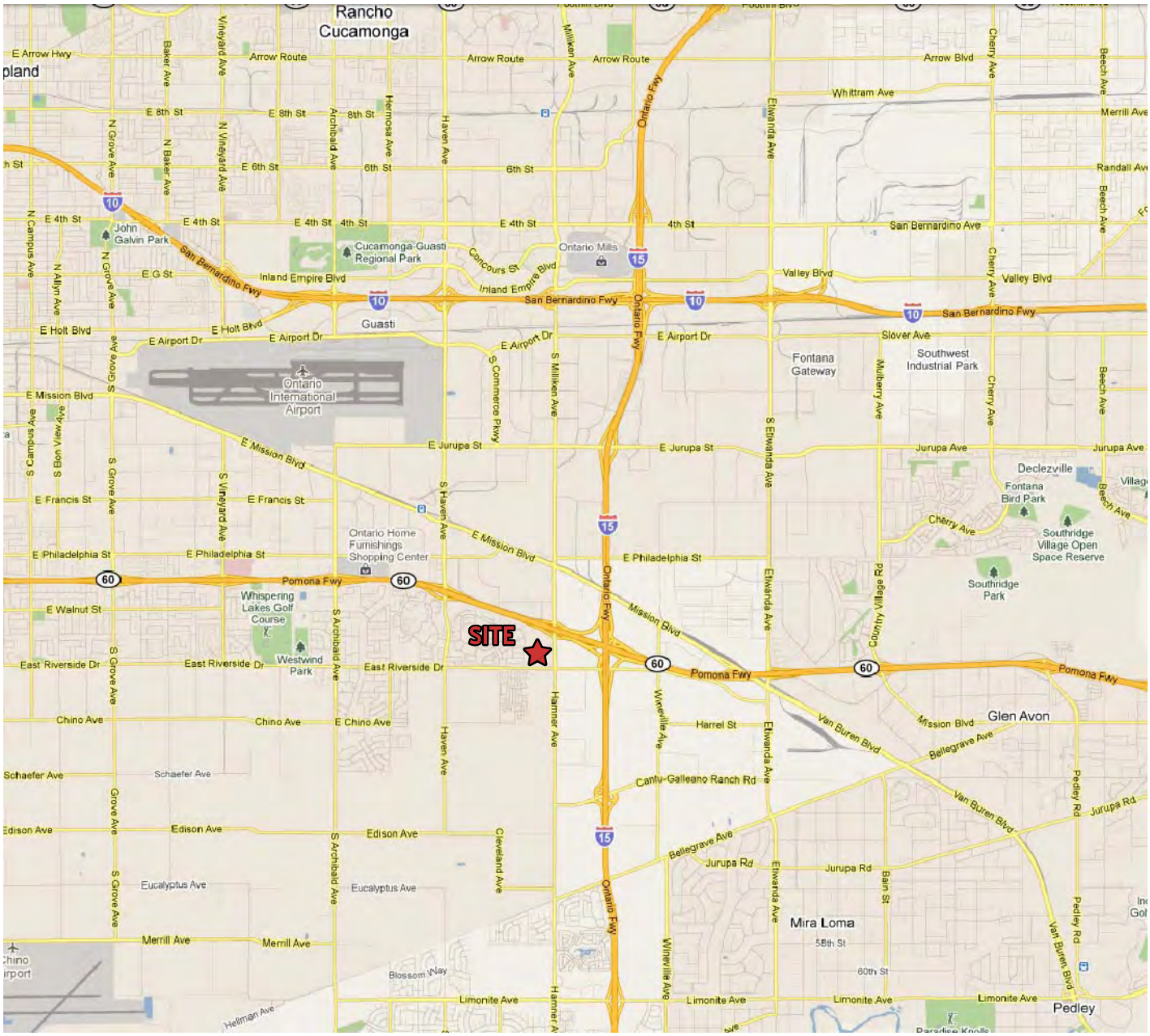
1.2 Project Description

The project area is comprised of properties which are currently owned by three different entities:

- Katelaris – approximately 20 acres in the northwest quadrant of the intersection of Milliken (Hamner) Avenue – Riverside Drive, of which 8 acres are proposed to be sold to Pelican Homes for residential development;
- Galleano – approximately 16 acres south of SR-60; and
- Riboli – approximately 12 acres west of Milliken (Hamner) Avenue, south of Hartford Street.

EXHIBIT 1-A

LOCATION MAP



- Up to a combination of 48,127 square feet of general retail and 242,821 square feet of office land uses on the Riboli property.

Table 1-1 provides a summary of the land uses based on the site plans provided by the Project applicant and the Tuscana Village Specific Plan prepared by Applied Planning, Inc., April 2011.

TABLE 1-1
TUSCANA VILLAGE SPECIFIC PLAN LAND USES (1)

Parcel	Land Use	Size	Units
PHASE I			
Katelaris Parcel (Interim Plan)	Apartments	200	dus (2)
	Office	2,000	s.f. (3)
	Retail	9,000	s.f.
	Fast-Food with Drive-Thru	2,250	s.f.
	Restaurant (Including Event and Brewery)	11,026	s.f.
	Nursery	5,000	s.f.
	Growing Area/Seasonal Sales/Multi-Function Courtyard/Petting Zoo (4)	8,901	s.f.
	Car Wash (gas w/convenience store and car wash)	12	fueling positions (5)
BUILDOUT (Total)			
Katelaris Parcel (Interim Plan)	Apartments	200	dus (2)
	Office	69,000	s.f. (3)
	Retail	27,000	s.f.
	Fast-Food with Drive-Thru	5,750	s.f.
	Restaurant (Including Event and Brewery)	11,026	s.f.
	Car Wash (gas w/convenience store and car wash)	12	fueling positions (5)
Galleano Parcel	Business Park (Office)	45,506	s.f.
	Retail	90,101	s.f.
Riboli Parcel	Business Park (Office)	242,821	s.f.
	Retail	48,127	s.f.

(1)Source: *Tuscana Village Specific Plan Project,* April 2011, Applied Planning, Inc.
(2) dus – dwelling units
(3) s.f. – square feet
(4) Interim land use – to be redeveloped after Opening Year
(5) Fueling positions assumed for trip generation; up to 3,500 square feet for convenience store building area

The site plan for the parcels to be developed for the residential component and Phase I (interim land uses) of the Katelaris property are shown on Exhibit 1-B. It is assumed that the residential and initial Katelaris development will be completed in 2012. No detailed site plans are provided for the Galleano and Riboli parcels.

The project proposes the construction of a pedestrian-oriented urban village mixed-use development which would provide commercial, business park (office) and residential land uses on these properties. At buildout, the project would allow for development of just less than 948,000 square feet of commercial retail and office land uses and up to 200 residential units.

The project will take access from Milliken (Hamner) Avenue and Riverside Drive and is proposed to be developed in two phases of development, as follows.

Phase I (Opening Year 2012)will include:

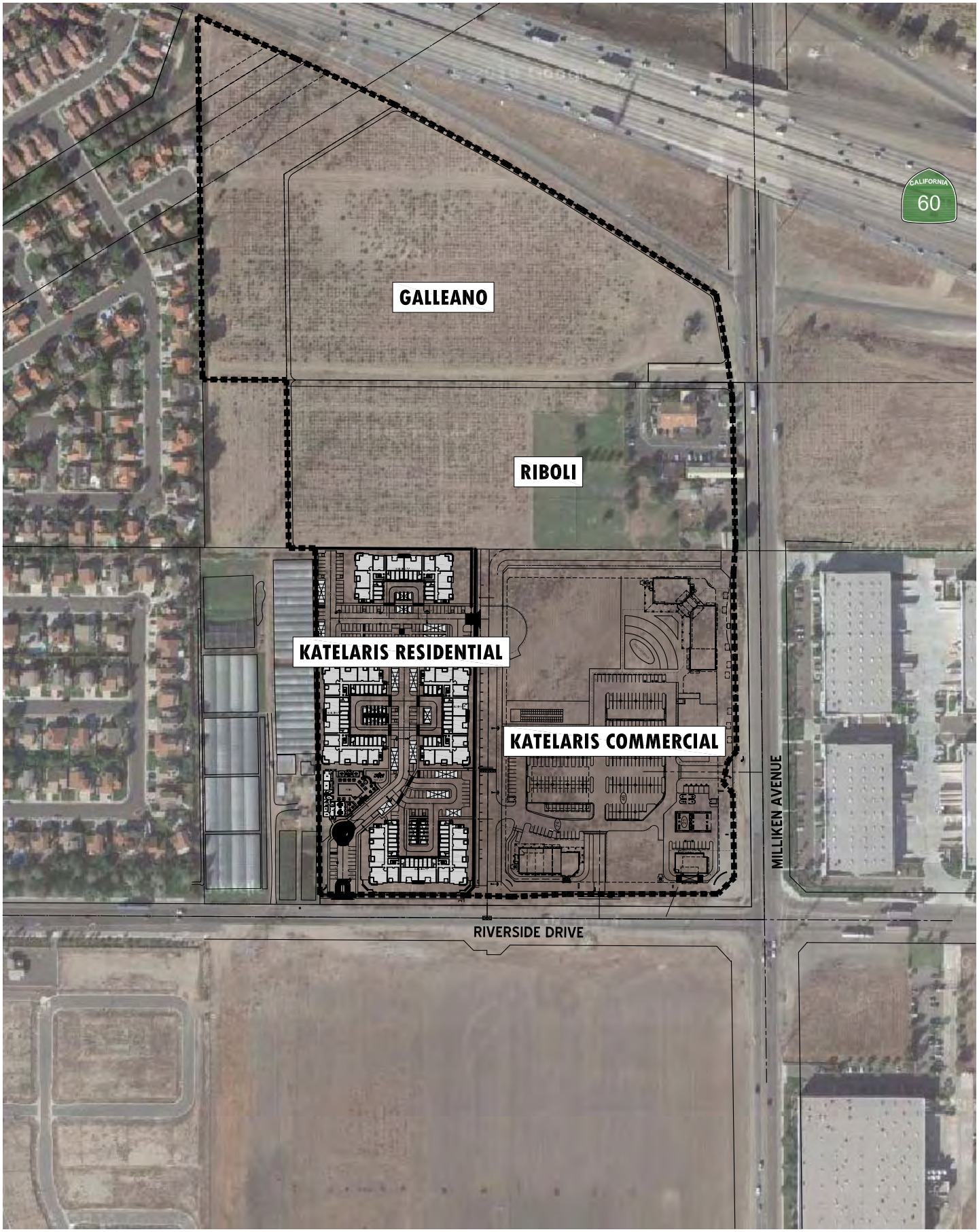
- 200 residential units;
- 9,000 square feet of general retail;
- 2,250 square feet of fast-food restaurants;
- 11,026 square feet of restaurant type uses (including an event hall and brewery); 2,000 square feet of office; and
- 110,380 square feet of *interim* uses including a 5,000-square foot nursery sales area as well as a seasonal sales/farmer's market area, a multi-function courtyard, and an educational gardens/ growing/petting zoo area on the Katelaris property.

Project (Specific Plan) Buildout:

Specific Plan buildout, which has an unspecified completion date, is proposed to include:

- The redevelopment of the Katelaris property's interim land uses to allow for the following *additional* land uses: 18,000 square feet of retail; 67,000 square feet of office; and 3,500 square feet of fast food restaurant uses;
- Up to a combination of 90,101 square feet of general retail and 450,506 square feet of office land uses on the Galleano property; and

SITE PLAN


GALLEANO
RIBOLI
KATELARIS RESIDENTIAL
KATELARIS COMMERCIAL
MILLIKEN AVENUE
RIVERSIDE DRIVE
CALIFORNIA
60
N

2.0 NOISE FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

2.1 Range of Noise

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort.

2.2 Noise Descriptors

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. In addition, the hourly Leq is the noise metric used to collect short-term noise level measurement samples and to estimate the 24-hour Community Noise Equivalent Levels (CNEL).

EXHIBIT 2-A

TYPICAL NOISE LEVELS AND THEIR SUBJECTIVE LOUDNESS AND EFFECTS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

SOURCE: NOISE TECHNICAL SUPPLEMENT BY CALTRANS

The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7 p.m. to 10 p.m., and the addition of 10 decibels to dBA Leq sound levels at night between 10 p.m. and 7 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any particular time, but rather represents the total sound exposure.

2.3 Traffic Noise Prediction

The level of traffic noise depends on three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks. A doubling of the traffic volume (assuming that the speed and truck mix do not change) results in a noise level increase of 3 dBA. The truck mix on a given roadway may also have an effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires.

2.4 Noise Control

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

2.5 Ground Absorption

To account for the ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft site and hard site conditions. Soft site conditions account for the sound propagation loss over natural surfaces such as normal

earth and ground vegetation. A drop-off rate of 4.5 dBA per doubling of distance is typically observed over soft ground with landscaping, as compared with a 3.0 dBA drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. Based on our experience, soft site conditions better reflect the predicted noise levels. In addition, Caltrans' research has shown that the use of soft site conditions is more appropriate for the application of the FHWA traffic noise prediction model used in this analysis.

2.6 Noise Barrier Attenuation

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the view of the noise source.

2.7 Community Response to Noise

Approximately ten (10) percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another 25 percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels. An increase or decrease of 1.0 dBA cannot be perceived except in carefully controlled laboratory experiments. A 3.0 dBA increase may be perceptible outside of the laboratory. An increase of 5.0 dBA is often necessary before any noticeable change in community response (i.e., complaints) would be expected.

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level of the receptor;
- Noise receptor's perception that they are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Receptor's belief that the noise source can be controlled.

Recent studies have shown that changes in long-term noise levels are noticeable, and are responded to by people. For example, about ten (10) percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one (1) dBA is associated with approximately two (2) percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people begin complaining. Group or legal actions to stop the noise should be expected to begin at traffic noise levels near 70 dBA and aircraft noise levels near 65 dBA.

2.8 Land Use Compatibility With Noise

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches and residences are more sensitive to noise intrusion than are commercial or industrial activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process.

3.0 NOISE STANDARDS

Local noise guidelines are often based on the broader guidelines established by state and federal agencies. This section describes the regulatory setting for the proposed Tuscana Village Specific Plan. Since the project has the potential to impact neighboring uses in the City of Eastvale, the criteria for both the City of Ontario and City of Eastvale are presented below. The City of Eastvale was incorporated as a city in October of 2010. Through the incorporation process, the City adopted the Riverside County General Plan and Municipal Code.

3.1 City of Ontario Noise Element

The Noise Element includes standards for land use compatibility for community noise exposure. The Ontario Plan standards are derived from standards contained in the *General Plan Guidelines*, a publication of the California Office of Planning and Research. These standards are used by many California cities and counties.

The Noise Element specifies the maximum noise levels allowable for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. For the purposes of this project, the noise impacts associated with traffic are controlled by the Ontario Plan Noise Element. For noise sensitive residential areas, the exterior noise levels should remain below 65 dBA CNEL, and the interior noise levels should remain below 45 dBA CNEL. In the case of multi-family uses because there are no areas defined as private exterior living areas, only interior noise levels shall be mitigated to remain below 45 dBA CNEL. The City of Ontario Plan Noise Element is included in Appendix 3.1.

3.2 City of Ontario Noise Ordinance

Section 5-29.04 (a) of the City of Ontario Noise Ordinance states “the following exterior noise standards, unless otherwise specifically indicated, shall apply to all properties within a designated noise zone.

Allowable Exterior Noise Level (1)		Allowed Equivalent Noise Level, Leq (2)	
Noise Zone	**Type of Land Use**	**7 a.m. to 10 p.m.**	**10 p.m. to 7 a.m.**
I	Single-Family Residential	65 dBA	45 dBA
II	Multi-Family Residential, Mobile Home Parks	65 dBA	50 dBA
III	Commercial Property	65 dBA	60 dBA
IV	Residential Portion of Mixed Use	70 dBA	70 dBA
V	Manufacturing and Industrial, Other Uses	70 dBA	70 dBA

(1) If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.

(2) Measurements for compliance are made on the affected property pursuant to § 5-29.15.

(b It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

(1) The noise standard for the applicable zone for any fifteen-minute (15) period; and

(2) A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response).

(c) In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

(d) The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.

(e) If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

Section 5-29.06 states “the following activities shall be exempt from the provisions of this chapter”:

(d) Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of Section 5-29.09.

Sec. 5-29.09 of the City of Ontario Noise Ordinance defines the construction activity noise regulations.

(a) No person, while engaged in construction, remodeling, digging, grading, demolition or any other related building activity, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.

(b) No landowner, construction company owner, contractor, subcontractor, or employer shall permit or allow any person or persons working under their direction and control to operate any tool, equipment or machine in violation of the provisions of this section.

(c) Exceptions.

(1) The provisions of this section shall not apply to emergency construction work performed by a private party when authorized by the City Manager or his or her designee;

(2) The maintenance, repair or improvement of any public work or facility by public employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City, or its employees, contractors or agents, unless:

(i) The City Manager or a department head determines that the maintenance, repair or improvement is immediately necessary to maintain public services,

(ii) The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours, or

(iii) The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes construction during hours of the day that would otherwise be prohibited pursuant to this section; and

(3) Any construction that complies with the noise limits specified in Sections 5-29.04.

The City of Ontario Municipal Code Section 9-1.3310, Vibration, states, "No vibration shall be detectable beyond the property line of the site from which the vibration is emanating. Vibration shall not exceed the standards set forth in the following table."

Frequency (Cycles Per Second)	Vibration Deplacement (In Inches)	
	Steady State	Impact
Under 10	0.0055	0.0010
10-19	0.0044	0.0008
20-29	0.0033	0.0006
30-39	0.0002	0.0004
40 and Over	0.0001	0.0002

3.3 City of Eastvale Transportation Noise Standards

The Noise Element specifies the maximum noise levels allowable for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. For the purposes of this project, the noise impacts associated with traffic are controlled by the General Plan Noise Element. The General Plan Noise Element is included in Appendix 3.3.

The General Plan standards are derived from standards contained in the *General Plan Guidelines*, a publication of the California Office of Planning and Research. These standards are used by many California cities and counties. The Noise Element includes standards for land use compatibility for community noise exposure. For single family residential areas, the exterior noise levels should remain below 65 dBA CNEL, and the interior noise levels should remain below 45 dBA CNEL.

For commercial uses the noise compatibility matrix sets guidelines according to the predicted noise exposure level. According to the noise compatibility matrix, an ambient noise level of up to 65 dBA CNEL for residential uses and up to 70 dBA CNEL for

commercial uses is considered “normally acceptable”.

3.4 City of Eastvale Stationary Noise Standards

The City of Eastvale has set exterior noise limits to control delivery trucks, trash compactors, speakerphones, vehicle activities, and mechanical ventilation system noise impacts associated with the development of the proposed Tuscana Village Specific Plan. The City considers noise generated by the use of motor vehicles to be a stationary noise source when operated on private property such as at a truck terminal or warehousing facility. These facility-related noises, as projected to any portion of any surrounding property containing a "habitable dwelling, hospital, school, library or nursing home," must not exceed the following worst-case noise levels.

Policy N 4.1 of the Noise Element sets an exterior noise limit not to be exceeded for a cumulative period of more than ten (10) minutes in any hour of 65 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m. This is consistent with the Stationary Source Requirements included in Appendix 3.4.

Policy N 4.8 of the Noise Element requires that loading docks of industrial land uses minimize the potential noise impacts of vehicles on the site as well on the adjacent land uses.

3.5 Community Noise Assessment Criteria

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For the purposes of this report, noise impacts would be potentially significant if the proposed Project is determined to result in or cause:

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

- A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

While the CEQA Guidelines, City of Ontario and City of Eastvale noise standards provide direction on noise compatibility and establish noise standards by land use type, they do not define the levels at which increases above the ambient noise levels are considered substantial. However, the Federal Highway Administration and Caltrans both identify changes in noise levels of greater than 3 dBA as "barely perceptible," while changes of 5 dBA are considered "readily perceptible." This is consistent with the community response to noise characteristics described at Section 3.6 of this report.

In a community situation, the noise exposure is extended over a long time period, and changes in noise levels occur over years rather than the immediate comparison made in a laboratory situation. The level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and 3 dBA appears to be appropriate for most people. On this basis, and for the purposes of this study, a substantial increase in noise levels attributable to operations of the Project would occur if:

1. Ambient conditions are below applicable standards, and project-generated noise at receptor land uses would result in:
    - An exceedance of the suggested land uses/noise compatibility guidelines for surface transportation sources presented in the City of Ontario and Eastvale Noise Element (mobile sources); or
    - An exceedance of the exterior noise standards defined in the City of Ontario or City of Eastvale Noise Ordinance (area/stationary sources);

2. If ambient noise conditions exceed applicable Noise Ordinance Standards and project-generated noise would create a “barely perceptible” 3 dBA or greater permanent increase in ambient exterior noise levels.

3. For construction noise, a substantial increase in noise would occur if project-related construction activities occur of on any weekday outside the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday outside the hours of 9:00 a.m. and 6:00 p.m.

4.0 EXISTING NOISE LEVEL MEASUREMENTS

To determine the existing noise level environment, four (4) long-term 24-hour measurements and two (2) short-term noise measurements were taken at locations in the Project study area. Exhibit 4-A provides the boundaries of the Project study area and the noise level measurement locations. The noise level measurements were recorded by Urban Crossroads, Inc. on April 19th and 20th, 2011. Appendix 4.1 includes study area photos.

4.1 Measurement Procedure and Criteria

Short-term noise measurements were taken using a Larson-Davis Model 824 Type 1 precision sound level meter. The 24-hour noise readings were recorded using four (4) Quest DL Pro data logging Type 2 noise dosimeters. All noise meters were programmed in "fast" mode to record noise levels in "A" weighted form. The sound level meters and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The Larson Davis Model 824 sound level meter was calibrated before the monitoring using a Larson-Davis calibrator, Model CAL 150 and the Quest DL noise dosimeters were calibrated using a Quest QC-10 calibrator. All noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (Standard S1.4-1983).

4.2 Noise Measurement Locations

Except for a small commercial cluster located on the Riboli property, the Project site is currently vacant . The commerical site includes a church/daycare, and wine tasting facility. The project site is bordered by the Pomona Freeway (SR-60) to the north, Hamner Avenue and industrial park to the east, Riverside Drive and vacant land to the south, and existing nursery and single-family homes to the west. Exhibit 4-A shows the noise monitoring locations.

Long-Term noise level measurement locations L1 through L4 were monitored for a period of 24 hours.

EXHIBIT 4-A

NOISE MEASUREMENT LOCATIONS

- Site L1 is located near the existing single-family home at 2939 South McCloud River Lane west of the proposed project site, north of the existing nursery approximately 850 feet north of Riverside Drive.
- Site L2 is located near the existing single-family home at 2939 South McCloud River Lane west of the existing nursery approximately 400 feet north of Riverside Drive.
- Site L3 is located near the existing single-family home at 3903 San Lorenzo River Road west of the proposed project site 100 feet north of the Riverside Drive centerline.
- Site L4 is located approximately 170 feet west of Hamner Avenue along the northern property line of the proposed project site, near the existing church/daycare.

Short-Term noise measurement locations S1 and S2 were monitored for a time period of 10 minutes.

- Site S1 is located approximately 130 feet east of the Hamner Avenue centerline at the existing business park uses located in the City of Eastvale.
- Site S2 is located approximately 100 feet south of the Riverside Drive centerline southwest of the project site, at the location of future single-family homes.

4.3 Noise Measurement Results

The results of the noise level measurements are presented in Tables 4-1 and 4-2. All measurements monitored for a period of 24 hours are presented in Table 4-1 and all noise measurements monitored for a period of 10 minutes are presented in Table 4-2. The hourly noise levels at Site L1 range from 44.3 to 53.7 dBA Leq and produce a 24-hour Community Noise Equivalent Level (CNEL) of 55.5 dBA. The hourly noise levels at Site L2 range from 44.5 to 52.7 dBA Leq and produce a noise level of 55.1 dBA CNEL. The hourly noise levels at Site L3 range from 50.8 to 59.5 dBA Leq and produce a noise level of 60.9 dBA CNEL. The hourly noise levels at Site L4 range from 50.2 to 56.6 dBA Leq and produce a noise level of 59.5 dBA CNEL. The long-term noise monitoring results printouts are included in Appendix 4.2.

To supplement the long-term noise level measurements, two (2) short-term, 10-minute

Table 4-1

Existing Long-Term (Ambient) Noise Level Measurements[1]

Receptor Location[2]	Description	Time Of Measurement[3]	Primary Noise Source	Hourly Noise Levels (Leq dBA)[4]	Daily Noise Levels (dBA CNEL)[4]
L1	Located near the existing single-family homes west of the proposed project site north of the existing nursery approximately 850 feet north of Riverside Drive.	April 19-20, 2011	Ambient, Traffic on SR-60	44.3 - 53.7	55.5
L2	Located near the existing single-family homes west of the proposed project site west of the existing nursery approximately 400 feet north of Riverside Drive.	April 19-20, 2011	Ambient, Traffic on SR-60	44.5 - 52.7	55.1
L3	Located near the existing single-family homes west of the proposed project site 100 feet north of the Riverside Drive centerline.	April 19-20, 2011	Traffic on Riverside Drive	50.8 - 59.5	60.9
L4	Located approximately 170 feet west of Hamner Avenue along the northern property line of the proposed project site near the existing church/daycare.	April 19-20, 2011	Traffic on Hamner Avenue	50.2 - 56.6	59.5

[1] Noise measurements taken by Urban Crossroads, Inc. on April 19-20, 2011.

[2] See Exhibit 4-A for the location of the monitoring sites, and Appendix 4.1 for Study Area Photos.

[3] All measurement at locations L1-L4 were monitored for a period of 24 hours.

[4] The long-term noise level measurements printouts are included in Appendix 4.2.

Table 4-2

Existing Short-Term (Ambient) Noise Level Measurements[1]

Receptor Location[2]	Description	Time Of Measurement[3]	Primary Noise Source	Noise Level (Leq dBA)	Noise Level (dBA CNEL)[4]
S1	Located approximately 130 feet east of the Hamner Avenue centerline at the existing business park uses.	1:44 PM	Traffic on Hamner Avenue	63.9	68.2
S2	Located approximately 100 feet south of the Riverside Drive centerline southwest of the project site at the potential future single-family homes.	1:59 PM	Traffic on Riverside Drive	54.5	57.7

[1] Noise measurements taken by Urban Crossroads, Inc. on April 20, 2011.

[2] See Exhibit 4-A for the location of the monitoring sites.

[3] All measurement at locations S1-S2 were monitored for a minimum period of 10 minutes.

[4] Noise data printouts are included in Appendix 4.2 and Leq to CNEL calculations included in Appendix 4.3.

noise measurements taken within and near the proposed Project site ranged from 54.5 to 63.9 dBA Leq. The levels were then compared to 24-hour noise level impact curves recorded at the nearest long-term measurement locations to estimate the hourly levels at the additional measurement locations. The estimated CNEL noise levels at locations S1 to S2 range from 57.7 to 68.2 dBA CNEL. The short-term noise monitoring results printouts and Leq to CNEL conversions are included in Appendix 4.2 and 4.3, respectively.

The results of the noise level monitoring shows that the ambient noise levels in the study area are currently below the City of Ontario exterior noise levels of 65 dBA CNEL for residential uses.

5.0 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

5.1 FHWA Traffic Noise Prediction Model

The roadway noise impacts from vehicular traffic were projected using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model-FHWA-RD-77-108 (the "FHWA Model"). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

5.2 Traffic Noise Prediction Model Inputs

Table 5-1 presents the FHWA Traffic Noise Prediction Model roadway parameters used in this analysis. Soft site conditions were used to develop the noise contours to analyze the traffic noise impacts to the study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Based on our experience, soft site conditions better represent the noise level contours.

The Existing, Project Phase 1 (Year 2012), and Project Buildout average daily traffic volumes used for this study and presented in Table 5-2 were provided by the Tuscana Village Specific Plan Impact Analysis prepared by Urban Crossroads, Inc. in February 2011.

Table 5-3 presents the hourly traffic flow distributions (vehicle mix) used for this analysis.

Table 5-1

Off-Site Roadway Parameters[1]

Roadway	Segment	Roadway Classification	Vehicle Speed (MPH)	Site Conditions
Milliken Avenue	n/o SR-60	6 Lane Divided Arterial	40	Soft
Milliken Avenue	b/w SR-60 and Street "B"	8 Lane Divided Arterial	40	Soft
Milliken Avenue	b/w Street "B" and Riverside Drive	8 Lane Divided Arterial	40	Soft
Hamner Avenue	b/w Riverside Drive and Samantha Drive	6 Lane Divided Arterial	40	Soft
Hamner Avenue	b/w Samantha Drive and Chino Avenue	6 Lane Divided Arterial	40	Soft
Hamner Avenue	b/w Chino Avenue and Cantu-Galleano Ranch Road	6 Lane Divided Arterial	40	Soft
Hamner Avenue	s/o Cantu-Galleano Ranch Road	6 Lane Divided Arterial	40	Soft
Mill Creek Road	n/o Riverside Drive	Local Street	35	Soft
Mill Creek Road	s/o Riverside Drive	Standard Arterial	35	Soft
Sharp Street	b/w Riverside Drive and Samantha Drive	Local Street	35	Soft
Riverside Drive	w/o Mill Creek Road	Standard Arterial	50	Soft
Riverside Drive	b/w Mill Creek Road and Street "A"	Standard Arterial	50	Soft
Riverside Drive	b/w Street "A" and Milliken Avenue	Standard Arterial	50	Soft
Riverside Drive	b/w Milliken Avenue and Sharp Street	Standard Arterial	50	Soft
Riverside Drive	b/w Sharp Street and I-15	Standard Arterial	50	Soft
Samantha Drive	b/w Milliken Avenue and Sharp Street	Local Street	35	Soft
Cantu-Galleano Ranch Road	b/w Hamner Avenue and I-15	Collector Street	35	Soft
Cantu-Galleano Ranch Road	b/w I-15 and Wineville Road	Collector Street	35	Soft

[1] According to the Tuscana Village Specific Plan Traffic Impact Analysis by Mountain Pacific, Inc. in April 2011.

Table 5-2

Average Daily Traffic For Existing, Year 2012, And Project Buildout Conditions

Roadway	Segment	Average Daily Traffic (1,000's)				
		Existing	Year 2012		General Plan Buildout	
			No Project	With Project	No Project	With Project
Milliken Avenue	n/o SR-60	15.2	17.6	18.2	46.3	46.3
Milliken Avenue	b/w SR-60 and Street "B"	13.2	15.4	17.1	57.6	57.3
Milliken Avenue	b/w Street "B" and Riverside Drive	12.1	16.3	17.3	60.3	54.2
Hamner Avenue	b/w Riverside Drive and Samantha Drive	11.7	14.8	15.4	54.7	54.8
Hamner Avenue	b/w Samantha Drive and Chino Avenue	11.0	13.9	14.4	54.5	54.9
Hamner Avenue	b/w Chino Avenue and Cantu-Galleano Ranch Road	10.8	13.4	14.0	40.0	40.4
Hamner Avenue	s/o Cantu-Galleano Ranch Road	11.8	13.7	13.9	31.2	31.4
Mill Creek Road	n/o Riverside Drive	2.4	2.7	2.9	7.1	7.1
Mill Creek Road	s/o Riverside Drive	1.0	1.6	1.7	2.8	2.2
Sharp Street	b/w Riverside Drive and Samantha Drive	0.7	0.7	0.7	0.9	0.9
Riverside Drive	w/o Mill Creek Road	7.5	9.1	9.5	19.5	19.6
Riverside Drive	b/w Mill Creek Road and Street "A"	6.2	7.9	8.7	17.4	16.8
Riverside Drive	b/w Street "A" and Milliken Avenue	6.3	8.7	11.3	22.3	15.1
Riverside Drive	b/w Milliken Avenue and Sharp Street	4.1	5.5	5.6	16.1	16.1
Riverside Drive	b/w Sharp Street and I-15	3.9	5.1	5.2	16.6	16.6
Samantha Drive	b/w Milliken Avenue and Sharp Street	0.4	0.5	0.5	0.6	0.6
Cantu-Galleano Ranch Road	b/w Hamner Avenue and I-15	5.7	7.4	7.7	41.2	41.6
Cantu-Galleano Ranch Road	b/w I-15 and Wineville Road	6.3	15.6	15.7	60.4	60.6

[1] According to the Tuscana Village Specific Plan Traffic Impact Analysis by Mountain Pacific, Inc. in April 2011.

The vehicle mixes provided on Table 5-3 reflect a typical Southern California vehicle mix for city roadways as well as counted truck mix data for the Pomona Freeway (SR-60) provided by the Caltrans Traffic Data Branch 2009 Truck Mix Report. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model.

Table 5-3

Hourly Traffic Flow Distribution

Motor-Vehicle Type	Daytime (7 am to 7 pm)	Evening (7 pm to 10 pm)	Night (10 pm to 7 am)	Total % Traffic Flow
City Roadways[1]				
Automobiles	77.5%	12.9%	9.6%	97.42%
Medium Trucks	84.8%	4.9%	10.3%	1.84%
Heavy Trucks	86.5%	2.7%	10.8%	0.74%
SR-60[2]				
Automobiles	75.0%	14.0%	10.5%	85.70%
Medium Trucks	48.0%	2.0%	50.0%	3.50%
Heavy Trucks	48.0%	2.0%	50.0%	10.80%

[1] Typical Southern California vehicle mix.

[2] Based the Caltrans 2010 Annual Average Daily Truck Traffic Report.

6.0 OFF-SITE TRANSPORTATION EXTERIOR NOISE IMPACTS

To assess the off-site noise level impacts associated with development of the proposed Project, noise contours were developed for the following traffic scenarios:

Existing: This scenario refers to the existing traffic noise conditions, without the proposed Project.

Project Phase 1 (Year 2012) Without / With Project: This scenario refers to the background noise conditions at Project Phase 1 (Year 2012) without and with the proposed Project.

Project Buildout Without / With Project: This scenario refers to the background noise conditions at Project Buildout without and with the proposed Project.

6.1 Traffic Noise Contour Boundaries

Traffic noise contour boundaries are often desired by local land planning and zoning authorities to represent sound level exposures on land that is being considered for development and is adjacent to highways. Noise contour boundaries represent the equal levels of noise exposure and are measured from the center of the roadway. Traffic noise contour boundaries are typically calculated at distances of 100 feet from a roadway centerline. CNEL noise contour boundaries are also determined below for the 55, 60, 65 and 70 dBA noise levels. The off-site transportation noise contour calculations are presented in Appendix 6.1.

The distance from the centerline of the roadway to the CNEL contour boundaries for roadways in the proposed Project's vicinity are presented in Tables 6-1 through 6-5. The noise contour boundaries do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels.

6.2 Existing Roadway Noise Levels

Table 6-1 presents the existing noise contour boundaries. Table 6-1 shows for existing traffic volumes all segments in the project study area currently do not exceed the City of Ontario and the City of Eastvale 65 dBA CNEL standard for noise sensitive residential areas at 100 feet from each roadway's centerline.

Table 6-1

Existing Conditions Noise Contours

Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Milliken Avenue	n/o SR-60	63.0	RW	73	158	340
Milliken Avenue	b/w SR-60 and Street "B"	62.8	RW	RW	154	332
Milliken Avenue	b/w Street "B" and Riverside Drive	62.4	RW	RW	146	314
Hamner Avenue	b/w Riverside Drive and Samantha Drive	61.8	RW	62	133	286
Hamner Avenue	b/w Samantha Drive and Chino Avenue	61.6	RW	RW	127	274
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	61.5	RW	RW	126	271
Hamner Avenue	s/o Cantu-Galleano Ranch Road	61.9	RW	62	133	287
Mill Creek Road	n/o Riverside Drive	53.1	RW	RW	35	74
Mill Creek Road	s/o Riverside Drive	49.5	RW	RW	RW	RW
Sharp Street	b/w Riverside Drive and Samantha Drive	47.7	RW	RW	RW	RW
Riverside Drive	w/o Mill Creek Road	62.1	RW	64	137	296
Riverside Drive	b/w Mill Creek Road and Street "A"	61.2	RW	56	121	260
Riverside Drive	b/w Street "A" and Milliken Avenue	61.3	RW	57	122	263
Riverside Drive	b/w Milliken Avenue and Sharp Street	59.4	RW	RW	92	198
Riverside Drive	b/w Sharp Street and I-15	59.2	RW	RW	89	191
Samantha Drive	b/w Milliken Avenue and Sharp Street	45.3	RW	RW	RW	RW
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	56.9	RW	RW	62	134
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	57.4	RW	RW	67	144

[1] "RW" = Location of the respective noise contour falls within the right-of-way of the road

Table 6-2

Year 2012 Without Project Conditions Noise Contours

Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Milliken Avenue	n/o SR-60	63.6	RW	81	174	375
Milliken Avenue	b/w SR-60 and Street "B"	63.5	RW	79	171	368
Milliken Avenue	b/w Street "B" and Riverside Drive	63.7	RW	82	178	382
Hamner Avenue	b/w Riverside Drive and Samantha Drive	62.9	RW	72	155	334
Hamner Avenue	b/w Samantha Drive and Chino Avenue	62.6	RW	69	149	321
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	62.4	RW	67	145	313
Hamner Avenue	s/o Cantu-Galleano Ranch Road	62.5	RW	68	147	318
Mill Creek Road	n/o Riverside Drive	53.6	RW	RW	37	80
Mill Creek Road	s/o Riverside Drive	51.5	RW	RW	RW	59
Sharp Street	b/w Riverside Drive and Samantha Drive	47.7	RW	RW	RW	RW
Riverside Drive	w/o Mill Creek Road	62.9	RW	72	156	336
Riverside Drive	b/w Mill Creek Road and Street "A"	62.3	RW	66	142	306
Riverside Drive	b/w Street "A" and Milliken Avenue	62.7	RW	70	152	326
Riverside Drive	b/w Milliken Avenue and Sharp Street	60.7	RW	52	112	240
Riverside Drive	b/w Sharp Street and I-15	60.4	RW	RW	106	229
Samantha Drive	b/w Milliken Avenue and Sharp Street	46.3	RW	RW	RW	RW
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	58.1	RW	RW	74	160
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	61.3	RW	57	122	263

[1] "RW" = Location of the respective noise contour falls within the right-of-way of the road

Table 6-3

Year 2012 With Project Conditions Noise Contours

Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Milliken Avenue	n/o SR-60	63.8	RW	83	178	384
Milliken Avenue	b/w SR-60 and Street "B"	63.9	RW	85	183	395
Milliken Avenue	b/w Street "B" and Riverside Drive	64.0	RW	86	185	398
Hamner Avenue	b/w Riverside Drive and Samantha Drive	63.0	RW	74	159	343
Hamner Avenue	b/w Samantha Drive and Chino Avenue	62.7	RW	71	152	328
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	62.6	RW	69	150	322
Hamner Avenue	s/o Cantu-Galleano Ranch Road	62.6	RW	69	149	321
Mill Creek Road	n/o Riverside Drive	53.9	RW	RW	39	84
Mill Creek Road	s/o Riverside Drive	51.8	RW	RW	RW	61
Sharp Street	b/w Riverside Drive and Samantha Drive	47.7	RW	RW	RW	RW
Riverside Drive	w/o Mill Creek Road	63.1	RW	75	161	346
Riverside Drive	b/w Mill Creek Road and Street "A"	62.7	RW	70	152	326
Riverside Drive	b/w Street "A" and Milliken Avenue	63.8	RW	84	180	389
Riverside Drive	b/w Milliken Avenue and Sharp Street	60.8	RW	52	113	243
Riverside Drive	b/w Sharp Street and I-15	60.5	RW	RW	108	232
Samantha Drive	b/w Milliken Avenue and Sharp Street	46.3	RW	RW	RW	RW
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	58.2	RW	RW	76	164
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	61.3	RW	57	123	264

[1] "RW" = Location of the respective noise contour falls within the right-of-way of the road

Table 6-4

Project Buildout Without Project Conditions Noise Contours

Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Milliken Avenue	n/o SR-60	67.8	72	154	332	715
Milliken Avenue	b/w SR-60 and Street "B"	69.2	89	191	412	887
Milliken Avenue	b/w Street "B" and Riverside Drive	69.4	91	197	425	915
Hamner Avenue	b/w Riverside Drive and Samantha Drive	68.5	80	172	371	799
Hamner Avenue	b/w Samantha Drive and Chino Avenue	68.5	80	172	370	797
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	67.2	65	140	301	649
Hamner Avenue	s/o Cantu-Galleano Ranch Road	66.1	RW	118	255	550
Mill Creek Road	n/o Riverside Drive	57.8	RW	RW	71	153
Mill Creek Road	s/o Riverside Drive	53.9	RW	RW	RW	85
Sharp Street	b/w Riverside Drive and Samantha Drive	48.8	RW	RW	RW	39
Riverside Drive	w/o Mill Creek Road	66.2	56	120	260	559
Riverside Drive	b/w Mill Creek Road and Street "A"	65.7	52	112	241	518
Riverside Drive	b/w Street "A" and Milliken Avenue	66.8	61	132	284	611
Riverside Drive	b/w Milliken Avenue and Sharp Street	65.4	RW	106	228	492
Riverside Drive	b/w Sharp Street and I-15	65.5	RW	108	233	502
Samantha Drive	b/w Milliken Avenue and Sharp Street	47.1	RW	RW	RW	RW
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	65.5	50	108	233	502
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	67.2	65	140	301	648

[1] "RW" = Location of the respective noise contour falls within the right-of-way of the road

Table 6-5

Project Buildout With Project Conditions Noise Contours

Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Milliken Avenue	n/o SR-60	67.8	72	154	332	715
Milliken Avenue	b/w SR-60 and Street "B"	69.2	88	190	410	884
Milliken Avenue	b/w Street "B" and Riverside Drive	69.0	85	184	395	852
Hamner Avenue	b/w Riverside Drive and Samantha Drive	68.5	80	172	371	800
Hamner Avenue	b/w Samantha Drive and Chino Avenue	68.6	80	173	372	801
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	67.2	65	141	303	653
Hamner Avenue	s/o Cantu-Galleano Ranch Road	66.1	RW	119	256	552
Mill Creek Road	n/o Riverside Drive	57.8	RW	RW	71	153
Mill Creek Road	s/o Riverside Drive	52.9	RW	RW	RW	72
Sharp Street	b/w Riverside Drive and Samantha Drive	48.8	RW	RW	RW	39
Riverside Drive	w/o Mill Creek Road	66.2	56	121	260	561
Riverside Drive	b/w Mill Creek Road and Street "A"	65.6	51	109	235	506
Riverside Drive	b/w Street "A" and Milliken Avenue	65.1	RW	102	219	471
Riverside Drive	b/w Milliken Avenue and Sharp Street	65.4	RW	106	228	492
Riverside Drive	b/w Sharp Street and I-15	65.5	RW	108	233	502
Samantha Drive	b/w Milliken Avenue and Sharp Street	47.1	RW	RW	RW	RW
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	65.6	51	109	235	506
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	67.2	65	140	302	650

[1] "RW" = Location of the respective noise contour falls within the right-of-way of the road

6.3 Phase 1 (Year 2012) Project Traffic Noise Level Contributions

Table 6-6 presents a comparison of the Phase 1 (Year 2012) without and with the proposed Project noise levels shown in Tables 6-2 and 6-3. The roadway noise impacts will increase on all segments from 0.0 dBA CNEL to 1.1 dBA CNEL with the development of the proposed Project.

6.4 Project Buildout Project Traffic Noise Level Contributions

Table 6-7 presents a comparison of the Project Buildout without and with the proposed Project noise levels shown in Tables 6-4 and 6-5. The roadway noise impacts will increase on all segments from -1.7 dBA CNEL to 0.1 dBA CNEL with the development of the proposed Project. The proposed project provides a less intense use than what was assumed in the City of Ontario General Plan and therefore some volumes for the with project scenario are lower than the base General Plan volumes. Segments along Milliken Avenue, Riverside Drive, and Mill Creek Road which have the highest percentage of the project trip distribution have modeled project buildout volumes less that those predicted in the City of Ontario General Plan. The segment which sees the greatest decrease in traffic volumes is Riverside Drive between Street "A" and Milliken Avenue from 22,300 to 15,100 as shown in Table 5-2.

6.5 Off-Site Transportation Related Project Noise Impacts

Project-related vehicular source noise may affect permanent and on-going ambient noise conditions and would not be considered a temporary or periodic noise source. Applying the Thresholds of Significance discussed in Section 3 of this report, potentially permanent increases in the ambient noise levels generated by Project traffic will be considered potentially significant if:

a) Vehicular source noise exceeds applicable City standards;

b) Ambient conditions are within the normally acceptable community noise exposure levels identified in the Noise Element, and the Project increases the noise to levels above the normally acceptable community noise exposure at any sensitive receptor by an audible amount (3 dB or more) or;

Table 6-6

Year 2012 Off-Site Project Related Traffic Noise Impacts

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
		No Project	With Project	Project Contribution	
Milliken Avenue	n/o SR-60	63.6	63.8	0.2	NO
Milliken Avenue	b/w SR-60 and Street "B"	63.5	63.9	0.4	NO
Milliken Avenue	b/w Street "B" and Riverside Drive	63.7	64.0	0.3	NO
Hamner Avenue	b/w Riverside Drive and Samantha Drive	62.9	63.0	0.1	NO
Hamner Avenue	b/w Samantha Drive and Chino Avenue	62.6	62.7	0.1	NO
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	62.4	62.6	0.2	NO
Hamner Avenue	s/o Cantu-Galleano Ranch Road	62.5	62.6	0.1	NO
Mill Creek Road	n/o Riverside Drive	53.6	53.9	0.3	NO
Mill Creek Road	s/o Riverside Drive	51.5	51.8	0.3	NO
Sharp Street	b/w Riverside Drive and Samantha Drive	47.7	47.7	0.0	NO
Riverside Drive	w/o Mill Creek Road	62.9	63.1	0.2	NO
Riverside Drive	b/w Mill Creek Road and Street "A"	62.3	62.7	0.4	NO
Riverside Drive	b/w Street "A" and Milliken Avenue	62.7	63.8	1.1	NO
Riverside Drive	b/w Milliken Avenue and Sharp Street	60.7	60.8	0.1	NO
Riverside Drive	b/w Sharp Street and I-15	60.4	60.5	0.1	NO
Samantha Drive	b/w Milliken Avenue and Sharp Street	46.3	46.3	0.0	NO
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	58.1	58.2	0.1	NO
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	61.3	61.3	0.0	NO

[1] A significant impact is considered both a level above 65 dBA CNEL and an increase greater than 3.0 dBA.

Table 6-7

Project Buildout Off-Site Project Related Traffic Noise Impacts

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
		No Project	With Project	Project Contribution	
Milliken Avenue	n/o SR-60	67.8	67.8	0.0	NO
Milliken Avenue	b/w SR-60 and Street "B"	69.2	69.2	0.0	NO
Milliken Avenue	b/w Street "B" and Riverside Drive	69.4	69.0	-0.4	NO
Hamner Avenue	b/w Riverside Drive and Samantha Drive	68.5	68.5	0.0	NO
Hamner Avenue	b/w Samantha Drive and Chino Avenue	68.5	68.6	0.1	NO
Hamner Avenue	b/w Chino Ave and Cantu-Galleano Ranch Rd.	67.2	67.2	0.0	NO
Hamner Avenue	s/o Cantu-Galleano Ranch Road	66.1	66.1	0.0	NO
Mill Creek Road	n/o Riverside Drive	57.8	57.8	0.0	NO
Mill Creek Road	s/o Riverside Drive	53.9	52.9	-1.0	NO
Sharp Street	b/w Riverside Drive and Samantha Drive	48.8	48.8	0.0	NO
Riverside Drive	w/o Mill Creek Road	66.2	66.2	0.0	NO
Riverside Drive	b/w Mill Creek Road and Street "A"	65.7	65.6	-0.1	NO
Riverside Drive	b/w Street "A" and Milliken Avenue	66.8	65.1	-1.7	NO
Riverside Drive	b/w Milliken Avenue and Sharp Street	65.4	65.4	0.0	NO
Riverside Drive	b/w Sharp Street and I-15	65.5	65.5	0.0	NO
Samantha Drive	b/w Milliken Avenue and Sharp Street	47.1	47.1	0.0	NO
Cantu-Galleano Ranch Rd.	b/w Hamner Avenue and I-15	65.5	65.6	0.1	NO
Cantu-Galleano Ranch Rd.	b/w I-15 and Wineville Road	67.2	67.2	0.0	NO

[1] A significant impact is considered both a level above 65 dBA CNEL and an increase greater than 3.0 dBA.

c) Ambient conditions exceed the normally acceptable community noise exposure level identified in the Noise Element, *and* the Project increases the ambient noise at any sensitive receptor by an audible amount (3 dB or more).

As indicated above, for all other roadway segments, the Project's incremental vehicular-source noise contributions will be considered "barely perceptible" (less than 3.0 dBA CNEL) and therefore, no mitigation is required.

7.0 ON-SITE TRANSPORTATION NOISE IMPACTS

The project site will be subjected to transportation and non-transportation related noise impacts. This section discusses the potential noise impacts from the adjacent streets to the noise sensitive residential portions of the proposed project and the potential stationary noise impacts associated with the operation of the proposed commercial properties to surrounding noise sensitive uses. The Cities of Ontario and Eastvale do not consider the commercial property within the proposed project study area noise sensitive and therefore, mitigation measures will be considered for noise-sensitive residential areas only with in this report.

Currently, the northern portion of the project site is exposed to traffic noise levels from the Pomona Freeway (SR-60), the eastern portion is exposed to traffic noise level impacts from Milliken Avenue, and the southern portion is exposed to traffic noise level impacts from Riverside Drive . The future traffic related noise impacts to the noise sensitive residential portion of the project site will be caused by traffic on Riverside Drive, Street "A", Street "B" as well as traffic on the Pomona Freeway (SR-60). Using the FHWA traffic noise prediction model and the parameters outlined in Table 7-1, calculations of the expected future noise impacts were completed. Table 7-2 presents a summary of future on-site noise contours from the project site roadways. For the purpose of this analysis, all roadways were considered flat and do not take into account and future intervening buildings on the Galleano Property that will reduce potential noise impacts. Based on the location of the traffic noise contours produced by the traffic noise impacts from Riverside Drive, Milliken Avenue and the SR-60 Freeway as shown in Exhibit 7-A, the southernmost units of the residential component will be located within the 70 dBA CNEL contour. The calculations for the on-site traffic noise contours are presented in Appendix 7.1.

The proposed residential units will be a multi-family attached product type. The City of Ontario Noise Element does not define any noise sensitive private areas for multi-family uses. Once specific grading plans and architectural plans are finalized, a final noise study shall demonstrate that interior noise levels would be reduced to less than 45 dBA CNEL.

Table 7-1

On-Site Roadway Parameters[1]

Roadway	Segment	Roadway Classification	Buildout Average Daily Traffic (1,000's)	Vehicle Speed (MPH)	Site Conditions
Milliken Avenue	b/w SR-60 and Street "B"	8 Lane Divided Arterial	57.6	40	Soft
Milliken Avenue	b/w Street "B" and Riverside Drive	8 Lane Divided Arterial	60.3	40	Soft
Riverside Drive	b/w Mill Creek Road and Street "A"	Standard Arterial	17.4	50	Soft
Riverside Drive	b/w Street "A" and Milliken Avenue	Standard Arterial	22.3	50	Soft
Hartford Street	b/w Street "A" and Milliken Avenue	Local Street	2.1	35	Soft
Street "B"	b/w Street "A" and Milliken Avenue	Local Street	11.6	35	Soft
Street "A"	b/w Hartford Street and Riverside Drive	Local Street	6.8	35	Soft

[1] According to the Tuscana Village Specific Plan Traffic Impact Analysis by Mountain Pacific, Inc. in April 2011.

Table 7-2

Project Buildout On-Site Noise Contours[1]

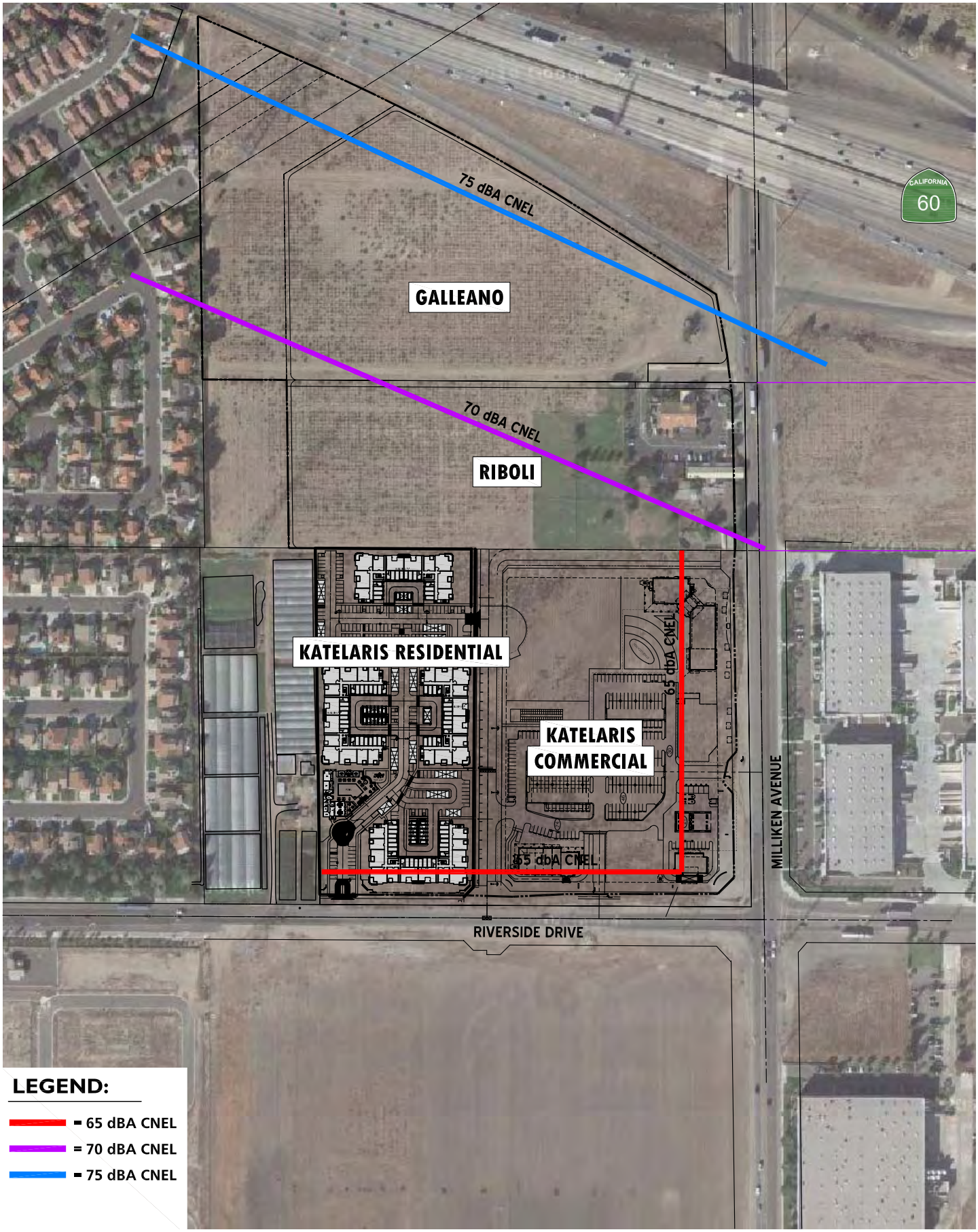
Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)				
			75 dBA CNEL	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Street "A"	b/w Hartford Street and Riverside Drive	57.6	RW	RW	RW	69	149
Hartford Street	b/w Street "A" and Milliken Avenue	52.5	RW	RW	RW	RW	RW
Street "B"	b/w Street "A" and Milliken Avenue	59.9	RW	RW	RW	99	213
Milliken Avenue	b/w SR-60 and Street "B"	69.2	RW	89	191	412	887
Milliken Avenue	b/w Street "B" and Riverside Drive	69.4	RW	91	197	425	915
Riverside Drive	b/w Mill Creek Road and Street "A"	65.7	RW	52	112	241	518
Riverside Drive	b/w Street "A" and Milliken Avenue	66.8	RW	61	132	284	611
SR-60[2]	w/o Milliken Ave.	-	400	1,000	-	-	-

[1] "RW" = Location of the respective noise contour falls within the right-of-way of the road

[2] Approximate location of the SR-60 Noise Contours provided by Draft EIR of the Ontario Plan Future Transportation Noise Contours.

EXHIBIT 7-A

ON-SITE TRANSPORTATION RELATED NOISE CONTOURS



8.0 PROJECT SITE OPERATIONAL ACTIVITY RELATED NOISE IMPACTS

This section analyzes the potential on-site operational noise impacts resulting from the development of the proposed Tuscana Village Specific Plan. Currently, the specific location of operational noise sources within the Galleano and Riboli parcels located north of the Katelaris Commercial and Residential parcels are not known.

Once a specific site plan is created, a noise study shall be completed to assess impacts from those parcels to the neighboring existing single-family homes west of the project site. For the purposes of this analysis, it is assumed that the Galleano parcel directly north of the Katelaris Residential parcel and east of the existing single-family homes, will contain business park uses which commonly accept deliveries by way of 2-axle trucks. These were modeled at distance of 50 feet from the residential property lines of the existing single-family homes and proposed Katelaris Residential development to be conservative. Additionally, the commercial uses south of Riverside Drive and east of Milliken Avenue are not considered noise sensitive but operational noise level impacts were calculated for completion.

8.1 Project Related Stationary Source Noise

The stationary noise impacts associated with the proposed project include delivery trucks, car wash, speakerphones, general vehicle activities, and roof-top air conditioning units. The project is surrounded by an existing nursery and noise sensitive single-family homes to the west, an existing child care facility to the north, and commercial land uses to the west and south.

8.2 Reference Noise Level Impacts

This section provides a detailed description of the reference noise level measurement results shown on Table 8-1. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading docks, trash compactors, speakerphones, parking lot activities and roof-top air conditioning units all operating simultaneously. In reality, these noise level impacts will vary throughout the day. The stationary noise source locations expected on the project site are shown on Exhibit 8-A.

Table 8-1

Reference Noise Level Measurements[1]

Noise Source	Duration (mm:ss)	Distance From Source (Feet)	Noise Source Height (Feet)	Drop-Off Rate[6] (Leq dBA)	Noise Level (Leq dBA)
Delivery Truck[1]	3:00	40.0	8.0	6.0	60.8
Car Wash[2]	-	140.0	8.0	6.0	60.0
Air Conditioning[3]	2:00	100.0	3.0	6.0	51.8
Speakerphones[4]	-	3.0	3.0	6.0	73.2
Vehicle Activity[5]	10:00	6.0	3.0	6.0	63.8

[1] As measured by Urban Crossroads, Inc. on 1/4/2008

[2] Data taken from the CarMax EIR completed by Michael Brandman Associates on 5/17/2007.

[3] As measured by Urban Crossroads, Inc. on 5/29/2001

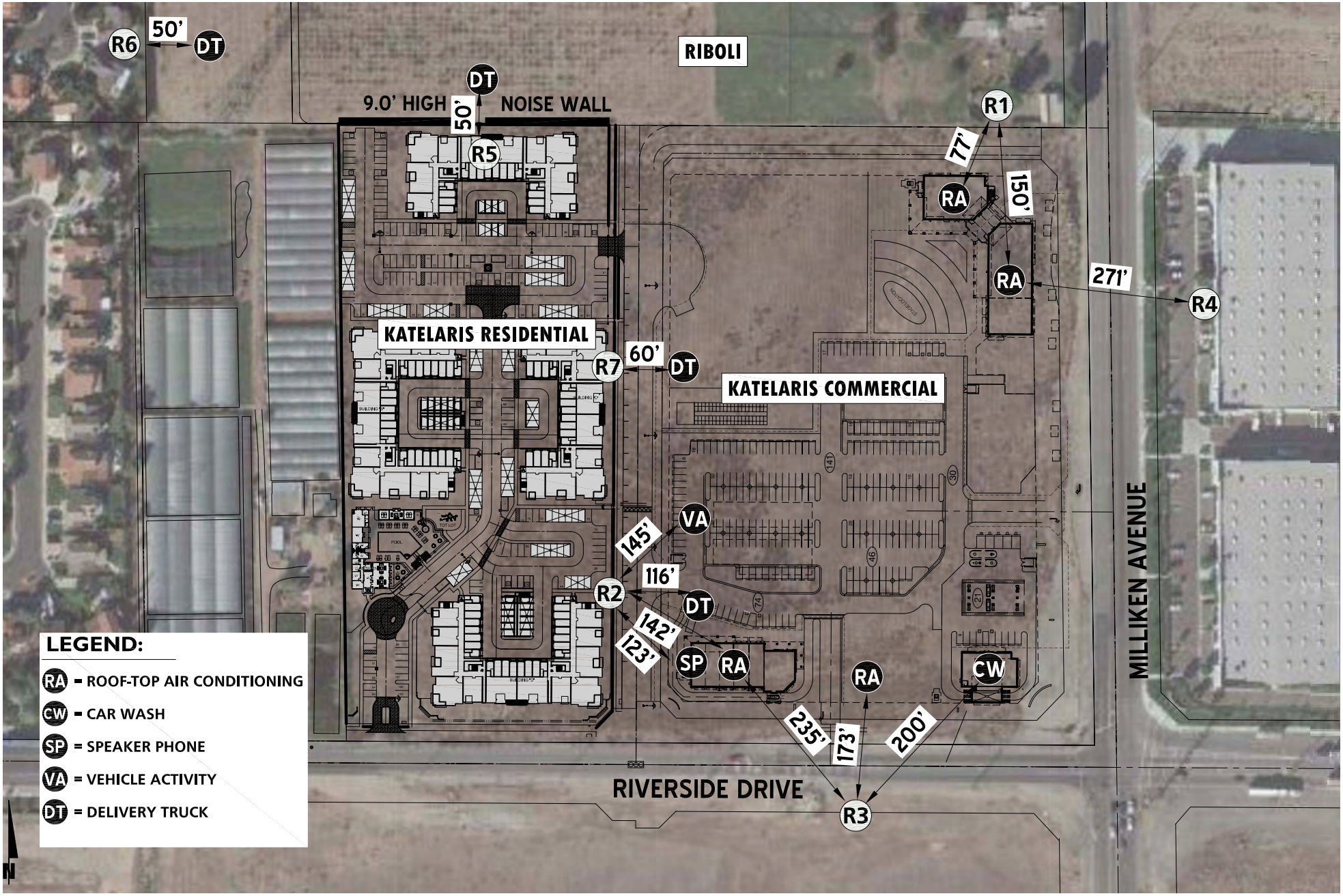
[4] Data provided by HM Electronics Inc. for a typical HME SPP2 speaker post.

[5] As measured by RKJK & Associates, Inc. on 6/3/99.

[6] Noise level (dBA) drop-off rate per doubling of distance.

EXHIBIT 8-A

PROJECT OPERATION RELATED NOISE IMPACTS



8.2.1 Delivery Trucks

In order to evaluate the noise impacts associated with delivery truck activities, reference noise level measurements were taken at an Albertson's Shopping Center loading area in Irvine by Urban Crossroads Inc. on January 4, 2008. The measurements include loading and unloading of trucks with roll-up doors, truck drive-by noise, and truck engine noise. The unmitigated exterior noise levels were measured at 60.8 dBA Leq at a distance of 40 feet from the delivery trucks.

8.2.2 Car Wash

In order to assess the impacts created by the proposed car wash planned on the southeastern portion of the project site, reference noise levels were gathered from the CarMax EIR completed by Michael Brandman Associates on May 17, 2007. The unmitigated exterior noise levels were measured at 60.0 dBA Leq at a distance of 140 feet from the car wash.

8.2.3 Air Conditioning Units

In order to assess the impacts created by the roof-top air conditioning units at the planned project site, reference noise levels were gathered from the Albertson's Shopping Center in Ladera Ranch, CA by Urban Crossroads Inc. on May 29, 2001. The unmitigated exterior noise levels were measured at 51.8 dBA Leq at a distance of 100 feet from the air-conditioning units.

8.2.4 Drive-thru Speakerphones

For the purpose of this analysis, the anticipated speakerphone noise impacts are based on data provided by HM Electronics, Inc for a typical speakerphone used at a fast-food drive thru. According to the manufacturer data provided, the speakerphone noise level is 73.2 dBA Leq at 3 feet away.

8.2.5 Vehicle Activity

To evaluate on-site automobile generated noise impacts, noise level measurements were taken by RKJK & Associates, Inc. on June 3, 1999. At a distance of 6 feet from the noise source, the reference noise levels associated with vehicle activity were measured at 63.8 dBA Leq at a distance of 6 feet. This is mostly due to engine stop-and–go and idling.

8.3 Project Only Stationary Source Noise Impacts

Based upon the reference noise levels provided on Table 8-1, it is possible to project noise levels from the proposed commercial center to the adjacent noise-sensitive uses. The noise level projections were calculated based on the site plan showing the spatial relationship between the potential on-site noise sources and the noise receptor locations. Table 8-2 presents the expected noise level impacts associated with the proposed Tuscana Village commercial uses to the neighboring noise receptor locations surrounding the project site. The stationary source noise level projections include, where appropriate, delivery truck noise, roof-top air conditioning units, vehicle activity, car wash and speakerphones. The expected noise level impacts also take into account the planned noise wall, a 9-foot high property line walls on the north property line of the Katelaris Residential portion as well as the existing 6-foot high property line wall along the eastern property line of the existing single family homes to the west. At this time, the exact locations of the roof-top air conditioning units are unknown. Therefore, in order to identify a "worse-case" noise condition not including any potential parapet walls was completed. With the planned noise wall mitigation, the project only noise levels at the receptor locations are expected to range from 43.1 to 57.5 dBA Leq. The stationary source noise prediction calculations are included in Appendix 8.1.

8.4 Stationary Source Project Noise Level Contributions

To assess the commercial related noise level contributions, the existing ambient noise level measurements were combined with the stationary source noise level projections generated by the project.

Table 8-2

Project Only Stationary Source Impact Noise Level Projections

Receptor Location[1]	Noise Source	Distance From Source To Receptor (Feet)	Unmittigated Nosie Level (Leq dBA)	Proposed 9' Property Line Wall Noise Attenuation (dBA)	Existing 6' Property Line Wall Noise Attenuation (dBA)	Mittigated Noise Level (Leq dBA)
R1[2]	Rooftop A.C. Units	77'	54.1	-	-	-
	Rooftop A.C. Units	150'	48.3	-	-	-
	Overall Unmittigated Noise Level:		**55.1**	Overall Mittigated Noise Level:		**-**
R2	Rooftop A.C. Units	142'	48.8	-	-	-
	Delivery Trucks	116'	51.5			
	Vehicle Movements	145'	36.1	-	-	-
	Speakerphones	123'	40.9	-	-	-
	Overall Unmittigated Noise Level:		**53.7**	Overall Mittigated Noise Level:		**-**
R3	Rooftop A.C. Units	173'	47.0	-	-	-
	Rooftop A.C. Units	235'	44.4	-	-	-
	Car Wash	200'	56.9	-	-	-
	Overall Unmittigated Noise Level:		**57.5**	Overall Mittigated Noise Level:		**-**
R4	Rooftop A.C. Units	271'	43.1	-	-	-
	Overall Unmittigated Noise Level:		**43.1**	Overall Mittigated Noise Level:		**-**
R5	Delivery Trucks	60'	57.3	9.3	0.0	48.0
	Overall Unmittigated Noise Level:		**57.3**	Overall Mittigated Noise Level:		**48.0**
R6	Delivery Trucks	60'	57.3	0.0	7.3	50.0
	Overall Unmittigated Noise Level:		**57.3**	Overall Mittigated Noise Level:		**50.0**
R7[3]	Delivery Trucks	60'	57.3	0.0	0.0	57.3
	Overall Unmittigated Noise Level:		**57.3**	Overall Mittigated Noise Level:		**57.3**

[1] See Exhibit 8-A for the noise receptor locations.

[2] Receptor 1 only open during daytime hours.

[3] Receptor R7 represents a worse-case scenario for all point along the eastern property line of the Katelaris Residential development north of R2 to the Street "A" and Street "B" intersection.

Table 8-3 shows that the daytime project noise level contributions will range from 0.1 dBA Leq to 8.5 dBA Leq when compared with the loudest daytime hours. Though project related noise level impacts may contribute greater than 3.0 dBA to the existing daytime ambient noise levels, overall noise levels will remain below the 65 dBA Leq residential/child care exterior noise level standards for the City of Ontario, and, therefore, the proposed project will not create a significant daytime noise impact to the surrounding receptors.

Table 8-4 shows that the nighttime project noise level contributions will range from 0.1 dBA Leq to 7.5 dBA Leq when compared with the quietest nighttime hours. With project related noise level impacts contributing greater than 3.0 dBA to existing nighttime ambient noise levels and exceeding the City of Ontario Nighttime Multi-Family and Single-Family Residential standards, on-site operation will create a potential significant noise impact to receptors R2, R6 , and R7 as shown on Exhibit 8-A. It should be noted that noise level impact increases at receptor R5 located on the northern portion of the Katelaris Residential parcel may approach 5.2 dBA, however, with the construction of a 9.0' high property line noise wall, the overall exterior noise levels are expected to remain below the City of Ontario 50 dBA exterior noise standard, and therefore, no further mitigation was considered at this receptor during nighttime hours.

In order to reduce potentially significant noise level impacts to receptor R2, the units within the Katelaris Residential parcel located nearest the fast-food restaurant during nighttime hours, additional analysis was completed that includes restricting truck deliveries to daytime hours only. Table 8-5 presents the restricted project stationary source impact noise levels at the affected receptor. With the restricted deliveries to the fast-food restaurant, the project only noise level projections at receptor R2 will be 49.6 dBA Leq. Table 8-6 shows that the restricted operations will cause the nighttime project noise level contributions to be 2.5 dBA Leq at receptor R2 when compared with the quietest nighttime hours, and therefore, less than significant. For receptors R6 and R7, specific nighttime mitigations were not made at this time due to the location of the future Galleano and Katelaris Commercial Phase II sources being unknown. Once final plans showing the specific locations of the stationary noise sources are available, a final noise analysis shall be completed.

Table 8-3

Daytime (7 a.m. to 10 p.m.) Project Noise Contributions

Receptor Location[1]	Condition[2]	Exterior Noise Level (dBA Leq)
R1 (Child Care)	Project Only Impact Noise Total	55.1
	Existing Ambient Noise Level	52.6
	Combined Project & Ambient Noise Level	57.0
	Project Contribution	4.4
R2 (Multi-family)	Project Only Impact Noise Total	53.7
	Existing Ambient Noise Level	49.5
	Combined Project & Ambient Noise Level	55.1
	Project Contribution	5.6
R3 (Commercial)	Project Only Impact Noise Total	57.5
	Existing Ambient Noise Level	54.3
	Combined Project & Ambient Noise Level	59.2
	Project Contribution	4.9
R4 (Commercial)	Project Only Impact Noise Total	43.1
	Existing Ambient Noise Level	61.3
	Combined Project & Ambient Noise Level	61.4
	Project Contribution	0.1
R5 (Multi-family)	Project Only Impact Noise Total	48.0
	Existing Ambient Noise Level	47.3
	Combined Project & Ambient Noise Level	50.7
	Project Contribution	3.4
R6 (Single-family)	Project Only Impact Noise Total	50.0
	Existing Ambient Noise Level	47.3
	Combined Project & Ambient Noise Level	51.9
	Project Contribution	4.6
R7[3] (Multi-family)	Project Only Impact Noise Total	57.3
	Existing Ambient Noise Level	49.5
	Combined Project & Ambient Noise Level	58.0
	Project Contribution	8.5
City of Ontario Daytime Residential/Child Care Noise Standard		65.0

[1] See Exhibit 8-A for the noise receptor locations.

[2] Existing ambient noise level coincides with lowest daytime noise level recorded at nearest noise monitoring location.

[3] Receptor R7 represents a worse-case scenario for all point along the eastern property line of the Katelaris Residential development north of R2 to the Street "A" and Street "B" intersection.

Table 8-4

Nighttime (10 p.m. to 7 a.m.) Project Noise Contributions

Receptor Location[1]	Condition[2]	Exterior Noise Level (dBA Leq)
R1 (Child Care)	*Open during daytime hours only*	-
R2 (Multi-family)	Project Only Impact Noise Total	53.7
	Existing Ambient Noise Level	50.8
	Combined Project & Ambient Noise Level	55.5
	Project Contribution	4.7
R3 (Commercial)	Project Only Impact Noise Total	57.5
	Existing Ambient Noise Level	50.8
	Combined Project & Ambient Noise Level	58.3
	Project Contribution	7.5
R4 (Commercial)	Project Only Impact Noise Total	43.1
	Existing Ambient Noise Level	58.9
	Combined Project & Ambient Noise Level	59.0
	Project Contribution	0.1
R5 (Multi-family)	Project Only Impact Noise Total	48.0
	Existing Ambient Noise Level	44.3
	Combined Project & Ambient Noise Level	49.5
	Project Contribution	5.2
R6 (Single-family)	Project Only Impact Noise Total	50.0
	Existing Ambient Noise Level	44.3
	Combined Project & Ambient Noise Level	51.0
	Project Contribution	6.7
R7[3] (Multi-family)	Project Only Impact Noise Total	57.3
	Existing Ambient Noise Level	50.8
	Combined Project & Ambient Noise Level	58.2
	Project Contribution	7.4
City of Ontario Nighttime Single-Family Residential Noise Standard		45.0
City of Ontario Nighttime Multi-Family Residential Noise Standard		50.0
City of Ontario Nighttime Commercial Noise Standard		60.0

[1] See Exhibit 8-A for the noise receptor locations.

[2] Existing ambient noise level coincides with lowest daytime noise level recorded at nearest noise monitoring location.

[3] Receptor R7 represents a worse-case scenario for all point along the eastern property line of the Katelaris Residential development north of R2 to the Street "A" and Street "B" intersection.

Table 8-5

Nighttime Restricted Project Only Stationary Source Impact Noise Level Projections

Receptor Location[1]	Noise Source	Distance From Source To Receptor (Feet)	Unmittigated Nosie Level (Leq dBA)	Proposed 9' Property Line Wall Noise Attenuation (dBA)	Existing 6' Property Line Wall Noise Attenuation (dBA)	Mittigated Noise Level (Leq dBA)
R1	*Daycare not open during nighttime hours*					
	Overall Unmittigated Noise Level:		-	Overall Mittigated Noise Level:		-
R2	Rooftop A.C. Units	142'	48.8	-	-	-
	Delivery Trucks	-	*Deliveries not permitted*			
	Vehicle Movements	145'	36.1	-	-	-
	Speakerphones	123'	40.9	-	-	-
	Overall Unmittigated Noise Level:		**49.6**	Overall Mittigated Noise Level:		-
R3	*No nighttime restrictions necessary*					
	Overall Unmittigated Noise Level:		-	Overall Mittigated Noise Level:		-
R4	*No nighttime restrictions necessary*					
	Overall Unmittigated Noise Level:		-	Overall Mittigated Noise Level:		-
R5	*No nighttime restrictions necessary*					
	Overall Unmittigated Noise Level:		-	Overall Mittigated Noise Level:		-
R6	*Nighttime noise source impacts to be evaluated once final site plans are available*					
	Overall Unmittigated Noise Level:		-	Overall Mittigated Noise Level:		-
R7[2]	*Nighttime noise source impacts to be evaluated once final site plans are available*					
	Overall Unmittigated Noise Level:		-	Overall Mittigated Noise Level:		-

[1] See Exhibit 8-A for the noise receptor locations.

[2] Receptor R7 represents a worse-case scenario for all point along the eastern property line of the Katelaris Residential development north of R2 to the Street "A" and Street "B" intersection.

Table 8-6

Restricted Operations Nighttime (10 p.m. to 7 a.m.) Project Noise Contributions

Receptor Location[1]	Condition[2]	Exterior Noise Level (dBA Leq)
R1 (Child Care)	*Open during daytime hours only*	-
R2 (Multi-family)	Project Only Impact Noise Total	49.6
	Existing Ambient Noise Level	50.8
	Combined Project & Ambient Noise Level	53.3
	Project Contribution	2.5
R3 (Commercial)	*No Restrictions Necessary*	-
R4 (Commercial)	*No Restrictions Necessary*	-
R5 (Multi-family)	*No Restrictions Necessary*	-
R6 (Single-family)	*Nighttime noise source impacts to be evaluated once final site plans are available*	-
		-
R7[3] (Multi-family)	*Nighttime noise source impacts to be evaluated once final site plans are available*	-
		-
City of Ontario Nighttime Single-Family Residential Noise Standard		45.0
City of Ontario Nighttime Multi-Family Residential Noise Standard		50.0
City of Ontario Nighttime Commercial Noise Standard		60.0

[1] See Exhibit 8-A for the noise receptor locations.

[2] Existing ambient noise level coincides with lowest daytime noise level recorded at nearest noise monitoring location.

[3] Receptor R7 represents a worse-case scenario for all point along the eastern property line of the Katelaris Residential development north of R2 to the Street "A" and Street "B" intersection.

8.5 Project Operation-Related Activity Mitigation Measures

To minimize noise impacts on the adjacent noise sensitive uses, the project should provide the following noise mitigation measures summarized below:

- Restrict truck deliveries at the proposed drive thru restaurant to the non-noise sensitive daytime hours of 7:00 a.m. to 10:00 p.m.
- Construct a 9.0'-foot high noise wall along the northern property line of the Katelaris Residential Development as shown on Exhibit 8-A.
- A final noise analysis shall be completed once specific noise source locations are designed for the Galleano and Katelaris Commerical Phase II properties.

9.0 SHORT-TERM CONSTRUCTION NOISE IMPACTS

This section analyzes potential noise and vibration impacts resulting from the short-term construction related impacts associated with the development of the proposed Tuscana Village Specific Plan.

9.1 Construction Activities

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment, including trucks, power tools, concrete mixers and portable generators can reach high levels. The project is expected to be completed within approximately seven months. Project construction is expected to occur in six stages: demolition, site preparation, grading, building construction, paving, and architectural coating.

The Cities of Ontario and Eastvale do not maintain specific construction noise level impact standards. For the purposes of this analysis, construction related noise level impacts are exempt based on Section 5-29.06 of the City of Ontario Municipal Code states, "the following activities shall be exempt from the provisions of this chapter": Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of Section 5-29.09 which requires construction activities to occur on weekdays between the hours of 7:00 a.m. and 6:00 p.m. and on Saturday and Sunday between the hours of 9:00 a.m. and 6:00 p.m. Though exempt from the noise ordinance as a project requirement to comply with construction hours, expected noise level impacts associated with construction activities are presented below.

9.2 Construction Noise Levels

In January 2006, the Federal Highway Administration (FHWA) published a national database of construction equipment reference noise emission levels. The database, as shown in Appendix 10.1, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of

construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Noise levels generated by heavy construction equipment can range from approximately 70 dBA to noise levels in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 78 dBA measured at 50 feet from the noise source to the receptor would be reduced to 72 dBA at 100 feet from the source to the receptor, and would be further reduced to 66 dBA at 200 feet from the source to the receptor. The location of the nearest noise receptors are shown in Exhibit 9-A. Short-term construction noise levels for each stage of construction were calculated and are summarized below.

9.2.1 Demolition

Demolition activity is estimated to occur over a period of approximately four weeks or twenty working days. Table 9-1 shows that during the short-term demolition stage of construction, noise levels at nearby noise sensitive uses are expected to range from 71.2 to 87.4 dBA Leq when activities occur near the demolition boundary.

9.2.2 Site Preparation

Site preparation activity is estimated to occur over a period of approximately two weeks or ten working days. Table 9-2 shows that during the short-term preparation stage of construction, noise levels at nearby noise sensitive uses are expected to range from 65.9 to 83.4 dBA Leq when activities occur near the demolition boundary.

9.2.3 Grading

Grading activity is expected to last approximately five working-weeks or thirty days. Table 9-3 shows that during the short-term grading stage of construction, noise levels at nearby noise sensitive uses are expected to range from 70.5 to 88.0 dBA Leq when activities occur at the boundaries of grading activity.

EXHIBIT 9-A

PHASE I CONSTRUCTION RELATED NOISE IMPACTS

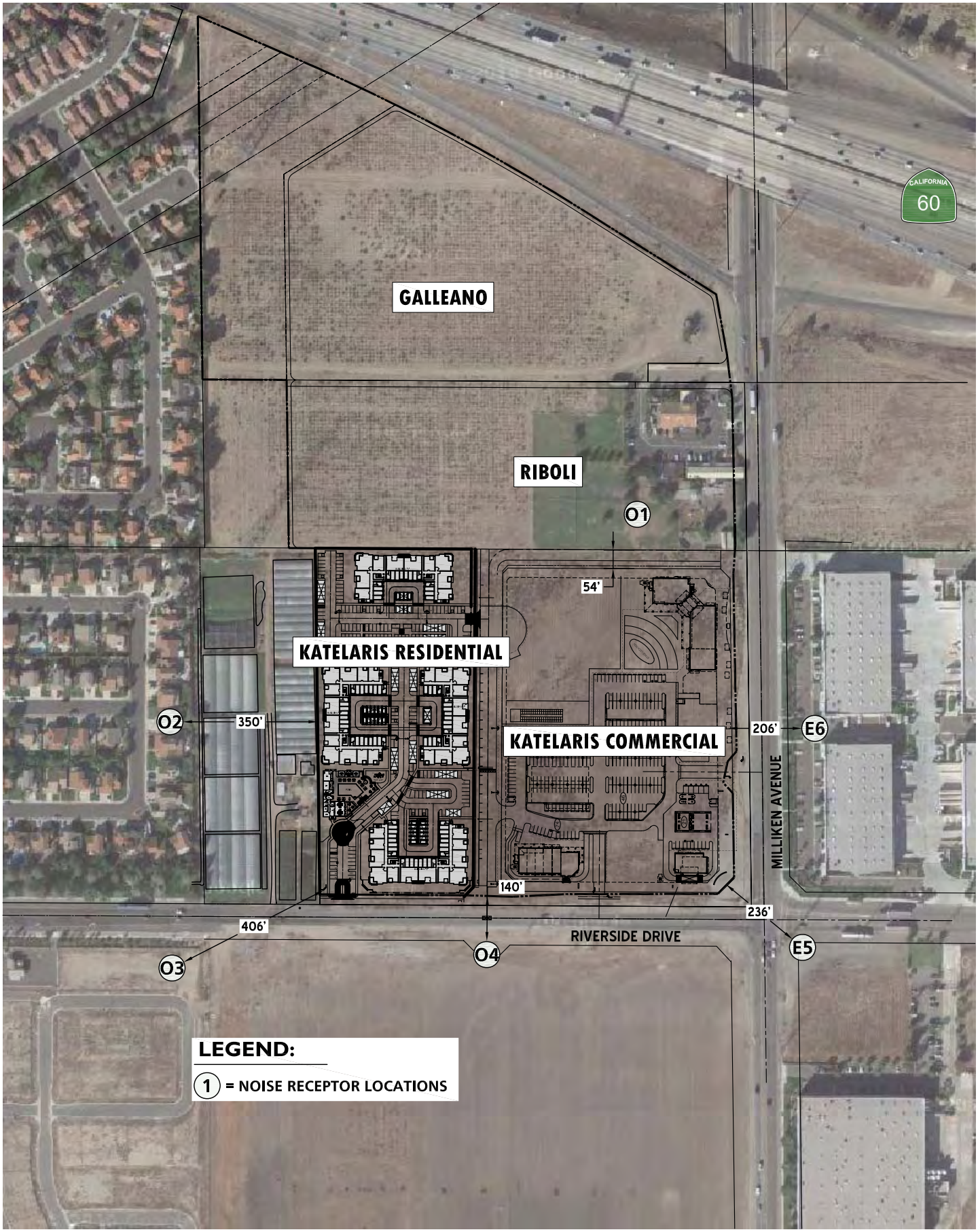


Table 9-1

Demolition Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (dBA)	Cumulative Level @ 50 Feet (dBA)
Concrete/Industrial Saws	1	20%	1.6	90.0	83.0
Rubber Tired Dozers	2	40%	3.2	79.0	78.0
Excavator	3	40%	3.2	85.0	85.8
				Cumulative Noise Levels 50 Feet (dBA)	88.1

Receiver Location[4]	Distance To Property Line (In Feet)[5]	Noise Reduction Due To Distance (dBA)	Construction Noise Level (dBA)
OR1	54	-0.7	87.4
OR2	350	-16.9	71.2
OR3	406	-18.2	69.9
OR4	140	-8.9	79.1
ER5	236	-13.5	74.6
ER6	206	-12.3	75.8

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A

[5] Distance from the nearest point of construction activity to the nearest receiver.

Table 9-2

Site Preparation Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (dBA)	Cumulative Level @ 50 Feet (dBA)
Rubber Tired Dozers	3	40%	3.2	79.0	79.8
Tractors/Loaders/Backhoes	4	40%	3.2	80.0	82.0
				Cumulative Noise Levels 50 Feet (dBA)	84.1

Receiver Location[4]	Distance To Property Line (In Feet)[5]	Noise Reduction Due To Distance (dBA)	Construction Noise Level (dBA)
OR1	54	-0.7	83.4
OR2	350	-16.9	67.2
OR3	406	-18.2	65.9
OR4	140	-8.9	75.1
ER5	236	-13.5	70.6
ER6	206	-12.3	71.8

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A

[5] Distance from the nearest point of construction activity to the nearest receiver.

Table 9-3

Grading Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (dBA)	Cumulative Level @ 50 Feet (dBA)
Scraper	2	40%	3.2	85.0	84.0
Grader	1	40%	3.2	85.0	81.0
Rubber Tired Dozers	1	40%	3.2	79.0	75.0
Tractor/Loader/Backhoe	2	40%	3.2	80.0	79.0
Excavator	2	40%	3.2	85.0	84.0
				Cumulative Noise Levels 50 Feet (dBA)	88.7

Receiver Location[4]	Distance To Property Line (In Feet)[5]	Noise Reduction Due To Distance (dBA)	Construction Noise Level (dBA)
OR1	54	-0.7	88.0
OR2	350	-16.9	71.8
OR3	406	-18.2	70.5
OR4	140	-8.9	79.8
ER5	236	-13.5	75.2
ER6	206	-12.3	76.4

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A

[5] Distance from the nearest point of construction activity to the nearest receiver.

9.2.4 Building Construction

Building construction activity is expected to last for approximately eleven months. Table 9-4 shows that during the short-term building construction stage of construction, noise levels at nearby noise sensitive uses are expected to range from 65.7 to 83.2 dBA Leq when activities occur at the boundary of building construction.

9.2.5 Paving

Paving activity is expected to last approximately four working-weeks or twenty days. Table 9-5 shows that during the short-term paving stage of construction, noise levels at nearby noise sensitive uses are expected to range from 63.3 to 80.8 dBA Leq when activities occur at the boundary of paving activities.

9.2.6 Architectural Coating

Architectural coating activity is expected to last approximately four working-weeks or twenty days. Table 9-6 shows that during the short-term architectural coating stage of construction, noise levels at nearby noise sensitive uses are expected to range from 59.1 to 75.4 dBA Leq when activities occur at the boundary of architectural coating activities.

9.3 Construction Noise Impact Reduction Practices

Based on the six phases of construction related noise impacts, the noise impacts associated with the proposed Tuscana Village Specific Plan are expected to create temporary high-level noise impacts at receptors surrounding the project site when certain activities occur near the project property line. Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce any noise level increases produced by the construction equipment to the nearby noise sensitive residential land uses.

Table 9-4

Building Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (dBA)	Cumulative Level @ 50 Feet (dBA)
Crane	1	16%	1.3	81.0	73.0
Forklifts	3	20%	1.6	75.0	72.8
Tractor/Loader/Backhoe	3	40%	3.2	80.0	80.8
Welder	1	40%	3.2	73.0	69.0
Generator Set	1	50%	4.0	82.0	79.0
				Cumulative Noise Levels 50 Feet (dBA)	83.9

Receiver Location[4]	Distance To Property Line (In Feet)[5]	Noise Reduction Due To Distance (dBA)	Construction Noise Level (dBA)
OR1	54	-0.7	83.2
OR2	350	-16.9	67.0
OR3	406	-18.2	65.7
OR4	140	-8.9	75.0
ER5	236	-13.5	70.4
ER6	206	-12.3	71.6

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A

[5] Distance from the nearest point of construction activity to the nearest receiver.

Table 9-5

Paving Equipment Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (dBA)	Cumulative Level @ 50 Feet (dBA)
Paver / Paving Equipment	4	50%	4.0	77.0	80.0
Roller	2	20%	1.6	80.0	76.0
				Cumulative Noise Levels 50 Feet (dBA)	81.5

Receiver Location[4]	Distance To Property Line (In Feet)[5]	Noise Reduction Due To Distance (dBA)	Construction Noise Level (dBA)
OR1	54	-0.7	80.8
OR2	350	-16.9	64.6
OR3	406	-18.2	63.3
OR4	140	-8.9	72.5
ER5	236	-13.5	68.0
ER6	206	-12.3	69.2

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A

[5] Distance from the nearest point of construction activity to the nearest receiver.

Table 9-6

Architectural Coating Equipment Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (dBA)	Cumulative Level @ 50 Feet (dBA)
Air Compressors	1	40%	3.2	80.0	76.0
				Cumulative Noise Levels 50 Feet (dBA)	76.0

Receiver Location[4]	Distance To Property Line (In Feet)[5]	Noise Reduction Due To Distance (dBA)	Construction Noise Level (dBA)
OR1	54	-0.7	75.4
OR2	350	-16.9	59.1
OR3	406	-18.2	57.8
OR4	140	-8.9	67.1
ER5	236	-13.5	62.5
ER6	206	-12.3	63.7

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 9-A

[5] Distance from the nearest point of construction activity to the nearest receiver.

- During all project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction.

- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment. Haul routes shall not pass sensitive land uses or residential dwellings.

9.4 Construction Vibration Impacts

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. To control short-term construction vibration related impacts, the City of Ontario has established "steady state" or long-term vibration standards which are presented in Section 3.2. The vibration impacts associated with the operation of the proposed Tuscana Village Specific Plan construction equipment are considered short-term and will not present a long-term vibration impact.

According to the Transportation and Construction-Induced Vibration Guidance Manual prepared for Caltrans, ground-borne vibration from construction activities and equipment such as such as D-8 and D-9 Caterpillars bulldozers, earthmovers and haul trucks at distances of 10 feet do not create vibration amplitudes that causes structural damage to nearby structures. Since the proposed project is not expected to employ any pile driving or rock blasting equipment and with the nearest receivers located over 50 feet from the nearest point of construction activities, impacts from groundborne vibration are anticipated to be less-than-significant.

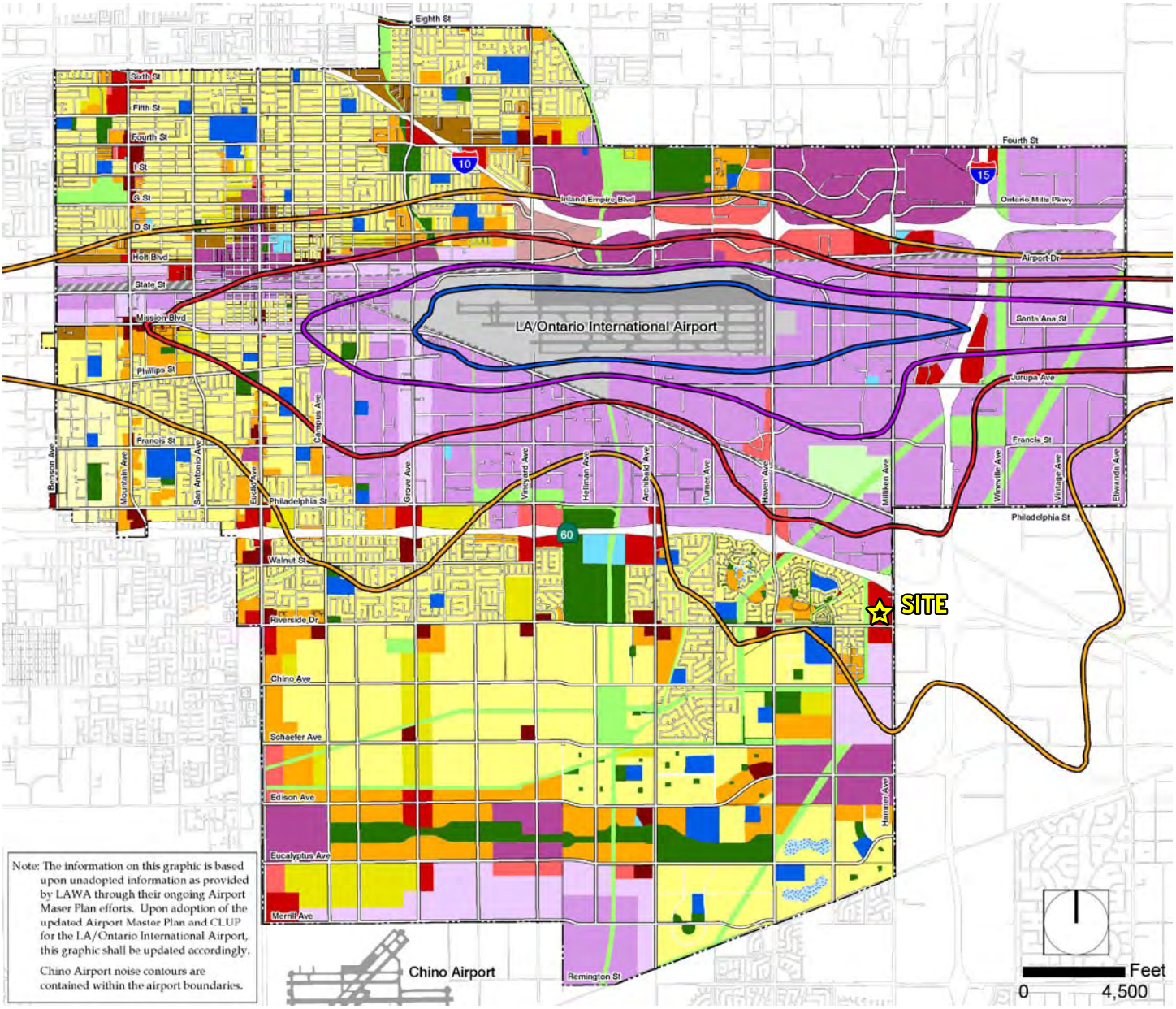
In addition to the construction related activities, operational activities at the proposed project site will not include nor require equipment, facilities, or activities that would result in perceptible ground borne vibration, thus creating no ground borne vibration impacts.

10.0 ONTARIO INTERNATIONAL AIRPORT NOISE IMPACTS

It is expected that the project site may also experience some noise impacts from aircraft operations at the Ontario International Airport. The noise contours produced by these operations are provided in Exhibit 10-A. The site is located south of the airport and is well outside the 65 dBA CNEL noise contour boundaries, therefore, it is not expected to provide any significant noise impact to the proposed project site.

EXHIBIT 10-A

ONTARIO INTERNATIONAL AIRPORT NOISE CONTOURS



Tuscana Village Specific Plan Noise Analysis
City of Ontario, CA (JN - 07674:007.dwg)

URBAN CROSSROADS

APPENDIX 3.1

City of Ontario Noise Element

5.12 NOISE

This section discusses the fundamentals of sound; examines federal, state, and local noise guidelines, policies, and standards; reviews noise levels at existing receptor locations; and evaluates potential noise impacts associated with buildout of The Ontario Plan for 2035. This evaluation uses procedures and methodologies as specified by California Department of Transportation (Caltrans), the Federal Highway Administration, and the Federal Railroad Administration. Noise calculations on which this analysis is based are included in Appendix G, *Noise Monitoring and Modeling Data.*.

5.12.1 Environmental Setting

Terminology/Noise Descriptors

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.”

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level averaged over the measurement period, regarded as an average level.
- **Day-Night Level (L_{dn}).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the levels occurring during the period from 7:00 PM to 10:00 PM and 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent and are treated as such in this assessment.

Characteristics of Sound

When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate the human,

frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. The normal range of human hearing extends from approximately 0 dBA to 140 dBA.

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, represented by points on a sharply rising curve. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 5.12-1, *Change in Sound Pressure Level, dB*, presents the subjective effect of changes in sound pressure levels.

Table 5.12-1
Change in Sound Pressure Level, dB

Change in Apparent Loudness	
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen 1988

Sound is generated from a source and decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as spreading loss.

When sound is measured for distinct time intervals, the statistical distribution of the overall sound level during that period can be obtained. The energy-equivalent sound level (L_{eq}) is the most common parameter associated with such measurements. The L_{eq} metric is a single-number noise descriptor of average sound level over a given period of time. For example, L_{50} is the noise level that is exceeded 50 percent of the time: half the time the noise exceeds this level and half the time it is less than this level. This is also the level that is exceeded 30 minutes in an hour. Similarly, the L_{02}, L_{08}, and L_{25} values are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values are the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet-time noise levels in the CNEL/L_{dn}.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear, called the threshold of pain. A sound level of 160 to 165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying less developed areas. Elevated ambient noise

levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Table 5-12-2 shows *Typical Noise Levels from Noise Sources*.

Table 5.12-2
Typical Noise Levels from Noise Sources

Common Outdoor Activities	*Noise Level (dBA)*	*Common Indoor Activities*
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation. Traffic Noise Analysis Protocol, Table 9-2136.2. October 1998

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is the velocity and the rate of change of the speed is the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During project construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. This type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).

- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.

- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all PPV and RMS velocity levels are in in/sec and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). The threshold of perception is approximately 65 VdB. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Manmade vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction operations generally include a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at up to 200 feet. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, etc., all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, and heavy loads.

Regulatory Framework

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. The City of Ontario regulates noise through the City of Ontario Municipal Code, Chapter 29, Noise. Potential noise and vibration impacts were evaluated based on the City of Ontario, Municipal Code, Federal Transit Administration (FTA) methodology, and supplemental criteria for single-event noise to determine whether a significant adverse noise impact would result from the construction and operation of the proposed project.

State of California Building Code

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, California Building Code. These noise standards are applied to new construction in California for the purpose of interior noise compatibility from exterior noise

sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

City of Ontario Land Use Compatibility Criteria

Table 5.12-3, *Land Use Compatibility for Community Noise Exposure*, is a chart prepared by the California Office of Noise Control and now included as part of the Governor's Office of Planning and Research's General Plan Guidelines (2003) and modified by the City of Ontario in the current General Plan.[1] This table provides urban planners with an integral tool to gauge the compatibility of land uses relative to existing and future noise levels.

[1] The California Office of Noise Control has since been decommissioned.

Table 5.12-3
Community Noise and Land Use Compatibility

Land Uses		CNEL (dBA)						
Category	Use	55	60	65	70	75	80	
Residential/ Lodging	Single-Family/Duplex							
	Multi-Family							
	Mobile Homes							
	Hotel/Motel							
Public/Institutional	Schools/Hospitals							
	Churches/Libraries							
	Auditoriums/Concert Halls							
Commercial	Offices							
	Retail							
Industrial	Manufacturing							
	Warehousing							
Recreational/Open Space	Parks/Playgrounds							
	Golf Courses/Riding Stables							
	Outdoor Spectator Sports							
	Outdoor Music Shells/Ampitheaters							
	Livestock/Wildlife Preserves							
	Crop Agriculture							

Clearly Acceptable:
With no special noise insulation required, assuming buildings of normal conventional construction.

Normally Acceptable:
Acoustical reports will be required for major new residential construction. Conventional construction with closed windows and fresh air supply systems of air conditioning will normally suffice.

Normally Unacceptable:
New construction should be discouraged. Noise/avigation easements required for all new construction. If new construction does proceed, a detailed analysis of noise reduction requirements must be made and necessary noise insulation features included.

Clearly Unacceptable:
No new construction should be permitted.

Source: California Office of Noise Control, Guidelines for the Preparation and Content of Noise Elements of the General Plan, February 1976. Included in the Governor's Office of Planning and Research. General Plan Guidelines. 2003. As modified by the City of Ontario in the City of Ontario General Plan. 1992.

City of Ontario – Stationary-Source Noise Standards

The City of Ontario regulates noise sources within the City through the City's Municipal Code (Title 5, Chapter 29, Noise). The City of Ontario Municipal Code has established noise standards for stationary source noise levels, as shown in Table 5.12-4, *City of Ontario Maximum Permissible Exterior Noise Levels*, at various categories of land uses in the City. The City applies the Noise Control Ordinance standards to nontransportation noise sources. These standards do not gauge the compatibility of developments in the noise environment, but provide restrictions on the amount and duration of noise generated at a property, as measured at the property line of the noise receptor. According to the City's municipal code, no person shall

operate or cause to operate any source of sound or noise at any location within the city, or allow the creation of any noise on property to exceed the levels shown in Table 5.12-4 at the receiving land use. In general, noise complaints related to the noise standards of the Municipal Code are enforced by the City of Ontario Code Enforcement Department.

Table 5.12-4
City of Ontario Maximum Permissible Exterior Noise Levels

Receiving Land Use Categories	10 PM to 7 AM.		7 AM to 10 PM	
	dBA L_{25}	dBA L_{max}	dBA L_{25}	dBA L_{max}
Residential (except multifamily)	45	65	65	85
Multifamily residential and mobile home parks	50	70	65	85
Commercial	60	80	65	85
Residential portion of mixed-use[1]	70	90	70	90
Manufacturing, Industrial, and other uses	70	90	70	90

Source: City of Ontario Municipal Code, Chapter 29, Section 5.29-04, Exterior Noise Standards.

Notes: Noise levels when measured at the property line of the receiving land use. When two or more dissimilar land uses occur on a single property, the more restrictive noise standard shall apply. If the ambient noise level exceeds the standard, the ambient noise level becomes the standard.

[1] Applies to that portion of residential property falling within 100 feet of a commercial property use, if the noise originates from that commercial property use.

Building Requirements for High Noise Impact Areas

The City of Ontario recognizes that noise levels from the Los Angeles Ontario International Airport (LAONT) exceed the standards set forth in the state's Land Use Compatibility for Community Noise exposure for the majority of surrounding land uses. Therefore, the City has established additional requirements for sound transmission control for new development in high noise impact areas surrounding the LAONT. These requirements are detailed in Title 8, Chapter 15, Sound Transmission Control in High Noise Impact Areas, of the City's Municipal Code for the purpose of allowing new development in the vicinity of the airport to safeguard health, property, and public welfare of the community. For new residential dwelling units within the 70 to 75 dBA CNEL contour, the City requires Sound Transmission Class (STC)-rated windows of at least 40 dB, roofing insulation to achieve a minimum of R-30 insulation value, STC-rated doors ranging from 35 to 40 dB, depending on whether or not the doors are directly exposed to aircraft noise, and other specific design measures that reduce interior noise levels. For new residential dwelling units within the 65 to 70 dBA CNEL contour, the City requires *Sound Transmission Class* STC-rated windows of at least 35 dB, roofing insulation to achieve a minimum of R-30 insulation value, STC-rated doors ranging from 30 to 35 dB, depending on whether or not the doors are directly exposed to aircraft noise, and other specific design measures that reduce interior noise levels.

Construction Noise Hours

The City of Ontario restricts construction activities to the weekday hours of 7:00 AM to 6:00 PM and 9: 00 AM to 6:00 PM on Saturday and Sunday. However, construction activities may occur outside of these hours if the City determines that the maintenance, repair, or improvement is necessary to maintain public services, cannot feasibly be conducted during normal business hours, or if construction activities comply with the stationary-source noise standards of the Municipal Code (see Table 5.12-4).

FTA Vibration Criteria

Vibration Annoyance

Groundborne noise is the vibration of floors and walls that may cause rattling of items such as windows or dishes on shelves, or a rumbling noise. The rumbling is created by the motion of the room surfaces, which act like a giant loudspeaker. The FTA provides criteria for acceptable levels of groundborne vibration based on the relative perception of a vibration event for vibration-sensitive land uses (see Table 5.12-5).

Table 5.12-5
Groundborne Vibration and Noise Impact Criteria – Human Annoyance

Land Use Category	Max L_v (VdB)[1]	Description
Workshop	90	Distinctly felt vibration. Appropriate to workshops and nonsensitive areas
Office	84	Felt vibration. Appropriate to offices and nonsensitive areas.
Residential – Daytime	78	Barely felt vibration. Adequate for computer equipment.
Residential – Nighttime	72	Vibration not felt, but groundborne noise may be audible inside quiet rooms.

Source: FTA 2006
[1] As measured in 1/3-octave bands of frequency over the frequency ranges of 8 to 80 Hz.

Vibration-Related Structural Damage

The level at which groundborne vibration is strong enough to cause structural damage has not been determined conclusively. The most conservative estimates are reflected in the FTA standards, shown in Table 5.12-6.

Table 5.12-6
Groundborne Vibration and Noise Impact Criteria – Structural Damage

Building Category	PPV (in/sec)	VdB
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Nonengineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2006
Note: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

Vibration-related problems generally occur due to resonances in the structural components of a building. The maximum vibration amplitudes of the floors and walls of a building will often be at the resonance frequencies of various components of the building. That is, structures amplify groundborne vibration. Resonant response is frequency dependent and 1/3-octave band charts are best for describing vibration behavior. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. According to the Caltrans' *Transportation Related Earthborne Vibration* (2002), extreme care must be taken when sustained pile driving occurs within 25 feet of any building; the threshold at which there is a risk of architectural damage to normal houses with plastered walls and ceilings is 0.2 in/sec.

Existing Noise Environment

The City of Ontario is impacted by a multitude of noise sources, many of them directly connected with major interstate commerce and intrastate thoroughfares that divide the City. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities. In addition, the City of Ontario is home to LAONT and major rail lines operated by the Union Pacific Railroad (UPRR), which also contribute significant noise. Other major transportation sources include Interstate 10 (I-10), I-15, State Route 60 (SR-60), Euclid Avenue (SR-83), and the Chino Airport. Secondarily, land uses throughout the City generate stationary-source noise. Figure 5.12-1, *Existing Noise Levels in Ontario from Surface Transportation*, shows noise levels from major roadway transportation sources.

On-Road Vehicles

Noise from motor vehicles is generated by engine vibrations, the interaction between tires and the road, and the exhaust system. Reducing the average motor vehicle speed reduces the noise exposure of receptors adjacent to the road. Each reduction of five miles per hour reduces noise by about 1.3 dBA.

In addition to local traffic volumes, regional roadways in the City of Ontario accommodate large volumes of traffic that support the movement of people and goods for the southern California region Major regional roadways such as I-10, I-15, SR-60, Mission Boulevard, and Milliken Avenue accommodate very large volumes of traffic and are responsible for a significant contribution to the noise environment in Ontario. These roadways accommodate a large amount of truck traffic, which adds significantly to the noise environment.

Local roadways primarily accommodate local traffic for the City and include both major arterials and smaller collector streets. While local roadways are not a major source of noise for the City as a whole, they contribute a large proportion of the ambient noise at the neighborhood level.

Train Noise

Two major UPRR rail lines traverse the City of Ontario going east–west. The northern route through the City is the UPRR Alhambra Line, which begins at the Los Angeles/Long Beach ports and runs through Pomona and Colton to points farther east. The southern route is the UPRR Los Angeles Subdivision Line, which also begins at the Los Angeles/Long Beach ports and runs through Pomona, but travels southeast to Riverside and points farther east. Noise generated by the train traffic on the Alhambra and the Los Angeles Lines contributes to the ambient noise environment along these two transportation routes. Noise from trains on the UPRR is generated by warning horns and crossing bells at at-grade crossings, engines, exhaust systems, cooling fans, and other mechanical gear noise. The interaction of steel wheels and rails generates rolling noise due to continuous contact: impact noise when a wheel encounters a discontinuity, such as a rail joint, turnout, or crossover; and squeals generated by friction on tight curves. Trains are required by the Federal Railroad Administration to sound a warning horn at one-quarter mile from all at-grade crossings and at a maximum 110 dBA, as measured at 100 feet, except those that have established a Quiet Zone. A Quiet Zone is a segment of rail line where locomotive horns are not routinely sounded. There are no Quiet Zones established for the City of Ontario. Figure 5.12-2 shows the existing 65 dBA CNEL train noise contours.

Aircraft Noise

Noise from aircraft at LAONT and the Chino Airport is produced by takeoffs, flyovers/overflights, approaches, and landings. Each of these events results in noise exposure to sensitive receptors near the airports. The California Public Resources Code, Section 21096, requires that when preparing an environmental impact

report for any project within an airport influence area as defined by an airport land use compatibility plan, the lead agency shall utilize the *California Airport Land Use Planning Handbook* as a technical resource with respect to airport noise and safety compatibility issues. The basis for compatibility zone delineation for airports is the CNEL contours created with the Federal Aviation Administration Integrated Noise Model for private and public airports.

Los Angeles Ontario International Airport

The airport contributes a large majority of the ambient noise environment of the City. LAONT is centrally located in the City, and few areas are unaffected by noise generated by the airport or aircraft overflights. The airport is a medium-hub, full-service airport. Traffic at the airport includes general aviation, commercial passenger aviation, and air cargo freight movement. LAONT is a member of the Los Angeles World Airport (LAWA) system. The airport is anticipated to accommodate up to 1.6 million tons of cargo and 30 million annual passengers by year 2030 (SCAG 2004a and LAWA 2005). LAWA is currently developing a Master Land Use Plan for LAONT that will provide a framework for the airport's development and use through the year 2030.

Figure 5.12-3, *Airport Noise Contours*, shows the noise contour map for LAONT, which describes average annual noise levels generated by the airport in terms of dBA CNEL through 2030.[2] While technological improvements have resulted in less noisy aircraft than older models, as the LAONT increases its capacity and number of flights per day, the number of noise interruptions from single-event sound exposure levels (SEL), such as that generated from a jet engine aircraft, will increase in frequency. Figures 5.12-4a and 5-12-4b show the 94 dBA SEL noise contours for selected aircraft commonly used at the airport. The 94 dBA SEL noise contour is the interior noise environment at which 10 percent of residents in the surrounding airport area would be awakened/interrupted due to aircraft overflights when windows are open.

Chino Airport

The Chino Airport is just outside the City of Ontario, adjacent to the southwestern boundary of the City near the New Model Colony. The Chino Airport is the largest general aviation airport in the County of San Bernardino and home to the Planes of Fame Museum. The airport noise contour for Chino Airport does not extend into the City of Ontario (see Appendix G).

Heliports

There are no heliports for public use in the City of Ontario; however, one private heliport is proposed under the Ontario Gateway Specific Plan for hospital uses. Helicopter operations in the city are not frequent. Use of helipads for emergency purposes generates noise during take-offs and landings in the immediate vicinity of the helipad. Unlike fixed-wing aircraft, helicopters produce noise not only from the engine but also from the relatively slowly turning main rotor. This sound modulation is called blade slap. According to the *Airport Land Use Compatibility Handbook* (Caltrans 2002), to a listener on the ground, helicopter noise is most audible as the aircraft approaches. Noise from emergency use of helipads contributes minimally to the ambient noise environment in the City. However, single-event noise from helicopter overflights can substantially elevate noise levels.

[2] Noise contours for the LAONT available for year 2030, not The Ontario Plan buildout year 2035.

Stationary Sources of Noise

Stationary sources of noise include commercial and industrial equipment and activities. Whereas mobile-source noise affects many receptors along an entire length of roadway, stationary noise sources affect only their immediate areas. Major stationary sources in the City are industrial and warehousing operations and schools (train noise from sounding of bells and whistles at at-grade crossings is considered mobile-source noise).

Industrial and Warehousing Operations

The northeastern side of the City of Ontario is characterized by industrial warehousing operations, many of which are associated with the LAONT and the City's integral role in the nation's goods movement. In addition to on-site mechanical equipment, warehousing and industrial land uses generate substantial truck traffic that results in additional sources of noise on local roadways in the vicinity of industrial operations.

Schools

Schools are considered noise-sensitive because of the necessity for quiet in the classroom to provide an adequate environment for learning. However, outdoor activities that occur on school campuses throughout the City generate noticeable levels of noise. While it is preferable to have schools in residential areas to support the neighborhood, noise generated on both the weekdays (by physical education classes and sports programs) and weekends (by use of the fields by youth organizations) can elevate noise levels.

Local Noise Monitoring Data

The Planning Center conducted field monitoring on Wednesday May 10 through Thursday May 11, 2006, at four separate locations for a 24-hour period. Noise monitoring locations were selected based on sensitive land uses in areas currently experiencing high levels of ambient noise and in areas that would experience the greatest change in noise levels due to planned development. The noise monitoring locations are shown in Figure 5.12-5, *Noise Monitoring Locations*. The results of the noise monitoring are presented in Table 5.12-7, *Noise Monitoring Existing Noise Levels,* and described below.

Table 5.12-7
Noise Monitoring Existing Noise Levels

Noise Monitoring Location	*Primary Land Use/Noise*	*Distance from Roadway*	*Noise Level dBA CNEL*
Noise Monitoring Site 1 (NM 1): Archibald Avenue north of Edison Avenue	Agriculture	12 feet	76.4
NM 2: SR-60 at Cucamonga Avenue	Residential/SR-60	30 feet	80.2
NM 3: Euclid Avenue/SR-83 south of Rosewood Court	Residential/SR-83	6 feet	81.5
NM 4: Virginia Avenue adjacent to I-10	Residential/I-10	125 feet + wall	70.2

Archibald Avenue (NM 1). Noise monitoring was conducted on the west side of Archibald Avenue, north of Edison Avenue. Surrounding land uses were primarily agricultural. The noise meter was placed 12 feet from the roadway adjacent to the fence of a rural residence. Archibald Avenue is a two-lane roadway with no median (27 feet wide), and a posted speed limit of 55 mph. Noise monitoring was conducted for a 24-hour period from 10:00 AM on May 10 to 10:00 AM on May 11,

2006. The primary noise source at the monitoring location was traffic on Archibald Avenue, which included a fair amount of truck traffic and agricultural activities. Secondary noise included large commercial overflights to the LAONT and noises from nearby agricultural uses (cows and poultry).

SR-60 at Cucamonga Avenue (NM 2). Noise monitoring was conducted at the southern terminus of Cucamonga Avenue adjacent to SR-60. Surrounding land uses were residential and a construction site. The noise meter was placed 30 feet from SR-60, adjacent to a chain-link fence separating the roadway and construction site from SR-60, and 5 feet east of the end of an approximately 15-foot wall that separates nearby residential uses from the SR-60. SR-60 is a 10-lane freeway with a posted speed limit of 65 mph. Noise monitoring was conducted for a 24-hour period from 11:00 AM on May 10, 2006, through 11:00 AM on May 11, 2006. The primary noise source was traffic on SR-60. Secondary noise included grading activities on the nearby construction site. While construction activities can generate substantial levels of stationary-source noise, these were rarely audible above traffic on SR-60, and the majority of grading activities occurred on the far eastern edge of the site. Other secondary noise sources included large aircraft overflights to the LAONT, helicopter flyovers, and local traffic entering the adjacent multifamily residential area. Noise levels at the monitoring site remained fairly constant throughout the day and night (range of L_{eq} was 70 to 76 dBA). This is attributed to a decrease in speeds on SR-60 as a result of traffic congestion on the roadway during the daytime, despite overall high traffic volumes.

Euclid Avenue/SR-83 (NM 3). Noise monitoring was conducted on the east side of Euclid Avenue/SR-83, just south of Rosewood Court. Surrounding land uses were primarily residential. The noise meter was placed six feet from the roadway on the grassy landscaped area. Euclid Avenue/SR-83 is a six-lane divided roadway with a very large landscaped center median (148 feet wide) and a posted speed limit of 45 mph. Noise monitoring was conducted for 24 hours from 12:15 PM on May 10 to 12:15 PM on May 11, 2006. The primary noise source was traffic on Euclid Avenue. Secondary noise included aircraft overflights at the LAONT and noise generated at nearby residential uses.

Virginia Avenue (NM 4). Noise monitoring was conducted on the south side of Virginia Avenue, just north of 5th Street, near I-10. Surrounding land uses included residential and vacant land associated with a concrete drainage channel. The noise meter was placed on a small sidewalk adjacent to a chain-link fence and Virginia Avenue, a two-lane roadway with no center median (30 feet wide). I-10 was approximately 125 feet from the noise meter and was separated by an approximately 25-foot sound wall. Noise monitoring was conducted for a 24-hour period, from 1:00 PM on May 10 to 1:00 PM on May 11. The primary noise source was traffic on I-10, even though the sound wall completely blocked the roadway from sight. Secondary sources of noise included local traffic on Virginia Avenue, residential noise, and aircraft overflights from the LAONT.

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include residential, school, and open space/recreation areas where quiet environments are necessary for enjoyment, public health, and safety. In the City of Ontario, sensitive noise receptors are primarily located in residential areas of the City. Commercial and industrial uses are not considered noise- and vibration-sensitive uses.

5.12.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on he environment if the project would result in:

N-1 Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies.

Based on local noise criteria as established by the City the following would be considered significant:

- Noise generated by buildout of the Proposed Land Use Plan would result in stationary (nontransportation) noise which exceeds the standards of the City's Municipal Code (see Table 5.12-4) at noise-sensitive receptors.
- It is the policy of the City of Ontario to require new residential development to mitigate to achieve an exterior noise environment of 65 dBA CNEL. Future development associated with buildout of the Proposed Land Use Plan would place residential uses in a noise environment which exceeds 65 dBA CNEL.
- For noise compatibility, interior noise levels in habitable noise-sensitive areas exceed 45 dBA CNEL.

N-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

N-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Based on local noise criteria as established in the Policy Plan and Municipal Code the following would be considered significant:

- Project-related traffic would increase the CNEL at any noise-sensitive receptor by an audible amount of 3 dBA. A minimum 3 dB change in noise levels is necessary for human hearing to discern a change in noise levels.
- Noise generated by buildout of the Proposed Land Use Plan would result in stationary (non-transportation) noise which exceeds the standards of the City's Municipal Code (see Table 5.12-4) on noise-sensitive receptors.

N-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Based on local noise criteria as established in the City of Ontario Municipal Code the following would be considered significant:

- Construction activities occurring outside of the hours specified (7:00 AM and 6:00 PM weekdays and 6:00 AM to 6:00 PM weekends, excluding federal holidays) under Municipal Code, Section 5.29-09 of the City of Ontario Municipal Code.
- Construction activities substantially elevating the ambient noise environment at noise-sensitive uses for a substantial period of time.

N-5 For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public-use airport, exposure of people residing or working in the project area to excessive noise levels.

Based on local noise criteria as established in the Policy Plan and Municipal Code the following would be considered significant:

- The maximum noise exposure considered normally acceptable for new residential land uses in the environs of the LAONT and Chino Airport is 65 dB CNEL. The Proposed Land Use Plan would place new residential development within the 65 dBA noise contour of the LAONT or Chino Airport. It is the Policy of the City of Ontario to require new residential development to mitigate to achieve an exterior noise environment of 65 dBA CNEL.
- For noise compatibility, interior noise levels in habitable noise-sensitive areas exceed 45 dBA CNEL.

N-6 For a project within the vicinity of a private airstrip, exposure of people residing or working the project area to excessive noise levels.

5.12.3 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

IMPACT 5.12-1 BUILDOUT OF THE PROPOSED LAND USE PLAN WOULD RESULT IN AN INCREASE IN TRAFFIC ON LOCAL ROADWAYS IN THE CITY OF ONTARIO, WHICH WOULD SUBSTANTIALLY INCREASE THE EXISTING NOISE ENVIRONMENT. [THRESHOLDS N-1 AND N-3]

Impact Analysis: The operational phases of individual projects that result from the Proposed Land Use Plan may generate noise from stationary or vehicular sources. Noise is regulated by numerous codes and ordinances across federal, state, and local agencies. In addition, the City regulates stationary-source noise through the Municipal Code.

Stationary-Source Noise Impacts

Buildout of the Proposed Land Use Plan would result in an increase in residential, commercial, industrial, and institutional development within the City. The primary noise sources from residential, commercial, and institutional land uses are landscaping, maintenance activities, and air conditioning systems. In addition, future commercial uses may include loading docks. Noise generated by residential or commercial uses is generally short and intermittent, and these uses are not a substantial source of noise. The City of Ontario requires that noise from new stationary sources in the City comply with the City's Noise Ordinance, which limits the acceptable noise at the property line of the impacted property, to reduce nuisances to sensitive land uses. The City Police or Code Enforcement Officer enforces the noise limitation of the Municipal Code. Noise that exceeds the limitations of the Municipal Code is considered a noise nuisance by the City and violations are punishable by a fine for each day a violation occurs and may be subject to abatement by restraining order or injunction. Consequently, stationary-source noise from these types of proposed land uses would not substantially increase the noise environment.

Industrial noise is less intermittent and can have moderate to high levels on a continual basis. The Ontario Plan proposes 159,998,711 square feet of industrial land uses at buildout. As shown in Figure 3-6, proposed industrial areas are centered around the LAONT and Chino Airport. In general, new industrial areas would be

buffered by business park uses or located around existing major noise sources that would mask most industrial noise (e.g., freeways, Chino Airport, LAONT). The siting of new industrial developments may increase noise levels to nearby uses. This can be due to the continual presence of heavy trucks used for the pick-up and delivery of goods and supplies, or from the use of noisy equipment used in the manufacturing or machining process. While vehicle noise on public roadways is exempt from local regulation, for the purposes of the planning process, it may be regulated as a stationary-source noise while operating on private property. Process equipment and the use of pneumatic tools could also generate elevated noise levels, but this equipment is typically housed within the facilities. To regulate stationary-source noise created by industrial machinery and tools from affecting sensitive land uses, the City of Ontario requires industrial operations to limit noise to no greater than the maximum allowable noise levels as described in the Noise Ordinance. Therefore, compliance with the City's Noise Ordinance (Title 5, Chapter 29, Noise) would result in noise levels that are acceptable to the City and would result less than significant noise impacts from stationary sources.

Transportation Noise Impacts

Potential impacts from buildout of the Proposed Land Use Plan stem mainly from the addition of vehicles along roadways in the City and trains on the UPRR. Figure 5.12-6 shows the noise contours from roadway traffic along major thoroughfares within the City of Ontario at buildout. Figure 5.12-7 shows the 65 dBA CNEL noise contour from train traffic on the UPRR main lines. Noise levels shown in Figure 5.12-6 and Figure 5.12-7 for the entire City do not account for noise attenuation provided by intervening structures or topographical barriers. The greatest increases are expected in those areas subject to increased land use intensity, especially in the NMC area. Figure 5.12-8 shows roadways in the City where noticeable (+3 dBA) increases in the ambient noise level would occur. Individual projects associated with buildout of the Proposed Land Use Plan would occur over a period of many years and the increase in noise on an annual basis would not be readily discernable because traffic and noise would increase incrementally. However, cumulative increases in the ambient noise environment would occur from buildout of the Proposed Land Use Plan and therefore impacts are significant.

IMPACT 5.12-2 NOISE-SENSITIVE USES COULD BE EXPOSED TO ELEVATED NOISE LEVELS FROM TRANSPORTATION SOURCES. [THRESHOLDS N-1 AND N-3]

Impact Analysis: An impact could be significant if the Proposed Land Use Plan designates noise-sensitive land uses in areas that would not exceed the noise compatibility criteria of the City. The City applies the state's Community Noise and Land Use Compatibility standards, summarized in Table 5.12-3, for the purpose of assessing the compatibility of new development with existing noise sources, such as vehicles. It is the policy of the City of Ontario to require new noise-sensitive residential developments to achieve an exterior noise environment of 65 dBA CNEL. However, ambient noise levels that exceed 65 dBA CNEL are only significant if they encroach into noise-sensitive land uses (schools, playgrounds and parks, and residential uses). Commercial and industrial areas are not considered noise sensitive and have much higher tolerances for exterior noise levels. The building interior of noise-sensitive structures is required to achieve noise levels of 45 dBA CNEL under the California Building Code, and Title 21 of the California Code of Regulations, for noise-sensitive structures within the 65 dBA CNEL contour of an airport. While interior areas can be mitigated to achieve acceptable interior noise levels, it may not be possible to achieve the noise compatibility criteria for noise-sensitive exterior areas.

The noise contours for projected buildout year 2035 conditions are presented in Figure 5.12-6 and Figure 5.12-7, which show the future noise levels from mobile sources. In addition to cumulative levels from the UPRR, LAONT and Chino Airport can generate noise that can adversely affect sensitive land uses (see Figure 5.12-3). Any siting of new noise-sensitive land uses within a noise environment that exceeds the normally acceptable land use compatibility criterion represents a potentially significant impact and would require a

separate noise study through the development review process to determine the level of impacts and required mitigation. To ensure the compatibility of new development in the City, the Safety Element contains a number of policies, to minimize potential impacts on sensitive land uses. As shown in Figure 5.12-6 (roadway), Figure 5.12-7 (train) and Figure 5.12-3 (aircraft), noise-sensitive land uses would be exposed to noise levels that exceed 65 dBA CNEL and impacts would be significant.

IMPACT 5.12-3: CONSTRUCTION ACTIVITIES ASSOCIATED WITH BUILDOUT OF THE INDIVIDUAL LAND USES ASSOCIATED WITH THE PROPOSED LAND USE PLAN WOULD EXPOSE SENSITIVE USES TO STRONG LEVELS OF GROUNDBORNE VIBRATION. [THRESHOLD N-2]

Impact Analysis:

Construction Vibration Impacts

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, and slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 5.12-8 lists vibration levels for construction equipment.

Table 5.12-8
Vibration Levels for Construction Equipment

Equipment	*Approximate Velocity Level at 25 Feet (VdB)*	*Approximate RMS[1] Velocity at 25 Feet (in/sec)*
Pile Driver (impact) Upper Range	112	1.518
Pile Driver (impact) Lower Range	104	0.644
Pile Driver (sonic) Upper Range	105	0.734
Pile Driver (sonic) Lower Range	93	0.170
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Human Annoyance (Daytime)	78	—
FTA Criteria – Structural Damage	—	0.200

Source: FTA 2006
[1] RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second.

As shown in Table 5.12-8, vibration generated by construction equipment has the potential to be substantial. However, groundborne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers (FTA 2006). Significant vibration impacts may occur from construction equipment associated with development in accordance with The Ontario Plan.

IMPACT 5.12-4: SENSITIVE LAND USES ALONG THE UNION PACIFIC RAILROAD CORRIDOR WOULD BE EXPOSED TO STRONG LEVELS OF GROUNDBORNE VIBRATION. [THRESHOLD N-2]

Impact Analysis:

On-Road Mobile-Source Vibration Impacts

Caltrans has studied the effects of propagation of vehicle vibration on sensitive land uses and notes that "heavy trucks, and quite frequently buses, generate the highest earthborn vibrations of normal traffic." Caltrans further notes that the highest traffic-generated vibrations are along freeways and state routes. Their study finds that "vibrations measured on freeway shoulders (five meters from the centerline of the nearest lane) have never exceeded 0.08 inch per second, with the worst combinations of heavy trucks. This level coincides with the maximum recommended safe level for ruins and ancient monuments (and historic buildings)." Typically, trucks do not generate high levels of vibration because they travel on rubber wheels and do not have vertical movement, which generates ground vibration. Vibrations from trucks may be noticeable if there are any roadway imperfections such as potholes (FTA 2006). Because vibration-sensitive structures are not and will not be sited within five meters (approximately 16 feet) of the centerline of the nearest lane of I-15, I-10, or SR-60, or any major truck route (see Figure 5.16-13, *Proposed Truck Routes*) any potential for significant vibration impacts is less than significant.

Railroad Vibration Impacts

New vibration-sensitive land uses, including residential land uses, would be exposed to groundborne vibration from train operations along the UPRR or the Southern California Regional Rail Authority (SCRRA). Vibration levels in the City from trains are dependant on specific site conditions such as geology and the condition of the railroad track and train wheels. In addition, wood-framed structures could amplify vibration levels felt by occupants by as much as 10 dB. As soil conditions have a strong influence on the levels of groundborne vibration, vibration levels from trains may be amplified. Vibration impacts from the UPRR and SCRRA are based on the potential for rail operations to cause perceptible levels of vibration. If current levels at the residential structure are less than perceptible to residents, future increases in rail traffic would not generate levels of vibration perceptible to residents as the intensity of vibration would not increase, only the frequency. However, vibration-sensitive land uses near the UPRR and SCRRA have the potential to be impacted by perceptible levels of vibration from rail operations. Consequently, vibration impacts from train operations could be potentially significant.

Industrial Vibration Impacts

The use of heavy equipment associated with industrial operations and the operation of wind turbines can create elevated vibration levels in their immediate proximity. As shown in Figure 5.12-2, industrial land uses are designated in the area surrounding the LAONT and Chino Airport.

Soil conditions have a strong influence on the levels of groundborne vibration. As the majority of the Ontario area is underlain by loose sandy soils, vibration levels from industrial activities can be amplified. However, groundborne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers (FTA 2006). In general, the majority of industrial uses would not be immediately adjacent to vibration-sensitive uses. Use of heavy equipment associated with industrial activities would occur indoors. Consequently, no significant vibration impacts would occur from vibration generated by industrial uses.

IMPACT 5.12-5: CONSTRUCTION ACTIVITIES ASSOCIATED WITH BUILDOUT OF THE INDIVIDUAL LAND USES ASSOCIATED WITH THE PROPOSED LAND USE PLAN WOULD SUBSTANTIALLY ELEVATE NOISE LEVELS IN THE VICINITY OF NOISE-SENSITIVE LAND USES. [THRESHOLD N-4]

Impact Analysis: Two types of short-term noise impacts could occur during construction. First, the transport of workers and movement of materials to and from the site could incrementally increase noise levels along local access roads. However, the amount of construction traffic is typically small in relation to the total daily traffic volumes on those roadway segments.

The second type of short-term noise impact is related to demolition, site preparation, grading, and/or physical construction. Construction is performed in distinct steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. However, despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 5.12-9 lists typical construction equipment noise levels recommended for noise-impact assessments, based on a distance of 50 feet between the equipment and noise receptor.

Table 5.12-9
Construction Equipment Noise Emission Levels

Construction Equipment	*Typical Noise Level (dBA) at 50 Feet from the Source*	*Construction Equipment*	*Typical Noise Level (dBA) at 50 Feet from the Source*
Air Compressor	81	Pile-Driver (Impact)	101
Backhoe	80	Pile-Driver (Sonic)	96
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	76
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	98
Concrete Pump	71	Roller	74
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	89
Dozer	85	Shovel	82
Generator	81	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	85	Truck	88
Paver	89		

Source: FTA 2006

Composite construction noise is best characterized by Bolt, Beranek, and Newman. In their study, construction noise for development ranges from 71 to 89 dBA L_{eq} when measured at a distance of 50 feet from the construction effort. These values take into account both the number of pieces and spacing of the heavy equipment used in the construction effort. In later phases during building assembly, noise levels are typically reduced from these values and the physical structures further break up line-of-sight noise propagation. Construction of individual developments associated with buildout of the Proposed Land Use Plan would temporally increase the ambient noise environment. However, the City of Ontario restricts the hours of construction activities to the least noise-sensitive portions of the day. According to the Municipal Code, construction activities are restricted to the weekday hours of 7:00 AM to 6:00 PM and 9:00 AM to 6:00 PM on Saturday and Sunday. However, construction activities may occur outside of these hours if the City determines that the maintenance, repair, or improvement is necessary to maintain public services or cannot feasibly be conducted during normal business hours, or if construction activities comply with the stationary source noise standards of the Municipal Code (see Table 5.12-4). Because construction activities associated with any individual development may occur near noise-sensitive receptors and noise disturbances may occur for prolonged periods of time, construction noise impacts from buildout of the Proposed Land Use Plan are considered significant.

IMPACT 5.11-6: SENSITIVE LAND USES WITHIN THE 65 dBA CNEL NOISE CONTOUR OF THE LOS ANGELES/ONTARIO INTERNATIONAL AIRPORT WOULD BE EXPOSED TO SUBSTANTIAL LEVELS OF AIRPORT-RELATED NOISE. [THRESHOLD N-5 AND N-6]

Impact Analysis: Aircraft overflights, takeoffs, and landings in the City of Ontario contribute to the ambient noise environment. Each of these events results exposes sensitive receptors near the LAONT and Chino Airport or other public and private heliports in the City to elevated levels.

LAONT and Chino Airport

The City of Ontario considers residential uses in the vicinity of LAONT and the Chino Airport to be normally acceptable with the airport noise environment so long as they do not extend into the 65 dBA CNEL noise contour. Title 21 of the California Code of Regulations requires that adequate acoustical insulation is provided for noise-sensitive uses within the 65 dBA CNEL contour to ensure that interior noise levels achieve 45 dBC CNEL. Sensitive areas in an airport noise environment that exceeds 65 dBA would be required conduct a noise assessment and mitigate, as feasible, to achieve an exterior environment of 65 dBA CNEL. However, because much of the noise from the airport is overhead, walls, berms, and other intervening structures would do little to reduce noise from aircraft operations when the noise environment exceeds 65 dBA CNEL from airport operations. Consequently, designation of any sensitive land use (e.g., residential) within the 65 dBA CNEL contour of LAONT and the Chino Airport would be considered significant.

The 65 dBA CNEL noise contour for Chino Airport does not extend into the City of Ontario and therefore no significant impacts are anticipated in the southern portion of the City. Furthermore, areas surrounding the airport influence area of the Chino Airport are designated as Industrial/Business Park in the Proposed Land Use Plan, which is not considered a noise-sensitive use. Because the Proposed Land Use Plan would not designate any noise-sensitive uses within the 65 dBA CNEL contour of the Chino Airport, no significant impacts would occur

As shown in Figure 5.12-3, by 2030 noise-sensitive land uses would be located within the 65 dBA CNEL noise contour of LAONT. Residents and other sensitive receptors in the noise contour would be exposed to excessive noise levels from airport operations. Consequently, indoor and exterior noise environments would be exposed to elevated noise levels from aircraft overflights. Impacts would be significant.

Heliports

In addition to the LAONT and Chino Airport, public and private heliports in the City also generate noise. There is one proposed private heliport in Ontario. The Ontario Gateway Specific Plan, north of LAONT, includes the development of a hospital and the operation of a heliport. Development of public and private heliports is regulated by the Federal Aviation Administration. Helicopters typically take off and land into the wind and fly approximately 500 to 1,000 feet above ground level when in flight. When helicopters land, they descend at approximately 1,000 feet per minute. Consequently, intermittent flyovers by helicopters are not considered a substantial source of noise in the City, and no significant impacts would occur. However, single event noise produced when a helicopter passes overhead can substantially elevate the ambient noise environment and would be potentially significant if located adjacent to noise-sensitive land uses.

5.12.4 Relevant Policy Plan Policies and Programs

Safety Element

Noise

S4-1 Noise Mitigation. We utilize the City's Noise Ordinance, building codes, and subdivision and development code regulations to mitigate noise impacts.

S4-2 Coordination with Transportation Authorities. We collaborate with airport owners, FAA, Caltrans, SANBAG, SCAG, neighboring jurisdictions, and other transportation providers in the preparation, maintenance, and update of transportation-related plans to minimize noise impacts and provide appropriate mitigation measures.

S4-3 Airport Noise Mitigation. We aggressively pursue funding and utilize programs to reduce effects of aircraft noise in impacted areas of our community.

S4-4 Truck Traffic. We manage truck traffic to minimize noise impacts on sensitive land uses.

S4-5 Roadway Design. We design streets and highways to minimize noise impacts.

Land Use Element

Airport Environs

LU5-1 Coordination with Airport Authorities. We collaborate with FAA, Caltrans Division of Aeronautics, airport owners, neighboring jurisdictions, and other stakeholders in the preparation, update ,and maintenance of airport-related plans, including this Policy Plan.

LU5-2 Future Planning Efforts. We coordinate with airport authorities to ensure The Ontario Plan is consistent with airport law and/or adopted master plans and land use compatibility plans for the LAONT and Chino Airports.

LU5-3 Airport Impacts. We work with agencies to mitigate the impacts and hazards related to airport operations.

LU5-4 Los Angeles/Ontario Airport Land Use Commission. We will fully comply with state statutes regarding the establishment of a City-administered Airport Land Use Commission for LAONT.

LU5-5 Future LAONT. We support and promote an LAONT that accommodates 30 million annual passengers and 1.6 million tons of cargo per year, as long as the impacts associated with that level of operations are planned for and mitigated.

Mobility Element

Goods Movement

M4-1 Truck Routes. We designate and maintain a network of City truck routes that provide for the effective transport of goods while minimizing negative impacts on local circulation and noise-sensitive land uses, as shown in the Truck Routes Plan.

M4-2 Regional Participation. We work with regional and subregional transportation agencies regarding planning and implementation of regional goods movement strategies.

M4-3 Railroad grade separations. We eliminate at-grade rail crossings identified on the Functional Roadway Classifications Plan.

M4-4 Environmental Considerations. We support efforts to reduce/eliminate the negative environmental impacts of goods movement.

M4-5 Truck Parking. We limit truck parking to appropriate locations.

M4-6 Air Cargo. We support and promote a LAONT that accommodates 1.6 million tons of cargo per year, as long as the impacts associated with that level of operations are planned for and mitigated.

Regional Transportation

M5-2 Land Use Compatibility with Regional Transportation Facilities. We work with LAWA, railroads, Caltrans, SANBAG, and other transportation agencies to minimize impacts.

5.12.5 Existing Regulations and Standard Conditions

State

- California Code of Regulations, Title 21, Part 1, Public Utilities Code (Regulation of Airports)
- California Code of Regulations, Title 24, Part 2, California Building Code.

City of Ontario Municipal Code

The City of Ontario Municipal Code contains regulations regarding noise nuisances:

- ***Title 5, Public Welfare, Morals, and Conduct, Chapter 29, Noise*** regulates the generation of impulsive or intrusive noise on properties within the City of Ontario. The City has established maximum permissible exterior noise levels as measured at the property line of the receiving property based on noise zones within the City. This Chapter also regulates the hours of construction noise.

5.12.6 Level of Significance Before Mitigation

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.12-1 Buildout of the Proposed Land Use Plan would result in an increase in traffic on local roadways in the City of Ontario, which would substantially increase the noise environment.
- Impact 5.12-2 Noise-sensitive uses could be exposed to elevated noise levels from transportation sources.
- Impact 5.12-3 Construction activities associated with buildout of the individual land uses associated with the Proposed Land Use Plan would expose sensitive uses to strong levels of groundborne vibration.
- Impact 5.12-4 Sensitive land uses along the Union Pacific Railroad corridor would be exposed to strong levels of groundborne vibration.
- Impact 5.12-5 Construction activities associated with buildout of the individual land uses associated with the Proposed Land Use Plan would substantially elevate noise levels in the vicinity of sensitive land uses.
- Impact 5.12-6 Sensitive land uses within the 65 dBA CNEL noise contour of the Los Angeles Ontario International Airport would be exposed to substantial levels of airport-related noise.

5.12.7 Mitigation Measures

Impact 5.12-1

No mitigation measures are available that would prevent noise levels along major transportation corridors from increasing as a result of substantial increases in traffic volumes.

Impact 5.12-2

12-1 Prior to the issuance of building permits for any project that involves a noise-sensitive use within the 65 dBA CNEL contour along major roadways, freeways, railroads, or the Los Angeles/Ontario International Airport, the project property owner/developers shall retain an acoustical engineer to conduct an acoustic analysis and identify, where appropriate, site design features (e.g., setbacks, berms, or sound walls) and/or required building acoustical improvements (e.g., sound transmission class rated windows, doors, and attic baffling), to ensure compliance with the City's Noise Compatibility Criteria and the California State Building Code and California Noise Insulation Standards (Title 24 and 21 of the California Code of Regulations).

Impact 5.12-3

12-2 Individual projects that involve vibration-intensive construction activities, such as pile drivers, jack hammers, and vibratory rollers, occurring near sensitive receptors shall be evaluated for potential vibration impacts. If construction-related vibration is determined to be perceptible at

vibration-sensitive uses (i.e., exceed the Federal Transit Administration vibration-annoyance criteria of 78 VdB during the daytime), additional requirements, such as use of less vibration intensive equipment or construction techniques, shall be implemented during construction (e.g., drilled piles to eliminate use of vibration-intensive pile driver).

Impact 5.12-4

12-3 Prior to the issuance of building permits for any project that involves a vibration-sensitive use directly adjacent to the Union Pacific Railroad or Southern California Regional Rail Authority main lines shall retain an acoustical engineer to evaluate potential for trains to create perceptible levels of vibration indoors. If vibration-related impacts are found, mitigation measures, such as use of concrete, iron, or steel, or masonry materials to ensure that levels of vibration amplification are within acceptable limits to building occupants, shall be implemented. Pursuant to the Federal Transit Administration vibration-annoyance criteria, these acceptable limits are 78 VdB during the daytime and 72 VdB during the nighttime for residential uses, 84 VdB for office uses, and 90 VdB for workshops.

Impact 5.12-5

12-4 Construction activities associated with new development that occurs near sensitive receptors shall be evaluated for potential noise impacts. Mitigation measures such as installation of temporary sound barriers for adjacent construction activities that occur adjacent to occupied noise-sensitive structures, equipping construction equipment with mufflers, and reducing non-essential idling of construction equipment to no more than five minutes shall be incorporated into the construction operations to reduce construction-related noise to the extent feasible.

Impact 5.12-6

Mitigation Measure 12-1 would require projects within the 65 dBA CNEL noise contour of the LAONT, roadway, freeways, or railroads to prepare an acoustical report that details required noise attenuation features to ensure compliance with Title 21. However, exterior noise may continue to exceed the noise compatibility criteria for the City of Ontario.

5.12.8 Level of Significance After Mitigation

No mitigation measures are available that would prevent noise levels along major transportation corridors from increasing as a result of substantial increase in traffic volumes. Impact 5.12-1 would remain significant.

Mitigation Measure 12-1 would reduce impacts associated with Impact 5.12-2 (roadway/train noise compatibility) and 5.12-6 (airport noise compatibility). While interior noise levels are required to achieve the interior noise limits of Title 24 and Title 25, which require structures to achieve 45 dBA CNEL, exterior noise levels may continue to exceed the noise compatibility criteria for the City (see Table 5.12-3), despite exterior noise attenuation (i.e., walls and/or berms). Consequently, noise compatibility impacts would remain significant.

Mitigation Measures 12-2 (construction-related vibration) and 12-4 (construction-related noise) would reduce impacts associated with construction activities to the extent feasible. However, due to the proximity of construction activities to sensitive uses and potential longevity of construction activities, noise and vibration Impact 5.12-3 (construction vibration) and Impact 5.12-5 (construction noise) would be significant.

Mitigation Measure 12-3 would ensure that any new vibration-sensitive structures near the UPRR or SCRRA would be constructed so that train-related vibration would not be perceptible. Consequently, Impact 5.12-4 would be less than significant.

Despite the application of mitigation measures, Impacts 5.12-1, 5.12-2, 5.12-3, 5.12-5, and 5.12-6 were found to still result in **significant and unavoidable** noise impacts.

APPENDIX 3.2

City of Ontario Stationary Noise Source Requirements

(a) The making and creation of excessive, unnecessary or unusually loud noises within the limits of the City is a condition that has existed for some time, however, the extent and volume of such noises is increasing;

(b) The making, creation or maintenance of such excessive, unnecessary, unnatural or unusually loud noises that are prolonged, unusual and unnatural in their time, place and use affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the City; and

(c) The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted, is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the residents of the City.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.02. Definitions.

As used in this chapter, specific words and phrases are defined as follows:

(a) "Ambient noise level" shall mean the all-encompassing noise level associated with a given environment and is a composite of sounds from all sources, excluding the alleged offensive noise or excessive sound, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

(b) "Applicable (noise) zone" shall mean the noise zone category based on the actual use of the property, provided that the actual use is a legal use in the City.

(c) "A-weighted sound level" shall mean the sound pressure level in decibels (dBAs) as measured with a sound level meter using the A-weighted filter network (scale) at slow response and at a pressure of twenty (20) micropascals. The A-weighted filter de-emphasizes the very low and a very high frequency component of sound in a manner similar to the response of the human ear, and is a numerical method of rating human judgment of loudness.

(d) "Decibel (dBA)" shall mean a unit for measuring the amplitude of a sound, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of pressure of the sound measured to the reference pressure of twenty (20) micropascals.

(e) "Equivalent sound or noise level (Leq)" shall mean the International Electrotechnical Commission (IEC) 60804 Standard for measurement, or the most recent revision thereof, for the sound level corresponding to a steady state noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level or the energy average noise level during the sample period. The measurement period for the purposes of this chapter is fifteen (15) minutes.

(f) "Impulsive noise" shall mean a noise of short duration usually less than one (1) second and of high intensity, with an abrupt onset and rapid decay. Such objectionable noises may also be repetitive.

(g) "Intrusive noise" shall mean that noise that intrudes over and above the ambient noise at a

given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence and tonal information content, as well as the prevailing ambient noise level.

(h) "Maintenance" shall mean the upkeep, repair or preservation of existing property or structures.

(i) "Noise" shall mean any unwanted sound or sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing or is otherwise annoying.

(j) "Noise level (sound level)" shall mean the weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum. For purposes of this chapter, all noise levels (sound levels) shall be A-weighted sound pressure level.

(k) "Noise (sound) level meter" shall mean an instrument, including a microphone, an amplifier, an output meter and frequency weighting networks for the measurement and determination of noise and sound levels. For the purposes of this chapter, the sound level meter must meet the International Electrotechnical Commission (IEC) 60651 and 60804 Standards, or the most recent revisions thereof, for Type 1 sound level meters or an instrument and the associated recording and analyzing equipment that will provide equivalent data.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.03. Designated noise zones.

The properties hereinafter described shall be assigned to the following noise zones:

Noise Zone I:	All single-family residential properties;
Noise Zone II:	All multi-family residential properties and mobile home parks;
Noise Zone III:	All commercial property;
Noise Zone IV:	The residential portion of mixed use properties;
Noise Zone V:	All manufacturing or industrial properties and all other uses.

The actual use of the property, and not necessarily its zoning designation, shall be the determining factor in establishing whether a property is in Noise Zone I, II, III, IV or V, provided that the actual use is a legal use within the applicable zone.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.04. Exterior noise standards.

(a) The following exterior noise standards, unless otherwise specifically indicated, shall apply to all properties within a designated noise zone.

Allowable Exterior Noise Level (1)		*Allowed Equivalent Noise Level, Leq. (2)*	
Noise Zone	***Type of Land Use***	***7 a.m. to 10 p.m.***	***10 p.m. to 7 a.m.***
I	Single-Family Residential	65 dBA	45 dBA
II	Multi-Family Residential, Mobile Home Parks	65 dBA	50 dBA
III	Commercial Property	65 dBA	60 dBA
IV	Residential Portion of Mixed Use	70 dBA	70 dBA
V	Manufacturing and Industrial, Other Uses	70 dBA	70 dBA

(1) If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.

(2) Measurements for compliance are made on the affected property pursuant to § 5-29.15.

(b) It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

(1) The noise standard for the applicable zone for any fifteen-minute (15) period; and

(2) A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response).

(c) In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

(d) The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.

(e) If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.05. Interior noise standards.

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all properties within a designated noise zone.

Allowable Interior Noise Level (1)		*Allowed Equivalent Noise Level, Leq. (2)*	
Noise Zone	***Type of Land Use***	***7 a.m. to 10 p.m.***	***10 p.m. to 7 a.m.***

I	Single-Family Residential	45 dBA	40 dBA
II	Multi-Family Residential, Mobile Home Parks	45 dBA	40 dBA
IV	Residential Portion of Mixed Use	45 dBA	40 dBA

(1) If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.

(2) Measurements for compliance are made on the affected property pursuant to § 5-29.15.

(b) It is unlawful for any person at any location within the incorporated area of the City to create noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which noise causes the noise level, when measured at any location on any other property, to exceed either of the following:

(1) The noise standard for the applicable zone for any fifteen-minute (15) period;

(2) A maximum instantaneous (single instance) noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response).

(c) In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

(d) The Noise Zone IV standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property or use, if the noise originates from that commercial property or use.

(e) If the measurement location is on a boundary between two (2) different noise zones, the lower noise level standard applicable to the noise zone shall apply.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.06. Exemptions.

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

(a) Any activity conducted on public property, or on private property with the consent of the owner, by any public entity or its officers, employees, representatives, agents, subcontractors, permittees, licensees or lessees that the public entity has authorized are exempt from the provisions of this chapter. This includes, without limitation, sporting and recreational activities that are sponsored, co-sponsored, permitted or allowed by the City or any school district within the City's jurisdictional boundaries. This also includes, without limitation, occasional outdoor gatherings, public dances, shows or sporting and entertainment events, provided such events are conducted pursuant to an approval, authorization, contract, lease, permit or sublease by the appropriate public entity, specifically the planning commission or City Council;

(b) Occasional outdoor gatherings, public dances, show, sporting and entertainment events,

provided said events are conducted pursuant to a permit or license issued by the appropriate jurisdiction relative to the staging of said events;

(c) Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle, work or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within forty-five (45) minutes in any hour of its being activated;

(d) Noise sources associated with construction, repair, remodeling, demolition or grading of any real property. Such activities shall instead be subject to the provisions of § 5-29.09;

(e) Noise sources associated with construction, repair, remodeling, demolition or grading of public rights-of-way or during authorized seismic surveys;

(f) All mechanical devices, apparatus or equipment associated with agriculture operations provided that:

(1) Operations do not take place between 8:00 p.m. and 7:00 a.m.;

(2) Such operations and equipment are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions; or

(3) Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by or regulations enforced by the California Department of Agriculture;

(g) Noise sources associated with the maintenance of real property. Such activities shall instead be subject to the provisions of § 5-29.08;

(h) Any activity to the extent regulation thereof has been preempted by state or federal law;

(i) Any noise sources associated with people and/or music associated with a party at a residential property. Such noise shall be subject to the provisions of OMC § 5-29.07;

(j) Any noise source emanating from an ice cream truck within the City. Such noise shall be subject to the provisions of OMC § 4-18.04;

(k) Any noise sources associated with barking dogs or other intermittent noises made by animals on any properly within the City. Such noise shall be subject to the provisions of OMC Chapter 1, Title 6;

(l) Noise sources related to uses approved by a permit or development agreement adopted prior to the date of adoption of this chapter and that contains acoustic or noise standard conditions of approval. This exemption shall only be applicable during the effective period of the City-approved permit or development agreement.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.07. Loud and disturbing noise.

(a) It is unlawful for any person or property owner within the City to make, cause or allow to be made any loud, excessive, impulsive or intrusive noise, disturbance or commotion that disturbs the peace or quiet of any area or that causes discomfort or annoyance to any reasonable person of normal sensitivities in the area, after a Police or Code Enforcement Officer has first requested that the person or property owner cease and desist from making such noise. The types of loud, disturbing, excessive, impulsive or intrusive noise may include, but shall not be limited to, yelling, shouting, hooting, whistling, singing, playing a musical instrument, or emitting or transmitting any loud music or noise from any mechanical or electrical sound making or sound-amplifying device.

(b) The factors, standards, and conditions that may be considered in determining whether a violation of the provisions of this section has been committed, included, but not limited to, the following:

(1) The level of the noise;

(2) The level and intensity of the background (ambient) noise, if any;

(3) The proximity of the noise to residential or commercial sleeping areas;

(4) The nature and zoning of the area within which the noise emanates;

(5) The density of inhabitation of the area within which the noise emanates;

(6) The time of day and night the noise occurs;

(7) The duration of the noise;

(8) Whether the noise is constant, recurrent or intermittent;

(9) Whether the noise is produced by a commercial or noncommercial activity; and

(10) Whether the use is lawful under the provisions of Title 5 of this Code and whether the noise is one that could reasonably be expected from the activity or allowed use.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.08. Real property maintenance noise regulations.

(a) No person, while engaged in maintenance of real property, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, except between the hours of 8:00 a.m. and 6:00 p.m.

(b) Trimming or pruning that requires the use of chainsaws or mulching machines shall only be allowed between the hours of 8:00 a.m. and 6:00 p.m. on a weekday and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday or Sunday.

(c) The use of electrical or gasoline powered blowers, such as commonly used by gardeners or other persons for cleaning lawns, yards, driveways, gutters and other property shall only be allowed

between the hours of 8:00 a.m. and 6:00 p.m. on a weekday and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday or Sunday.

(d) No landowner, gardener, property maintenance service, contractor, subcontractor or employer shall permit or allow any person or persons working under his or her direction or control to operate any tool, equipment or machine in violation of the provisions of this section.

(e) Exceptions. The provisions of this section shall not apply to the following:

(1) Emergency property maintenance required by the building official;

(2) The maintenance, repair or improvement of any public work or facility by public employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City, or its employees, contractors or agents, unless:

(i) The City Manager or department head determines that the maintenance, repair or improvement is immediately necessary to maintain public service,

(ii) The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours, or

(iii) The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes maintenance during hours of the day that would otherwise be prohibited pursuant to this section; and

(3) Any maintenance that complies with the noise limits specified in § 5-29.04.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.09. Construction activity noise regulations.

(a) No person, while engaged in construction, remodeling, digging, grading, demolition or any other related building activity, shall operate any tool, equipment or machine in a manner that produces loud noise that disturbs a person of normal sensitivity who works or resides in the vicinity, or a Police or Code Enforcement Officer, on any weekday except between the hours of 7:00 a.m. and 6:00 p.m. or on Saturday or Sunday between the hours of 9:00 a.m. and 6:00 p.m.

(b) No landowner, construction company owner, contractor, subcontractor, or employer shall permit or allow any person or persons working under their direction and control to operate any tool, equipment or machine in violation of the provisions of this section.

(c) Exceptions.

(1) The provisions of this section shall not apply to emergency construction work performed by a private party when authorized by the City Manager or his or her designee;

(2) The maintenance, repair or improvement of any public work or facility by public

employees, by any person or persons acting pursuant to a public works contract, or by any person or persons performing such work or pursuant to the direction of, or on behalf of, any public agency; provided, however, this exception shall not apply to the City, or its employees, contractors or agents, unless:

(i) The City Manager or a department head determines that the maintenance, repair or improvement is immediately necessary to maintain public services,

(ii) The maintenance, repair or improvement is of a nature that cannot feasibly be conducted during normal business hours, or

(iii) The City Council has approved project specifications, contract provisions, or an environmental document that specifically authorizes construction during hours of the day that would otherwise be prohibited pursuant to this section; and

(3) Any construction that complies with the noise limits specified in §§ 5-29.04 or 5-29.05.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.10. Other public agency exceptions.

The provisions of this chapter shall not be construed to prohibit any work at different hours by or under the direction of any other public agency or public or private utility companies in cases of necessity or emergency.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.11. Schools, day care centers, churches, libraries, museums, health care institutions; Special provisions.

It is unlawful for any person to create any noise that causes the outdoor noise level at any school, day care center, hospital or similar health care institution, church, library or museum while the same is in use, to exceed the noise standards specified in § 5-29.04 prescribed for the assigned Noise Zone I.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.12. Sound amplifying equipment.

Loudspeakers, sound amplifiers, public address systems or similar devices used to amplify sounds shall be subject to the provisions of § 5-29.13. Such sound amplifying equipment shall not be construed to include electronic devices, including but not limited to, radios, tape players, tape recorders, compact disc players, MP3 players, electric keyboards, music synthesizers, record players or televisions, which are designed and operated for personal use, or used entirely within a building and are not designed or used to convey the human voice, music or any other sound to an audience outside such building, or which are used in vehicles and heard only by occupants of the vehicle in which installed.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.13. Amplified sound.

(a) The City Council enacts the following legislation for the sole purpose of securing and promoting the public health, comfort, safety and welfare for its citizenry. While recognizing that the use of sound amplifying equipment may be entitled to certain protection by the constitutional rights of freedom of speech and assembly, the City Council finds that in order to protect the public safety and the correlative rights of the citizens of this community to privacy and freedom from public nuisance of loud and unnecessary noise, reasonable regulation of the time, place and manner of the use of amplifying equipment is necessary. In no event shall approval or authorization required herein be withheld by reason of the constitutionally protected content of any material proposed to be broadcast through amplifying equipment.

(b) It is unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate a loudspeaker or sound amplifying device in a fixed or movable position or mounted upon any vehicle within the City for the purpose of giving instructions, directions, talks, addresses or lectures to any persons or assemblages of persons in or upon any street, alley, sidewalk, park, place or public property without a permit to do so from the Police Chief or his or her designee. Notwithstanding any other provision of this chapter, the provisions of this section shall also apply to the use of sound amplifying equipment upon public or private property when used in connection with outdoor or indoor public or private events, whether or not admission is charged or food or beverages are sold, when such activity is to be attended by more than one hundred (100) persons and the noise emanating from the event will be audible at the property plane, or in the case of a street dance or concert on the nearest residential property. Those activities listed in § 5-29.06(a) are exempt from the requirements of this section.

(c) The Police Chief or his or her designee is authorized to approve and issue permits under this section.

(d) An application for a permit required by this section shall be filed with the Police Chief at least sixteen (16) days and no more than one hundred twenty (120) days prior to the date on which the sound amplifying equipment is intended to be used. Applications for events covered by the First Amendment of the United States Constitution are exempt from the time requirements of this section if it is shown that circumstances require a shorter filing period and the event will not constitute an unsafe condition. The application shall contain the following information:

(1) The name, address and telephone number of both the owner and the user of the sound amplifying equipment;

(2) The license number, if a sound truck is to be used;

(3) A general description of the sound amplifying equipment which is to be used;

(4) Whether sound amplifying equipment will be used for commercial or noncommercial purpose;

(5) The dates and times upon and within which, and the streets or property over or upon which, the equipment is proposed to be operated;

(6) The name or names of one (1) or more persons who will be present during the conduct of any activities for which registration is sought and who will have authority to reduce the volume of any sound amplifying equipment during the course of the activities if required pursuant to this chapter and, otherwise, to insure compliance with the provisions of this chapter;

(7) A statement by the applicant that he or she is willing and able to comply with the provisions of this chapter and the conditions of the permit; and

(8) A sketch of the area or facilities within which the activities are to be conducted, with approximate dimensions and illustration of the location and orientation of all sound-amplifying equipment.

(e) The Police Chief shall deny the permit application or revoke any permit if the chief finds any of the following:

(1) The application contains materially false or intentionally misleading information;

(2) The use of sound amplifying equipment at an event or activity proposed will be located in or upon a premises, building or structure that is hazardous to the health or safety of the employees or patrons of the premises, business, activity, or event, or the general public, under the standards established by the Uniform Building or Fire Codes, or other applicable codes, as set forth in OMC Titles 4 and 8;

(3) The use of sound amplifying equipment at an event or activity proposed in or upon a premises, building or structure that lacks adequate on-site parking for participants attending the proposed event or activity under the applicable standards set forth in OMC Title 9;

(4) The conditions of any motor vehicle movement are such that, in his or her opinion, the use of the equipment would constitute an unreasonable interference with traffic safety;

(5) The conditions of pedestrian movement are such that the use of the equipment would constitute a detriment to traffic safety;

(6) The application submitted by the applicant reveals that the applicant would violate the provisions of this section or any other provision of federal, state and/or local law;

(7) The applicant is unwilling or unable to comply with the provisions of this chapter or any conditions imposed upon any permit issued;

(8) There had already been a permitted event at the intended location, or within a two hundred (200) yard radius of the intended location and the prior permitted event was located on residentially zoned property or on a street, alley, public parking lot or neighborhood park within three (3) months prior to the intended event. Community parks are exempt from this subsection (8); or

(9) The applicant or location has had previous violations within the past calendar year, and in the judgment of the Police Chief, issuance would be contrary to the intent of this section.

(f) In determining whether the use of the equipment would constitute an unreasonable interference with or detriment to traffic safety, the Police Chief shall consider, but shall not necessarily be limited to:

(1) The volumes, patterns and speed of vehicular and pedestrian traffic in the proposed area of use;

(2) The relationship of the proposed use of equipment and potential impacts upon traffic patterns;

(3) Availability of sufficient room for the operation of the equipment without significantly interfering with the traffic patterns;

(4) Proximity to schools, playgrounds and similar facilities where use of such equipment might attract children into traffic patterns; or

(5) Proximity to busy intersections or other potentially hazardous conditions where use of such equipment might constitute a hazard by reason of its tendency to distract drivers of vehicles or pedestrians.

(g) Issuance or denial.

(1) If the application is approved, the Police Chief shall return an approved copy of the application to the applicant and shall issue a permit. The permit shall constitute permission for the use of the sound amplifying equipment as requested.

(2) Any application filed shall be either approved or disapproved within five (5) days of the filing thereof.

(3) If the application is disapproved, the Police Chief shall return a disapproved copy forthwith to the applicant with a written statement on the reason for disapproval.

(i) Any person aggrieved by a decision of the Police Chief or his or her designee may file an appeal to the City Manager. A complete and proper appeal shall be filed with the City Clerk within ten (10) calendar days of the action that is the subject of the appeal. If the applicant fails to file an appeal within the ten (10) day filing period provided herein, denial shall take effect immediately upon expiration of such filing period. All appeals shall be in writing and shall contain the following information: (a) name(s) of the person filing the appeal, (b) a brief statement in ordinary and concise language of the relief sought, and (c) the signatures of all parties named as appellants and their mailing addresses. After receiving the appeal, the City Clerk shall immediately forward the matter to the City Manager for handling.

(ii) The City Manager shall, upon receipt of the appeal, set the matter for hearing before the City Manager or a hearing officer. Any hearing officer shall be a licensed attorney or recognized mediator designated by the City Manager. The hearing shall be set for not more than ten (10) calendar days after the receipt of the appeal unless a longer time is requested or consented to by the appellant. Notice of such hearing shall be given in writing and mailed at least five (5) calendar days prior to the date of the hearing, by U.S. mail, with a proof of service attached, addressed to the address listed on the permit application, or the written appeal if different from the permit application. The notice shall state the grounds of the complaint or reason for the denial and shall state the time and place where such hearing will be held.

(iii) The City Manager or hearing officer shall, within ten (10) calendar days following the conclusion of the hearing, make a written finding and decision, which shall be delivered to the City and

the appellant by first class mail. Notwithstanding any provision in this Code, the decision of the City Manager or hearing officer shall be the final administrative decision of the City. Any party dissatisfied with the decision of the City Manager or hearing officer may seek review of such decision under the provisions of Code Civil Procedure, §§ 1094.5 and 1094.8, as amended from time to time.

(h) In addition to any other provisions of this Code, the use of sound-amplifying equipment and sound trucks in the City shall be subject to the following regulations:

(1) The only sounds permitted are music and human speech;

(2) Sound shall not be emitted within one hundred (100) yards of hospitals, churches, schools and City Hall;

(3) The volume of sound shall be controlled so that it will not be audible for a distance in excess of one hundred (100) feet from the sound amplifying equipment or sound truck, and so that the volume is not unreasonably loud, raucous, jarring, disturbing or a nuisance to persons within the range of allowed audibility; or

(4) The sound amplifying equipment or sound truck shall not be used between the hours of 8:00 p.m. and 8:00 a.m.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.14. Motor vehicles.

The use of any motor vehicle in such a condition as to create excessive, impulsive or intrusive noises is prohibited. The discharge into the open air of the exhaust of any internal combustion engine, stationary or mounted on wheels, motorboat or motor vehicle, including motor cycle, whether or not discharged through a muffler or other similar device, which discharge creates excessive, unusual, impulsive or intrusive noise is prohibited. Motor vehicles shall comply with the noise regulations of the California Vehicle Code.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.15. Noise level measurement.

(a) The location selected for measuring exterior noise levels in a residential area shall be at any part of a private yard, patio, deck or balcony normally used for human activity and identified by the owner or, if occupied by someone other than the owner, the occupant of the affected property as suspected of exceeding the noise level standard. This location may be the closest point in the private yard or patio, or on the deck or balcony, to the noise source, but should not be located in nonhuman activity areas such as trash container storage areas, planter beds, above or contacting a property line fence, or other areas not normally used as part of the yard, patio, deck or balcony. The location selected for measuring exterior noise levels in a nonresidential area shall be at the closest point to the noise source. The measurement microphone height shall be five (5) feet above finish elevation or, in the case of a deck or balcony, the measurement microphone height shall be five (5) feet above the finished floor level.

(b) The location selected for measuring interior noise levels shall be made within the affected residential unit. The measurements shall be made at a point at least four (4) feet from the wall, ceiling or floor, or within the frame of a window opening, nearest the noise source. The measurements shall be made with windows in an open position.

(c) Any decibel measurement made pursuant to the provisions of this chapter shall be measured in decibels (dBAs) as measured with a sound level meter using the A-weighted sound pressure level.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.16. Prima facie violation.

Any noise exceeding the noise level standard as specified in §§ 5-29.04 and 5-29.05, shall be deemed to be prima facie evidence of a violation of the provisions of this chapter.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.17. Penalty.

(a) Any person who negligently or knowingly violates any provision of this chapter shall be guilty of an infraction and upon conviction shall be punishable by a fine specified in OMC § 1-2.01. Each day a violation occurs shall constitute a separate offense and shall be punishable as such.

(b) Any person who negligently or knowingly violates any provision of this chapter may also be subject to fine(s) specified in the administrative citation schedule of fines set forth in OMC § 1-5.04. The manner of issuing administrative citations shall comply with all the procedures specified in OMC Chapter 5, Title 1.

(c) As an additional remedy, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provisions of this chapter, which operation or maintenance causes or creates sound levels exceeding the allowable standards as specified in this chapter, shall be deemed and is declared to be a public nuisance and may be subject to abatement by a restraining order or injunction issued by a court of competent jurisdiction.

(d) Any violation of this chapter is declared to be a public nuisance and may be abated in accordance with law. The expense of enforcing this chapter is declared to be public nuisance and may be by resolution of the City Council declared to be a lien and special assessment against the property on which such nuisance is maintained, and any such charge shall also be a personal obligation of the property owner.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.18. Enforcement and administration.

(a) It shall be the responsibility of Police or Code Enforcement Officers to enforce the provisions of this chapter and to perform all other functions required by this chapter. Such duties shall include, but not be limited to investigating potential violations, issuing warning notices and citations, and providing

evidence to the City prosecutor for legal action.

(b) For violations of § 5-29.07, Police or Code Enforcement Officers shall obtain a declaration under penalty of perjury from two (2) declarants living in separate households within a sixty (60) day period stating in detail all of the following:

(1) That the declarant is a resident of a residential neighborhood located within two hundred (200) yards of the noise source; and

(2) Within the past month declarant has heard noise for substantially long periods to the extreme annoyance of the declarant.

(3) Declarations from two (2) declarants are required to prove a violation of § 5-29.07, but are not required to prove that a person has violated any other provision of this chapter.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.19. City Manager waiver.

The City Manager is authorized to grant a temporary waiver to the provisions of this chapter for a period of time necessary to correct the violations of this chapter, if such temporary waiver would be in the public interest and there is no feasible and prudent alternative to the activity, or the method of conducting the activity, for which the temporary waiver is sought. This time period may include a commitment to a program that includes placing necessary orders and entering into necessary contracts within thirty (30) days for repair or installation.

(§ 2, Ord. 2888, eff. March 6, 2008)

Sec. 5-29.20. Noise abatement program.

(a) In circumstances where adopted community-wide noise standards and policies prove impractical in controlling noise generated from a specific source, the City Council may establish a noise abatement program that recognizes the characteristics of the noise source and affected property and that incorporates specialized mitigation measures.

(b) Noise abatement programs shall set forth in detail the approved terms, conditions and requirements for achieving maximum compliance with noise standards and policies. Said terms, conditions and requirements may include, but shall not be limited to, limitations, restrictions, or prohibitions on operating hours, location of operations, and the types of equipment.

(§ 2, Ord. 2888, eff. March 6, 2008)

APPENDIX 3.3

City of Eastvale Noise Element

Chapter 7: Noise Element

Definitions

Following is a list of commonly used terms and abbreviations that may be found within this element or when discussing the topic of noise. This is an abbreviated glossary to be reviewed prior to reading the element. It is important to become familiar with the definitions listed in order to better understand the importance of the Noise Element within the County of Riverside General Plan. Since the disbanding of the State Office of Noise Control in the mid-1990, the State of California Office of Planning and Research General Plan Guidelines can offer further information on other noise-related resources.

Ambient Noise: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL (Community Noise Equivalent Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

dB (Decibel): The unit of measure that denotes the ratio between two quantities that are proportional to power; the number of decibels corresponding to the ratio of the two amounts of power is based on a logarithmic scale.

dBA (A-weighted decibel): The A-weighted decibel scale discriminates upper and lower frequencies in a manner approximating the sensitivity of the human ear. The scale is based on a reference pressure level of 20 micropascals.

Intrusive Noise: That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing noise level.

L_{10}: The A-weighted sound level exceeded ten percent of the sample time. Similarly, L_{50}, L_{90}, etc.

L_{eq} (Equivalent energy level): The average acoustic energy content of noise during the time it lasts. The L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure, no matter what time of day they occur. The County of Riverside uses a 10-minute L_{eq} measurement.

L_{dn} (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq

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The level of sound that impacts a property varies greatly during the day. As an example, the sound near an airport may be relatively quiet when no airplane is taking off or landing, but will be extremely loud as a plane takes off. In order to deal with these variations, several noise indices have been developed, which measure how loud each sound is, how long it lasts, and how often the sound occurs. The indices express all the sound occuring during the day as a single average level, which if it occurred all day would convey the same sound energy to the site.

represents the equivalent energy noise exposure for a shorter time period, typically one hour.

Micropascal: The international unit for pressure, similar to pounds per square inch. 20 micropascals is the human hearing threshold. The scale ranges from zero for the average least perceptible sound to about 130 for the average pain level

Noise Contours: Lines drawn around a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

Introduction

> *It is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare.*
>
> *-Noise Control Act of 1972*

Before the alarm clock sounds, the lawn mower next door begins to roar. Then, while listening to the morning news on the radio, an airplane flies overhead and deadens all sound in the neighborhood. Once outside, the neighbor's stereo can be heard a block away. And during the morning commute, car horns, rumbling mufflers, and whirring motorcycles serenade motorists on the highway. Even in the most rural areas of Riverside County, the eternal battle between the efficiency of technology, and the noise it can create cannot be avoided.

As modern transportation systems continue to develop and human dependence upon machines continues to increase, the general level of noise in our day to day living environment rises. In Riverside County, residential areas near airports, freeways, and railroads are being adversely affected by annoying or hazardous noise levels. Other activities such as construction, operation of household power tools and appliances, and industry, also contribute to increasing background noise.

Sound refers to anything that is or may be perceived by the ear. Noise is defined as "unwanted sound" because of its potential to disrupt sleep, rest, work, communication, and recreation, to interfere with speech communication, to produce physiological or psychological damage, and to damage hearing.

ADDRESSING NOISE ISSUES

The Noise Element is a mandatory component of the General Plan pursuant to the California Planning and Zoning Law, Section 65302(f). The element must recognize the guidelines adopted by the Office of Planning and Research pursuant to Section 46050.1 of the Health and Safety Code. It also can be utilized as a tool for compliance with the state's noise insulation standards.

The General Plan Noise Element provides a systematic approach to identifying and appraising noise problems in the community; quantifying existing and projected noise levels; addressing excessive noise exposure; and community planning for the regulation of noise. This element includes policies, standards, criteria, programs, diagrams, a reference to action items, and maps related to protecting public health and welfare from noise.

Tinnitus: The perception of ringing, hissing, or other sound in the ears or head when no external sound is present. For some people, tinnitus is just a nuisance. For others, it is a life-altering condition. In the United States, an estimated 12 million people have tinnitus to a distressing degree.

SETTING

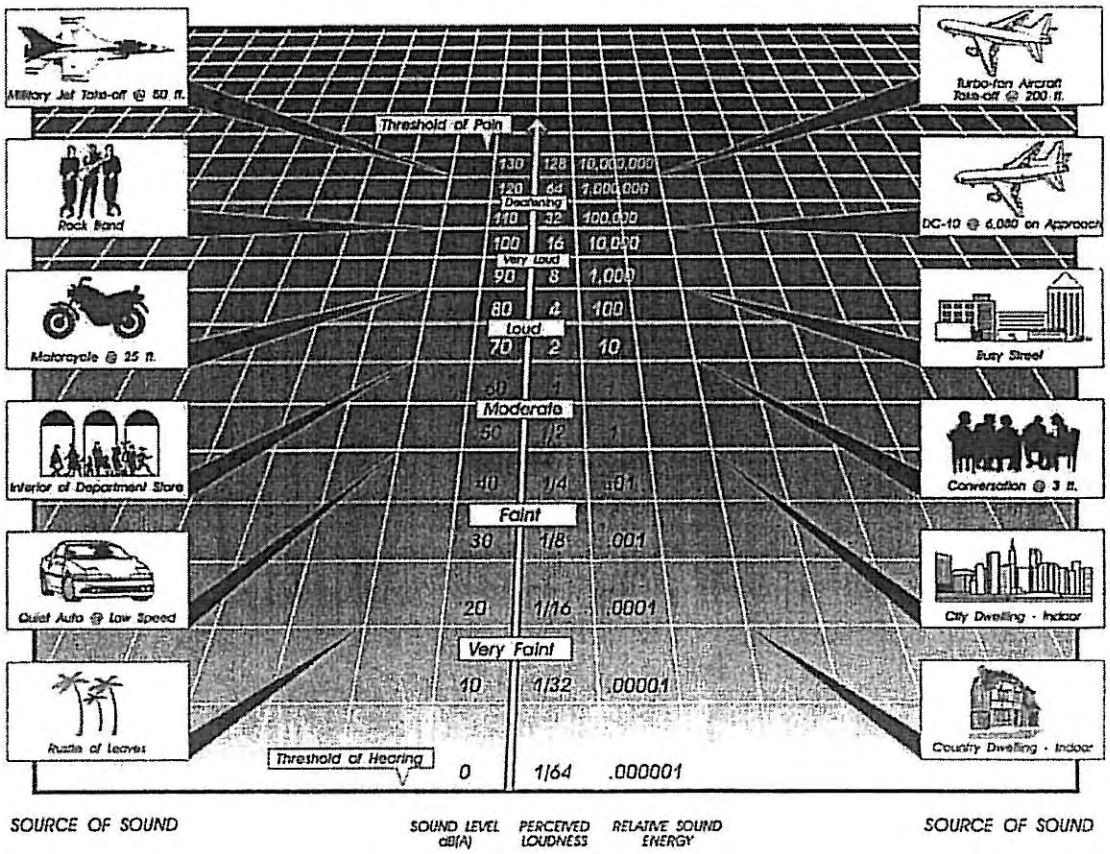
Riverside County is a continuously evolving group of communities that relies heavily upon the modern technological conveniences of American society to thrive and succeed as a pleasant and desirable place to live and work. Without such necessities as air-conditioning, heating, generators, and cars, living in an urban, suburban, rural, desert, or mountainous environment becomes difficult, if not impossible. Fortunately, these amenities are available to the residents of Riverside County and are used everyday, often all day long. Unfortunately, these technological advances can come at a high price to residents' and visitors' ears.

The philosophical view commonly held by Riverside County staff and residents is that noise, which may be perceived by some to be annoying, may not be noticed at all by others. It is also important to note that people who move into an area where a noise source already exists (such as near an existing highway) are often more tolerant of that noise source than when a new noise generator locates

itself in an established area that may be noise-sensitive (such as a stadium that is constructed near an established community).

Noise within Riverside County is generated by numerous sources found near places where people live and work. These sources are of particular concern when the noise they generate reaches levels above the prevailing background noise. There are many different types of noise, including mobile, stationary, and construction-related, that affect noise-sensitive receptors such as residences, schools, and hospitals. Figure 1, Common Noise Sources and Noise Levels, illustrates some noise producers that can be found within Riverside County, as well as their corresponding noise measurement. The following sections contain policies that address the issues of noise producers and their effects on noise-sensitive land uses.

Figure N-1: Common Noise Sources and Noise Levels



Noise Sensitive Land Uses

A series of land uses have been deemed sensitive by the State of California. These land uses require a serene environment as part of the overall facility or residential experience. Many of these facilities depend on low levels of sound to promote the well being of the occupants. These uses include, but are not necessarily limited to; schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, places of worship, libraries, and passive recreation areas. Activities conducted in proximity to these facilities must consider the noise output, and ensure that they don't create unacceptable noise levels that may unduly affect the noise-sensitive uses. The following policies address issues related to noise-sensitive land uses.

NOISE COMPATIBILITY

The Noise Element of the General Plan is closely related to the Land Use Element because of the effects that noise has on sensitive land uses. Noise-producing land uses must be compatible with adjacent land uses in order for the Land Use Plan to be successful. Land uses that emit noise are measured in A-weighted decibels (dBA) or Community Noise Equivalent Level (CNEL). If existing land uses emit noise above a certain level, they are not compatible with one another, and therefore noise attenuation devices must be used to mitigate the noise to acceptable levels indoors and outdoors. In cases of new development, the placement of noise-sensitive land uses is integral to a successful community. Table 1, Land Use Compatibility for Community Noise Exposure, reveals the noise acceptability levels for different land uses. Areas around airports may have different or more restrictive noise standards than those cited in Table 1 (See Policy N 1.3 below).The following policies protect noise-sensitive land uses from noise emitted by outside sources, and prevent new projects from generating adverse noise levels on adjacent properties.

The General Plan policy and implementation item reference system:

Identifies which element contains the Policy, in this case the Land Use Element, and the sequential number.

LU 1.3
Neighborhood commercial uses should be located near residential uses.
(AI 1 and AI 4)

Reference to the relevant Action Items contained in the Implementation Program.

Policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or blockwalls shall be used. (AI 107)

N 1.2 Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors or within the projected noise contours of any adjacent airports. (AI 107)

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- Schools;
- Hospitals;
- Rest Homes;
- Long Term Care Facilities;
- Mental Care Facilities;
- Residential Uses;
- Libraries;

- Passive Recreation Uses; and
- Places of worship

Unregulated noise sources such as household power tools often emit more noise than regulated noise producers.

According to the State of California Office of Planning and Research General Plan Guidelines, an acoustical study may be required in cases where these noise-sensitive land uses are located in an area of 60 CNEL or greater. Any land use that is exposed to levels higher than 65 CNEL will require noise attenuation measures.

Areas around airports may have different noise standards than those cited above. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix L and summarized in the Policy Area section of the affected Area Plan. (AI 105)

N 1.4 Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys. (AI 106, 109)

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County. (AI 105, 106, 108)

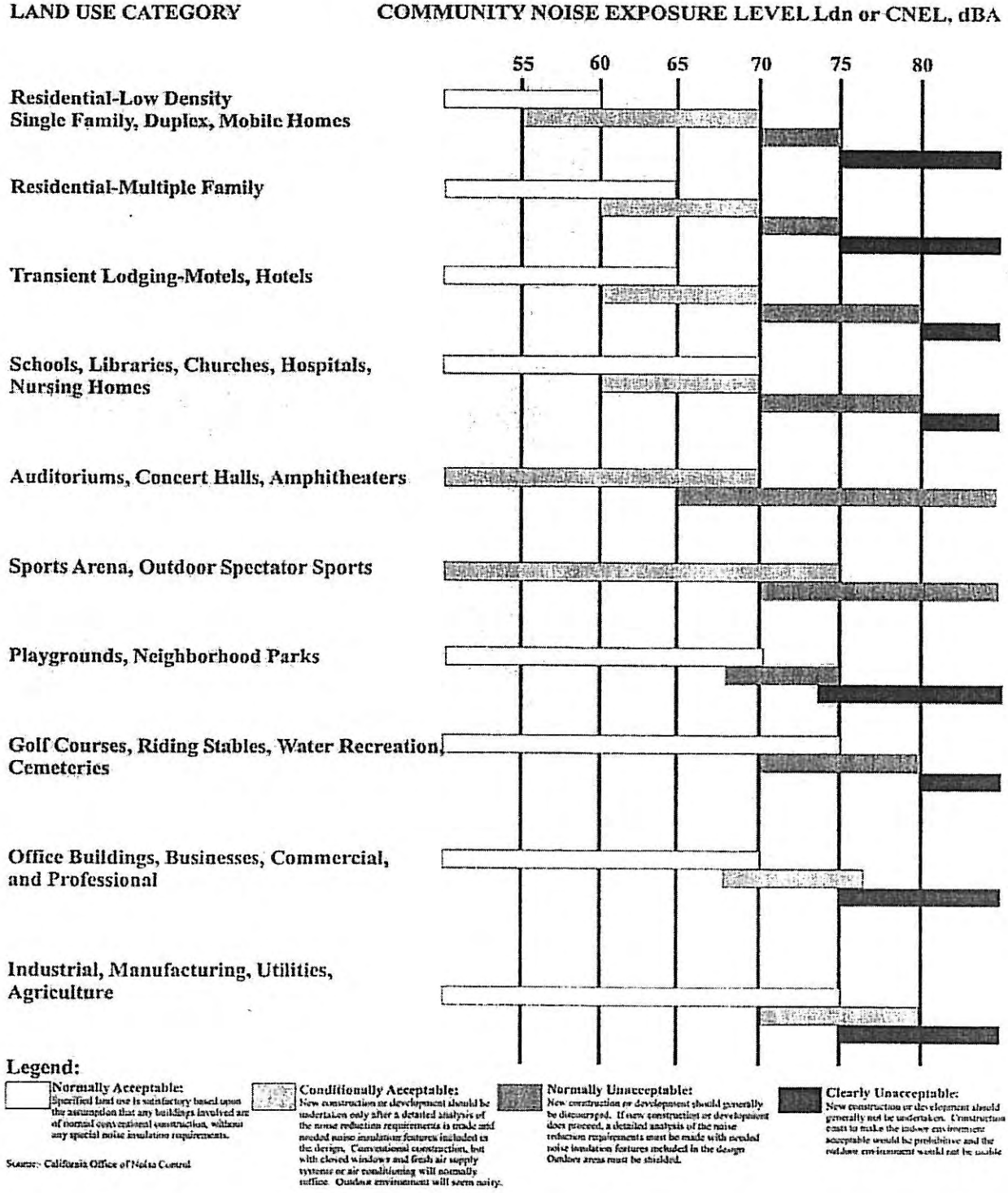
N 1.6 Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive uses. (AI 107)

N 1.7 Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem. (AI 106, 107)

N 1.8 Limit the maximum permitted noise levels that cross property lines and impact adjacent land uses, except when dealing with noise emissions from wind turbines. Please see the Wind Energy Conversion Systems section for more information. (AI 108)

Please contact the Office of Industrial Hygiene for more information on acoustical specialists.

Table N-1:
Land Use Compatibility for Community Noise Exposure



NOISE MITIGATION STRATEGIES

Many land uses emit noise above state-mandated acceptable levels. The noise emitted from a land use must be mitigated to acceptable levels indoors and outdoors in order for other, more noise-sensitive land uses to locate in proximity to these noise producers. There are a number of ways to mitigate noise and the following policies suggest some possible solutions to noise problems.

Policies:

N 2.1 Create a County Noise Inventory to identify major noise generators and noise-sensitive land uses, and to establish appropriate noise mitigation strategies. (AI 105)

N 2.2 Require a qualified acoustical specialist to prepare acoustical studies for proposed noise-sensitive projects within noise impacted areas to mitigate existing noise. (AI 105, 107)

N 2.3 Mitigate exterior and interior noises to the levels listed in the table below to the extent feasible, for stationary sources: (AI 105)

Table N-2:
Stationary Source Land Use Noise Standards [1]

Land Use	Interior Standards	Exterior Standards
Residential		
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)

[1]These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

Noise Producers

LOCATION OF NOISE PRODUCERS

Good neighbors keep their noise to themselves.

The communities of Riverside County need a variety of land uses in order to thrive and succeed. These land uses may provide jobs, clean water, ensure safety, ship goods, and ease transportation woes. But they may also emit high levels of noise throughout the day. These noise-producing land uses can complement a community when the noise they emit is properly mitigated. The following policies suggest a series of surveys and analyses to correctly identify the proper noise mitigating procedures in order to promote the continued success of the communities of Riverside County.

Agriculture

One of the major economic thrusts of Riverside County is the agricultural industry. The Riverside County Right-to-Farm Ordinance conserves, protects, and encourages the development, improvement, and continued viability of agricultural land and industries for the long-term production of food and other agricultural products, and for the economic well-being of the County's residents. The Right-to-Farm Ordinance also attempts to balance the rights of farmers to produce food and other agricultural products with the rights of non-farmers who own, occupy, or use land within or adjacent to agricultural areas. The Riverside County Right-to-Farm Ordinance also works to reduce the burden of the County's agricultural resources by limiting the circumstances under which agricultural operations may be deemed a nuisance. Policies within this section address the potential noise issues that may be raised in regards to agricultural production.

Policies:

N 3.1 Protect Riverside County's agricultural resources from noise complaints that may result from routine farming practices, through the enforcement of the Riverside County Right-to-Farm Ordinance. (AI 105, 107)

N 3.2 Require acoustical studies and subsequent approval by the Planning Department and the Office of Industrial Hygiene, to help determine effective noise mitigation strategies in noise-producing areas. (AI 105)

N 3.3 Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses. (AI 107)

N 3.4 Identify point-source noise producers such as manufacturing plants, truck transfer stations, and commercial development by conducting a survey of individual sites. (AI 106)

N 3.5 Require that a noise analysis be conducted by an acoustical specialist for all proposed projects that are noise producers. Include recommendations for design mitigation if the project is to be located either within proximity of a noise-sensitive land use, or land designated for noise-sensitive land uses. (AI 109)

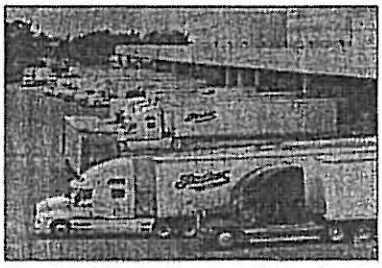
N 3.6 Discourage projects that are incapable of successfully mitigating excessive noise. (AI 107)

N 3.7 Encourage noise-tolerant land uses such as commercial or industrial, to locate in areas already committed to land uses that are noise-producing. (AI 107)

STATIONARY NOISE

A stationary noise producer is any entity in a fixed location that emits noise. Stationary noise producers are common in many noise-sensitive areas. Motors, appliances, air conditioners, lawn and garden equipment, power tools, and generators are often found in residential neighborhoods, as well as on or near the properties of schools, hospitals, and parks. These structures are often a permanent fixture and are required for the particular land use. Industrial and manufacturing facilities are also stationary noise producers that may affect sensitive land uses. Furthermore, while noise generated by the use of motor vehicles over public roads is preempted from local regulation, the County considers the use of these vehicles to be a stationary noise source when operated on private property such as at a truck terminal or warehousing facility. The emitted noise from the producer can be mitigated to acceptable levels either at the source or on the adjacent property through the use of proper planning, setbacks, blockwalls, acoustic-rated windows, dense landscaping, or by changing the location of the noise producer. The following policies identify mechanisms to measure and mitigate the noise emitted from stationary noise producers.

Community Noise Inventory



The cumulative noise created by truck transfer stations can reach excessive levels when noise sensitive uses are located nearby.

There are a series of noise producers within Riverside County that bear special recognition. These uses may be important parts of the economic health of the County, but they still emit noise from time to time. Some of the special noise producers within the County include, but are not limited to the Riverside Raceway, surface mining, truck transfer stations in the Mira Loma area, manufacturing facilities, and natural gas transmission pipelines.

Three high pressure natural gas transmission pipelines are located in the community of Cabazon (within the Pass Area Plan), and a series of valve stations are placed along the pipeline throughout the community. The pipelines supply a major portion of the non-transportation energy supply for southern California. The depressurization of mainline valves at the valve stations for emergency or maintenance reasons can result in noise levels exceeding 140 dB L_{eq} at a distance of 50 feet from the source for more than an hour at a time. The pipelines are not located in heavily populated areas; however, should higher-intensity uses be approved in the area in the future, possible relocation of one or more pipelines or valves may be necessary.

Policies:

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels: (AI 105)
a. 45 dBA-10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.
b. 65 dBA-10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 4.2 Develop measures to control non-transportation noise impacts. (AI 105)

N 4.3 Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed, and ensure that the recommended mitigation measures are implemented. (AI 105, 106, 109)

N 4.4 Require that detailed and independent acoustical studies be conducted for any new or renovated land uses or structures determined to be potential major stationary noise sources. (AI 105)

N 4.5 Encourage major stationary noise-generating sources throughout the County of Riverside to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent practicable prior to the renewal of Conditional Use Permits or business licenses or prior to the approval and/or issuance of new Conditional Use Permits for said facilities. (AI 105, 107)

N 4.6 Establish acceptable standards for residential noise sources such as, but not limited to, leaf blowers, mobile vendors, mobile stereos and stationary noise sources such as home appliances, air conditioners, and swimming pool equipment. (AI 105)

A pure tone is a single frequency tone with no harmonic content (e.g. hum).

N 4.7 Evaluate noise producers for the possibility of pure-tone producing noises. Mitigate any pure tones that may be emitted from a noise source. (AI 106, 107)

N 4.8 Require that the parking structures, terminals, and loading docks of commercial or industrial land uses be designed to minimize the potential noise impacts of vehicles on the site as well as on adjacent land uses. (AI 106, 107)

Wind Energy Conversion Systems (WECS)

Wind energy is a unique resource found only in a portion of Riverside County. Wind Energy Conversion Systems (WECS) are used to harness the energy found in strong gusts of wind. In order to fully capitalize on this special commodity, a large number of wind turbines have been placed in a portion of the Coachella Valley and San Gorgonio Pass within Riverside County. There are some residential areas spread throughout the County that may also capitalize on wind-generated power. Though there is minimal residential development in the immediate areas where these windmills are located, the potential for noise and ground-borne vibration in neighboring developed areas may occur. The Wind Implementation Monitoring Program, designed and implemented by Riverside County, guides the policy direction for this area.

Policies:

N 5.1 Enforce the Wind Implementation Monitoring Program (WIMP).

N 5.2 Encourage the replacement of outdated technology with more efficient technology with less noise impacts. (AI 105)

*Please see the **Circulation Element** for further policies regarding transportation and noise related issues.*

MOBILE NOISE

Mobile noise sources may be one of the most annoying noise producers in a community because they are louder than background noises and more intense than many acceptable stationary noise sources. Though the noise emitted from mobile sources is temporary, it is often more disturbing because of its abruptness, especially single noise-producing events such as vehicle backfires. Common mobile noise sources include on-road vehicles, aircraft, and trains. The policies in this section identify common mobile noise sources, and suggest mitigation techniques to reduce the annoyance and burden of mobile noise sources on noise-sensitive receptors.

Policies:

N 6.1 Consider noise reduction as a factor in the purchase of County maintenance equipment and their use by County contractors and permittees. (AI 108)

N 6.2 Investigate the feasibility of retrofitting current County-owned vehicles and mechanical equipment to comply with noise performance standards consistent with the best available noise reduction technology. (AI 108)

Commercial Airliners are mobile noise sources that contribute to noise pollution.

N 6.3 Require commercial or industrial truck delivery hours be limited when adjacent to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits. (AI 105, 107)

N 6.4 Restrict the use of motorized trail bikes, mini-bikes, and other off-road vehicles in areas of the County except where designated for that purpose. Enforce strict operating hours for these vehicles in order to minimize noise impacts on sensitive land uses adjacent to public trails and parks. (AI 105, 108)

Transportation

The most common mobile noise sources in the County are transportation-related. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a higher sustained noise level in proximity to areas sensitive to noise exposure. Rail and aircraft operations, though less frequent, may generate extremely high noise levels that can be disruptive to daily activities. Though mass transit has not yet been developed within Riverside County, it is important to consider the noise that may be generated from transit service.

The following airports are located within or have a direct effect on Riverside County. Please see Appendix I for a map with each airport's noise contours. Also see the area plans and airport land use plans for more specific airport-related policies:

- *Banning Municipal Airport*
- *Bermuda Dunes Airport*
- *Blythe Airport*
- *Chino Airport*
- *Corona Municipal Airport*
- *Chiriaco Summit Airport*
- *Desert Center Airport*
- *Desert Resorts Regional Airport*
- *Flabob Airport*
- *French Valley Airport*
- *Hemet-Ryan Airport*
- *March Inland Port*
- *Palm Springs Regional Airport*
- *Perris Valley Airport*
- *Riverside Municipal Airport*
- *Skylark Airport*

Airports

With the dynamic growth in aviation, aircraft noise will remain a challenging environmental problem and one that will affect an increasing number people as air traffic routes and procedures change in the future. Aircraft noise appears to produce the greatest community anti-noise response, although the duration of the noise from a single airplane is much less, for example, than that from a freight train. There is great economic benefit to gain from airports of any size, although living in proximity to an airport may bring about expected aircraft noise.

There are 15 (fifteen) airports that are located within or have a direct effect on Riverside County. The land under the flight paths of each airport was monitored to determine the amount of noise emitted by common aircraft taking-off and landing at any given airport. Noise contours were created based on the measurements from the monitoring program. The CNEL noise contour(s) for the following airports have been depicted in the applicable Area Plan's Airport Influence Area section:

- Banning Municipal Airport
- Bermuda Dunes Airport
- Blythe Airport
- Chino Airport
- Chiriaco Summit Airport
- Corona Municipal Airport
- Desert Center Airport
- Desert Resorts Regional Airport
- Flabob Airport
- French Valley Airport
- Hemet Ryan Airport
- Riverside Municipal Airport

An Airport Land Use Plan has been created for each airport within Riverside County, and it should be referenced for further information regarding airports. Helicopters and heliports are also potential sources of noise, but due to the relatively low frequency and short duration of their operation in most circumstances, these operations do not significantly affect average noise levels within the County. The following general policies address the noise that comes from airports and the aircraft they service.

Policies:

N 7.1 New land use development within Airport Influence Areas shall comply with airport land use noise compatibility criteria contained in the corresponding airport land use compatibility plan for the area. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix L and summarized in the Policy Area section of the affected Area Plan.

N 7.2 Adhere to applicable noise compatibility criteria when making decisions regarding land uses adjacent to airports. Refer to the Airports section of the Land Use Element (Page LU-32) and the Airport Influence Area sections of the corresponding Area Plans.

N 7.3 Prohibit new residential land uses, except construction of a single-family dwelling on a legal residential lot of record, within the current 60 dB CNEL contours of any currently operating public-use, or military airports. The applicable noise contours are as defined by the Riverside County Airport Land Use Commission and depicted in Appendix L, as well as in the applicable Area Plan's Airport Influence Area section.

N 7.4 Check each development proposal to determine if it is located within an airport noise impact area as depicted in the applicable Area Plan's Policy Area section regarding Airport Influence Areas. Development proposals within a noise impact area shall comply with applicable airport land use noise compatibility criteria.

N 7.5 Revise the Riverside County Zoning Code to reflect aircraft noise-impacted areas around the County's major airports. (AI 109)

*Please see the **Circulation Element** for more in-depth information regarding Level of Service Standards, Average Daily Trips, and other information related to vehicular circulation.*

Vehicular

Roadway traffic is one of the most pervasive sources of noise within Riverside County. Traffic noise varies in how it affects land uses depending upon the type of roadway, and the distance of the land use from that roadway. Some variables that affect the amount of noise emitted from a road are speed of traffic, flow of traffic, and type of traffic (e.g. tractor trailers versus cars). Another variable affecting the overall measure of noise is a perceived increase in sensitivity to vehicular noise at night. Appendix I contains tables and figures that illustrate existing and forecasted noise from roadways throughout the County. The existing noise measurements were obtained by measuring noise at different points adjacent to the roadway. The future noise contours along freeways and major highways, also located in Appendix I, were created from the results of traffic modeling to project the noise of major roadways in the future. The following policies address the issues of roadway traffic noise, and suggest methods to reduce the noise impact of roads on adjacent and nearby land uses.

Policies:

N 8.1 Enforce all noise sections of the State Motor Vehicle Code.

N 8.2 Ensure the inclusion of noise mitigation measures in the design of new roadway projects in the County. (AI 105)

Off-road and all-terrain vehicles must obey strict operating hours when noise-sensitive land uses are nearby or adjacent to trails and open space.

N 8.3 Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures. (AI 106)

N 8.4 Require that the loading and shipping facilities of commercial and industrial land uses, which abut residential parcels be located and designed to minimize the potential noise impacts upon residential parcels. (AI 105)

N 8.5 Employ noise mitigation practices when designing all future streets and highways, and when improvements occur along existing highway segments. These mitigation measures will emphasize the

establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas. (AI 105)

N 8.6 Require that all future exterior noise forecasts use Level of Service C, and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts. (AI 106)

Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere.

N 8.7 Require that field noise monitoring be performed prior to siting to any sensitive land uses along arterial roadways. Noise level measurements should be of at least 10 minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels. (AI 106)

Mass Transit

Please see the Circulation Element for additional policies related to transit development and rail systems.

Currently, the County does not participate in or provide any rail transit services though public transportation is becoming a more desirable option for many travelers and commuters in Riverside County. Transit can be an alternative to driving a car through congested Riverside County freeways. Currently, the noise generated by public transportation within Riverside County affects only a very small percentage of the total residential population. As years pass, and the need for public transportation increases, there will be a greater number of residents affected by the noise that buses, transit oases shuttles, light rail, and trains will produce. The following policies address the issues of noise related to public transit.

Policies:

N 9.1 Encourage local and regional public transit providers to ensure that the equipment they operate and purchase is state-of-the-art and does not generate excessive noise impacts on the community. (AI 108)

N 9.2 Encourage the use of quieter electric-powered vehicles. (AI 108)

N 9.3 Encourage the development and use of alternative transportation modes including bicycle paths and pedestrian walkways to minimize vehicular noise within sensitive receptor areas.

N 9.4 Actively participate in the development of noise abatement plans for freeways and rapid transit. (AI 108)

Rail

An at-grade railroad crossing is one where the street and the rail line form an intersection, and physically cross one-another.

The rail system within Riverside County criss-crosses its way through communities, industrial areas, rural areas, and urban centers. Trains carry passengers, freight, and cargo to local and regional destinations day and night. Rail transportation may become more popular in the future if a mass public transportation system is implemented within Riverside County. Currently, daily train traffic produces noise that may disrupt activities in proximity to railroad tracks. For instance, trains are required to sound their horns at all at-grade crossings, and they may also be required to slow their speed through residential areas. These types of noise disturbances can interfere with activities conducted on noise-sensitive land uses. Exhibits showing existing railroad noise contours

can be found in Appendix I. These exhibits provide purely illustrative contours along rail lines throughout the County. The following policies suggest actions that could minimize the impacts of train noise on noise-sensitive land uses.

Policies:

N 10.1 Check all proposed projects for possible location within railroad noise contours using typical noise contour diagrams. (AI 106, 109)

N 10.2 Minimize the noise effect of rail transit (freight and passenger) on residential uses and other sensitive land uses through the land use planning process. (AI 106, 109)

N 10.3 Locate light rail and fixed rail routes and design rail stations in areas that are accessible to both residential and commercial areas, but also minimize noise impacts on surrounding residential and sensitive land uses. (AI 106, 109)

N 10.4 Install noise mitigation features where rail operations impact existing adjacent residential or other noise-sensitive uses. (AI 108)

N 10.5 Restrict the development of new sensitive land uses to beyond the 65 decibel CNEL contour along railroad rights-of-way. (AI 106, 109)

Building and Design

One of the most effective means of reducing noise in a sensitive area is to construct and design buildings in such a way that the noise is deflected in such a way that it does not affect the occupants. If the building has already been constructed, then landscaping and design techniques can be used to tastefully absorb the noise emitted from mobile or stationary sources. These building and design techniques should serve two purposes; to mitigate noise to acceptable indoor and outdoor levels, and to enhance the community character rather than detract from its surroundings. The following policies have been included in the Noise Element to ensure that the character of each community within Riverside County is preserved while minimizing noise to acceptable levels.

Natural Barriers and Landscaping

Policies:

N 11.1 Utilize natural barriers such as hills, berms, boulders, and dense vegetation to assist in noise reduction. (AI 108)

N 11.2 Utilize dense landscaping to effectively reduce noise. However, when there is a long initial period where the immaturity of new landscaping makes this approach only marginally effective, utilize a large number of highly dense species planted in a fairly mature state, at close intervals, in conjunction with earthen berms, setbacks, or block walls. (AI 108)

Temporary Construction

Policies:

N 12.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices. (AI 105, 108)

N 12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas. (AI 105, 108)

N 12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as

a. Temporary noise attenuation fences;
b. Preferential location of equipment; and
c. Use of current noise suppression technology and equipment. (AI 107)

N 12.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer. (AI 105, 108)

Building and Design Techniques

Policies:

N 13.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

★

Non-habitable areas within a home include:

- *kitchens*
- *bathrooms*
- *hallways*
- *garages*
- *closets*
- *utility rooms*
- *laundry rooms*

N 13.2 Continue to develop effective strategies and mitigation measures for the abatement of noise hazards reflecting effective site design approaches and state-of-the-art building technologies. (AI 108)

N 13.3 Incorporate acoustic site planning into the design of new development, particularly large scale, mixed-use, or master-planned development, through measures which may include:

- separation of noise-sensitive buildings from noise-generating sources;
- use of natural topography and intervening structure to shield noise-sensitive land uses; and
- adequate sound proofing within the receiving structure. (AI 106)

N 13.4 Consider and, when necessary to lower noise to acceptable limits, require noise barriers and landscaped berms. (AI 108)

N 13.5 Consider the issue of adjacent residential land uses when designing and configuring all new, non-residential development. Design and configure on-site ingress and egress points that divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable. (AI 106, 107)

N 13.6 Prevent the transmission of excessive and unacceptable noise levels between individual tenants and businesses in commercial structures and between individual dwelling units in multi-family residential structures. (AI 105, 108)

N 13.7 Assist the efforts of local homeowners living in high noise areas to noise attenuate their homes through funding assistance and retrofitting program development, as feasible. (AI 105, 108)

N 13.8 Review all development applications for consistency with the standards and policies of the Noise Element of the General Plan.

N 13.9 Mitigate 600 square feet of exterior space to 65 dB CNEL when new development is proposed on residential parcels of 1 acre or greater.

Mixed Use

Policies:

N 14.1 Minimize the potential adverse noise impacts associated with the development of mixed-use structures where residential units are located above or adjacent to commercial uses. (AI 106, 107, 108)

N 14.2 Require that commercial and residential mixed-use structures minimize the transfer or transmission of noise and vibration from the commercial land use to the residential land use. (AI 105)

N 14.3 Minimize the generation of excessive noise level impacts from entertainment and restaurant/bar establishments into adjacent residential or noise-sensitive uses. (AI 105, 107)

APPENDIX 3.4

City of Eastvale Stationary Noise Source Requirements

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Department of Public Health
Riverside County Community Health Agency

MEMO: Requirements for Determining and Mitigating Non-transportation Noise Source Impacts to Residential Properties.

APPLICATION:

This document is intended to provide guidelines for the determination of community noise impact due to non-transportation (hereafter known as "stationary") noise sources. Noise sources covered by this standard include, but are not limited to: industrial facilities, mining activities, loading dock activities, loud speakers operation, sporting events, musical performances, well pumps, equipment, vehicles operated off the public roadways, or any noise producing activities associated with a permanent fixed base of operation (hereafter referred to as the "facility"). Temporary construction activities are not covered by the standard.

NOISE STANDARDS FOR STATIONARY NOISE SOURCES:

Facility-related noise, as projected to any portion of any surrounding property containing a "habitable dwelling, hospital, school, library or nursing home", must not exceed the following worst-case noise levels.

A) 45 dB(A) - 10 minute noise equivalent level ("leq"), between the hours of 10:00 p.m. to 7:00 a.m. (nighttime standard).

B) 65 dB(A) - 10 minute leq, between 7:00 a.m. and 10:00 p.m. (daytime standard).

REQUIREMENTS FOR DETERMINATION OF COMMUNITY NOISE IMPACT:

1. Noise originating from operations within the facility grounds shall be treated as "stationary" noise sources for which this standard will apply.

2. Noise Modeling Methodology: Noise predictions are to be made by an engineer, acoustical consultant, or other similar professional with experience in predicting community noise exposure using standard methods and practices of the noise consulting industry.

3. Required Modeling Parameters for Stationary Sources:

i. Stationary sources are to be modeled as "point" sources.

ii. Mobile point sources are to be modeled as emanating from the acoustical centroid of the activity, or at its closest approach to potentially impacted residential property lines, which ever yields the worst-case results.

iii. Noise modeling for each piece of acoustically significant equipment, process or activity must be based on Reference Noise Levels (RNL). RNL may be obtained directly from the manufacturer (in

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the case of equipment) or generated from field studies. Regardless, the data must be representative of worst-case conditions. Directionality of the noise source must be taken into consideration if applicable.

iv. Predicted noise levels are to be expressed in germs of worst-case "equivalent continuous sound levels" [or, Leq] averaged over a ten minute period.

v. For modeling purposes, receivers are assumed to be positioned at the property line boundary at an elevation of five feet off the ground.

vi. Terrain conditions for modeling noise propagation: Assumptions regarding ground effects, atmospheric absorption and other forms of noise attenuation must be fully justified.

NOISE REPORT FORMAT AND REQUIRED SUBMITTALS:

The noise Consultant's findings and recommendations must be submitted for review, and receive approval from, the Office of Industrial Hygiene. The resulting report must incorporate the requirements above and, at a minimum, contain the following information:

a) an adequate and accurate characterization of the current ambient noise environment;
b) a clear description of the proposed facility and its activities including a step-by-step flow chart of manufacturing processes if applicable;
c) the identity and characterization of all acoustically significant equipment and/or activities;
d) a discussion of analytical methodology and parameters used for noise modeling;
e) a table containing reference noise data accompanied by a detailed description of how it was obtained;
f) the facilities hours of operation;
g) a discussion of anticipated production volume, how it is expected to change over time and how such change will effect community noise;
h) a discussion of worst-case unmitigated noise impact;
i) a discussion of mitigation (if necessary);
j) a printed copy of computer input/output (if available) or manual calculations clearly illustrating the rationale for the Consultant's conclusions.

In addition, the final noise report must contain a scaled map(s) defining the acoustical contours surrounding the facility. Minimally, this map(s) must show:

a) The facility relative to the residential properties surrounding it. Include both unincorporated and incorporated (any adjoining Cities) area surrounding the project and potentially affected by project-related noise.
b) The 65 dB(A) 10 minute Leq noise contour reflecting the anticipated "worst-case" conditions between the hours of 7AM - 10 PM (daytime hours).
c) The 45 dB(A) 10 minute Leq noise contour reflecting the anticipated "worst-case" conditions between the hours of 10 PM - 7AM (nighttime hours).
d) The location and number of residential structures located within these contours.

Figure C-3 Street Classification Cross-Sections

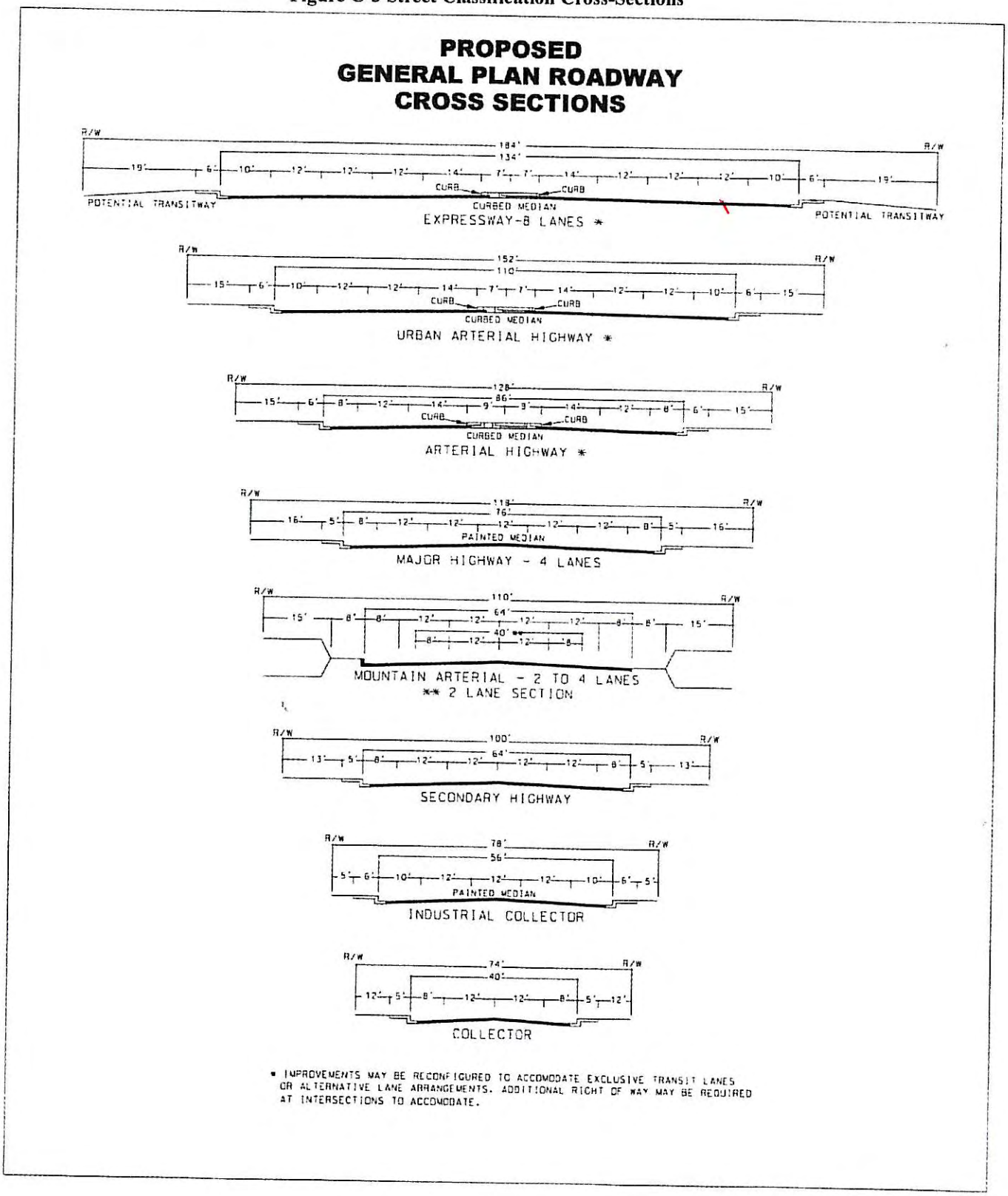

Figure C-2 Link/Volume Capacity/Level of Service for Riverside County Roadways

Link Volume Capacities/Level of Service for Riverside County Roadways[1]

David E. Barnhart
Director of Transportation

Roadway Classification	Number of Lanes	Maximum Two-Way Traffic Volume (ADT)[2]		
		Service Level C	Service Level D	Service Level E
Collector	2	10,400	11,700	13,000
Secondary	4	20,700	23,300	25,900
Major	4	27,300	30,700	34,100
Arterial[3]	2	14,400	16,200	18,000
Arterial	4	28,700	32,300	35,900
Mountain Arterial[3]	2	12,900	14,500	16,100
Mountain Arterial	3	16,700	18,800	20,900
Mountain Arterial	4	29,800	33,500	37,200
Urban Arterial	4	28,700	32,300	35,900
Urban Arterial	6	43,100	48,500	53,900
Urban Arterial	8	57,400	64,600	71,800
Expressway	4	32,700	36,800	40,900
Expressway	6	49,000	55,200	61,300
Expressway	8	65,400	73,500	81,700
Freeway	4	61,200	68,900	76,500
Freeway	6	94,000	105,800	117,500
Freeway	8	128,400	144,500	160,500
Freeway	10	160,500	180,500	200,600
Ramp[4]	1	16,000	18,000	20,000

Notes: (1) All capacity figures are based on optimum conditions and are intended as guidelines for planning purposes only.
(2) Maximum two-way ADT values are based on the 1999 Modified Highway Capacity Manual Level of Service Tables as defined in the Riverside County Congestion Management Program.
(3) Two-lane roadways designated as future arterials that conform to arterial design standards for vertical and horizontal alignment are analyzed as arterials.
(4) Ramp capacity is given as a one-way traffic volume.

Revised: March 2001

Table C-1
Street Classifications as identified in the City Transportation Department Standards and Specifications

Classification	Definition	Minimum Right-of-Way Width Required	Number of Lanes Required (Approximate)
Freeway	Highway upon which the abutter's rights of access are controlled and which provides separated grades at intersecting streets.	To be determined by Caltrans	To be determined by Caltrans
Expressway	Multi-modal highway corridor for through traffic to which access from abutting property is restricted. Intersections with other streets or highways shall be limited to approximately one-half mile intervals.	184 feet	6 or 8 lanes, additional rights-of-way may be needed at some intersections
Urban Arterial	Highway primarily for through traffic where anticipated traffic volumes exceed four-lane capacity. Access from other streets or highways shall be limited to approximately one-quarter mile intervals.	152 feet	6 lanes, additional rights-of-way may be required. at intersections
Arterial Highway	Divided highway primarily for through traffic to which access from abutting property shall be kept at a minimum. Intersections with other streets or highways shall be limited to approximately one-quarter mile intervals.	128 feet	4 or 6 lanes
Arterial Mountain Highway	Highway intended to serve through traffic in mountainous areas zoned for low density residential development. Access from abutting property shall be kept at a minimum. Intersections with other streets or highways shall be limited to approximately 330-foot intervals.	110 feet	4 lanes, additional right-of-way may be required at some intersections.
Major Highway	Highway intended to serve property zoned for major industrial and commercial uses, or to serve through traffic. Intersections with other streets or highways may be limited to approximately 660-foot intervals.	118 feet	4 lanes, additional rights-of-way may be required at intersections
Secondary Highway	Highway intended to serve through traffic along longer routes between major traffic generating areas or to serve property zoned for multiple residential, secondary industrial or commercial uses. Intersections with other streets and highways may be limited to 330-foot intervals.	100 feet	4 lanes, generally no turn lanes, and additional right-of-way may be required at some intersections
Collector Street	Street intended to serve intensive residential land use, multiple-family dwellings, or to convey traffic through an area to roads of equal or similar classification or higher. It may also serve as a cul-de-sac in industrial or commercial use areas but shall not exceed 660 feet in length when so used.	74 feet	2 lanes
Industrial Collector	A circulatory street with a continuous left-turn lane with at least one end connecting to a road of equal or greater classification.	78 feet	2 lanes

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Department of Public Health
Riverside County Community Health Agency

MEMO: Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures.

NOISE STANDARDS:

1. The Noise Element of the General Plan indicates that to avoid future noise hazard, the maximum capacity design standard for highways and major roads will be used for determining the maximum future noise level or, in the case of freeways and airports, the estimated conditions 20 years in the future.

2. The interior noise levels in residential dwellings shall not exceed 45 Ldn/CNEL.

3. The exterior noise level shall not exceed 65 Ldn/CNEL.

4. Required Noise Prediction Model – Traffic Noise: FHWA RD 77-108 Highway Traffic Prediction Model, Sound 32 or the equivalent.

REQUIRED TRAFFIC NOISE MODELING PARAMETERS:

1. Roadway Classification: All roadways must be classified into one of the following categories as defined in the General Plan: Secondary, Major, Arterial, Urban Arterial, Expressway, Freeway, and Specific Plan Road.

2. Roadway Traffic Volume: All roadways must be modeled using Average Daily Trip (ADT) Level of Service "C" design capacities. For roadways classified by the General Plan as variable, future build-out traffic volumes must be obtained from the County's Transportation Department
3. or in the case of freeways, from Caltrans.

4. Required vehicle mix.

   - Freeways: Vehicle mix information must be obtained from Caltrans.

   - Roadways designated as major, arterial highways, or expressways:

VEHICLE	OVERALL %	DAY (7AM-7PM) %	EVENING (7PM-10PM) %	NIGHT (10PM-7AM) %
Auto	92	69.5	12.9	9.6
Medium Truck	3	1.44	0.06	1.5
Heavy Truck	5	2.4	0.1	2.5

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- Roadways designated as secondary, collectors, or smaller:

VEHICLE	OVERALL %	DAY (7AM-7PM) %	EVENING (7PM-10PM) %	NIGHT (10PM-7AM) %
Auto	97.4	73.6	13.6	10.22
Medium Truck	1.84	0.9	0.04	0.9
Heavy Truck	0.74	0.35	0.04	0.35

5. Traffic Speed: For County roads assume an average traffic speed of 40 MPH. For freeways, contact CALTRANS and use what speed they recommend.

6. Terrain conditions for modeling noise propagation: Assume "hard site" conditions in determining noise propagation (no more than 3 dB of attenuation per doubling of distance between source and receiver).

7. Noise attenuation attributed to standard residential architecture: It is assumed that standard residential design (with windows closed) will provide no more than 20 dB (A) of attenuation. Additional mitigation must be demonstrated via modeling.

8. Receiver placement for modeling exterior noise levels (unmitigated): Noise levels must be estimated at the exterior face of the nearest residence at an elevation of five feet above the finished pad.

   - Receiver placement for noise barrier design: *Set back*: Barrier calculations shall be based on a hypothetical outdoor receiver located ten (10) feet behind the intervening noise barrier.

   - Receiver height: Initial calculations shall be based on a receiver height of five (5) feet above the ground. If these calculations result in a barrier less than or equal to six (6) feet in height, no further barrier calculations are necessary and this shall be selected as the required wall height.

9. However, if the resulting barrier height is calculated to be greater than six feet, it shall be re-calculated using a receiver height of three (3) feet. The resulting re-calculated wall height shall be then selected as the required wall height.

10. Receiver placement for architectural-based (indoor) noise mitigation – first floor: First floor interior noise level predictions are to be calculated assuming a hypothetical receiver is located in the center of the room nearest the noise source and elevated 5 feet above the pad (finished floor).

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NOISE REPORT FORMAT AND REQUIRED SUBMITTALS:

The noise Consultants findings and recommendations must be submitted for review, and receive approval from, the Office of Industrial Hygiene. The resulting report must incorporate the requirements above and, at a minimum, contain the following information: a) a clear description of the proposed project; b) the identity and characterization of all acoustically significant roadways; c) a discussion of analytical methodology and parameters used for noise modeling; d) information obtained from applying requirements 6-10 (above); e) a discussion of mitigation (if necessary) including a clear diagram illustrating noise barrier placement; f) a printed copy of computer input/output (if available).

In addition to the report, Industrial Hygiene must be provided with the following depending on the design stage of the project. The first item that must be provided is a scaled map (blue-line) of the project. This map must clearly illustrate lot boundaries and the relative location of all acoustically significant roadways. Topographical elevations for lots and roadway centerlines must be included. Second, if architectural-based mitigation is necessary, and if the project has progressed to the point where plans for the homes have been drawn, copies must be provided (floor plans and exterior elevation drawings). Additionally, an updated blue-line showing exact pad location and finished floor elevation must be included.

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Department of Public Health
Riverside County Community Health Agency

MEMO: Potential Studies Requiring Input from Department of Public Health

I. STUDIES

Except for WECS (Wind Energy Conversion Systems) Noise, Department of Public Health input is discretionary as determined by the Planning Department. Regularly, the Planning Department requests Department of Public Health reviews concerning the acoustical issues associated with a project. Less frequently, the Department may be requested to comment on ground vibration from trains (may apply to noise sensitive receptor within 1,000 feet of a rail corridor) and release of silica dust from sand and gravel pit operations. In addition, in response to community and planning commissioners comments, the Planning Department may request Department reviews of projects having the following associated issues: nuisance dust, cement dust, electromagnetic fields from power lines, and asbestos dust.

A. Noise Appraisals

Noise appraisals fall into three groups each with distinct criteria; Transportation noise receptors, e.g. tracts receiving noise from highways and airports; stationary noise sources, e.g. projects emitting significant noise impacting neighboring communities; and Wind Energy Conversion Systems noise (WECS or Windturbine Farms). An applicant should be aware that a given project may fall into more than one group. The following outlines the minimum criteria associated with each group.

1. Transportation noise receptors:
   (a) Interior noise levels in residential dwellings shall not exceed 45 Ldn (or CNEL).
   (b) Exterior noise levels shall not exceed 65 Ldn (or CNEL).
   (c) Acoustical parameters are outlined in the memo of Dec. 21, 1990 (contact the Office of Industrial Hygiene).

2. Stationary noise sources:
   During hours of 7 A.M. to 10 P.M. and 10 P.M. to 7 A.M., the noise levels shall not exceed 65 and 45 dB,A weighted ten minute Leq, respectively, as projected to any portion of a lot with occupied residence.

3. WECS Noise.:
   WECS shall comply with criteria established by Ordinance No. 348.258 and Resolution No. 93-378.

4. Consultants Expertise:
   The acoustical study demonstrating compliance with these categories shall be performed by a noise consultant with at least two years experience in acoustical design and mitigation. The consultant shall be able to utilize FHWA Highway Traffic Noise Prediction Model and Sound 32. Preferably the consultant shall be a member of the Institute of Noise Control Engineering or a Certified Industrial Hygienist.

B. Other Studies

For other studies requiring our input, the applicant shall contact Industrial Hygiene for guidelines in providing a study prior to conducting the assessment or study.

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II. FEES

Our current man-hour fee (subject to change by ordinance) is $95 per hour devoted to the project including review and comment, verbally and in writing. Any time consumed by traveling to and attending meetings (including public hearings) on behalf of the project is also included. In addition, incidental expenses such as mileage at .29/mile, meals, lodging, and miscellaneous transportation expenses may be incurred. Note, the incidental expenses other than mileage are rarely utilized.

III. DEPOSITS

For WECS, a $500 deposit is required. Frequently, expenses exceed this deposit and additional deposits are requested prior to completion of reviews and participation at public hearings. For all others, a $1,500 deposit is requested. This is generally sufficient, unless the project is complex and/or controversial, involving many revisions, and/or attendance at meetings.

APPENDIX 4.1

Study Area Photos

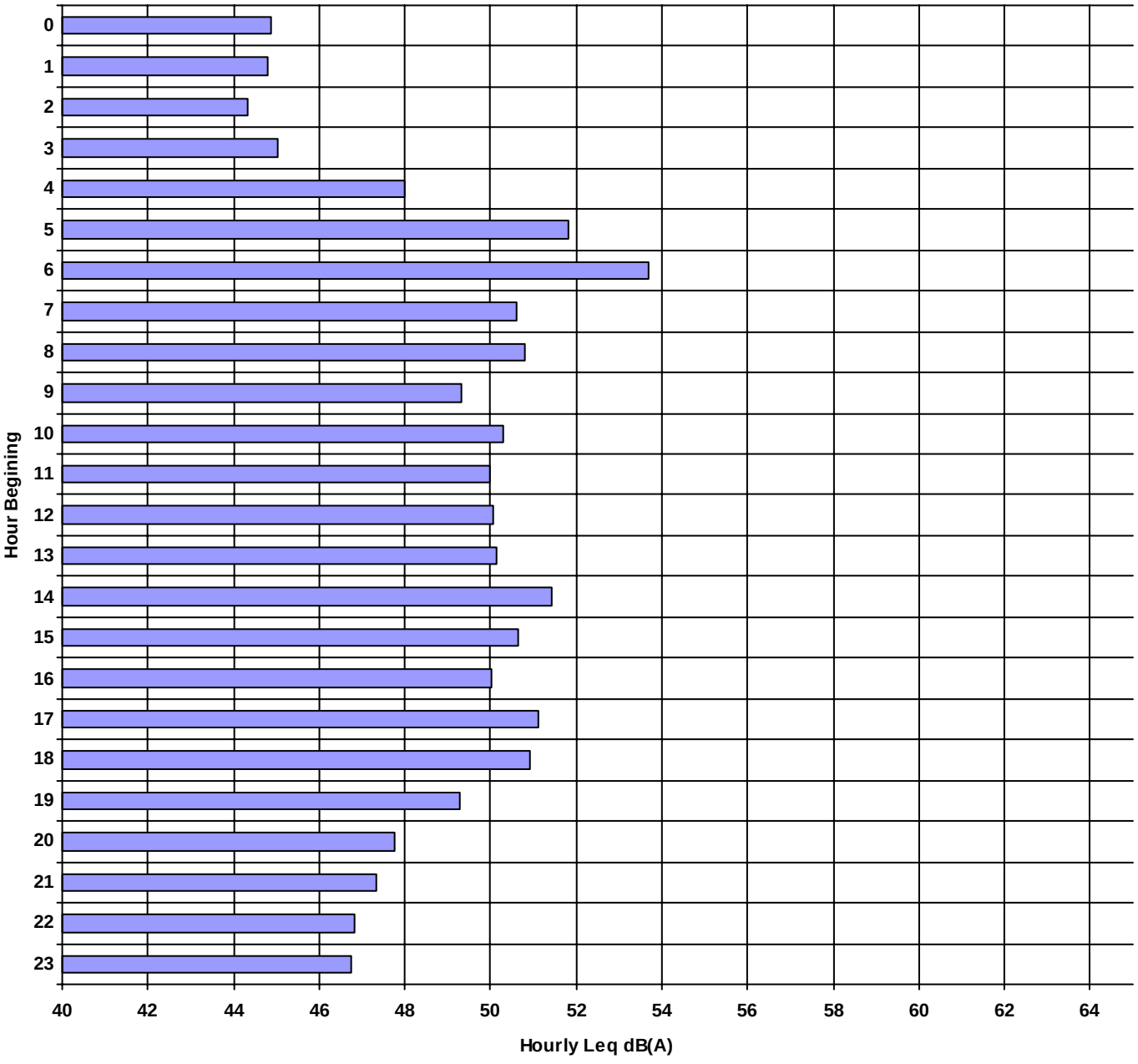
APPENDIX 4.2

Noise Monitoring Data Printouts

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L1
Analyst: J.T. Stephens
Description: L1
Start Date: Tuesday, April 19, 2011

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 6

Measured Peak Hour dBA Leq: 53.7

Monday, April 25, 2011

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L1
Analyst: J.T. Stephens
Description: L1
Start Date: Tuesday, April 19, 2011

Leq To CNEL Noise Calculations

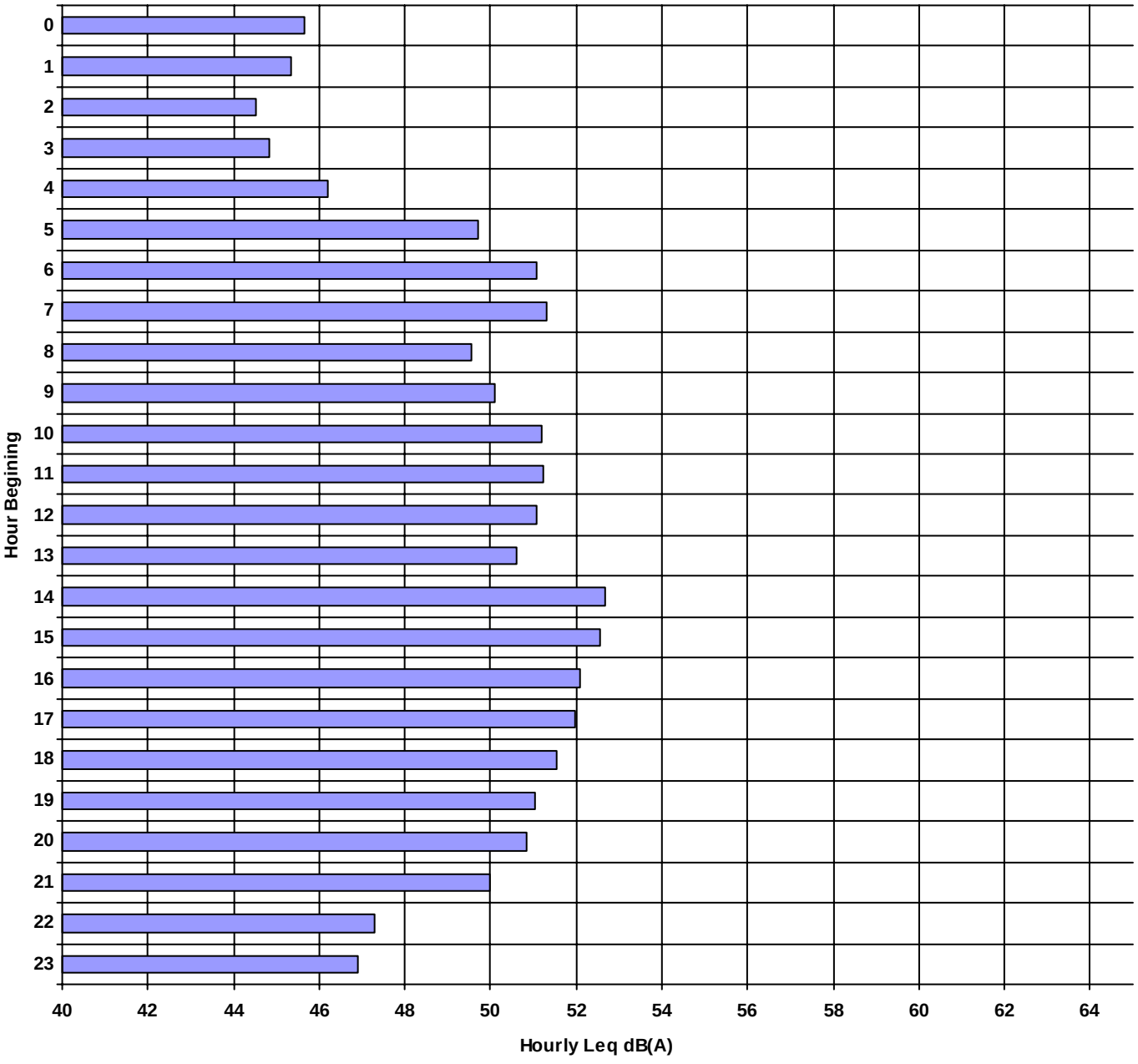
Noise Hour	*Hourly Leq*	*CNEL Penalty*	*Adjusted Hourly Leq*
0	44.9	10	54.9
1	44.8	10	54.8
2	44.3	10	54.3
3	45.0	10	55.0
4	48.0	10	58.0
5	51.8	10	61.8
6	53.7	10	63.7
7	50.6	0	50.6
8	50.8	0	50.8
9	49.3	0	49.3
10	50.3	0	50.3
11	50.0	0	50.0
12	50.0	0	50.0
13	50.2	0	50.2
14	51.4	0	51.4
15	50.6	0	50.6
16	50.0	0	50.0
17	51.1	0	51.1
18	50.9	0	50.9
19	49.3	5	54.3
20	47.7	5	52.7
21	47.3	5	52.3
22	46.8	10	56.8
23	46.7	10	56.7

Calculated CNEL: 55.5

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L2
Analyst: J.T. Stephens
Description: L2
Start Date: Tuesday, April 19, 2011

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 14

Measured Peak Hour dBA Leq: 52.7

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L2
Analyst: J.T. Stephens
Description: L2
Start Date: Tuesday, April 19, 2011

Leq To CNEL Noise Calculations

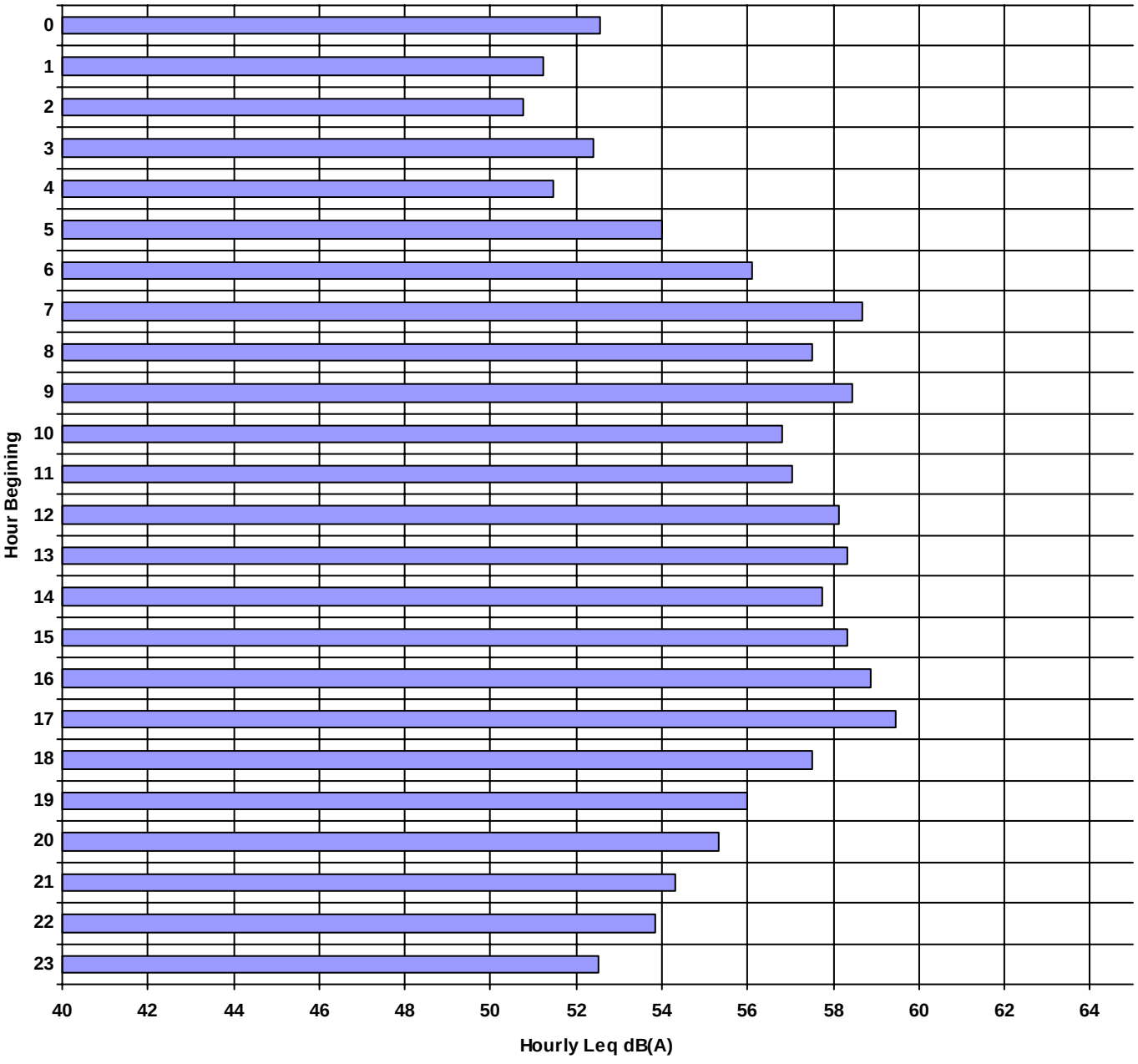
Noise Hour	*Hourly Leq*	*CNEL Penalty*	*Adjusted Hourly Leq*
0	45.7	10	55.7
1	45.4	10	55.4
2	44.5	10	54.5
3	44.9	10	54.9
4	46.2	10	56.2
5	49.7	10	59.7
6	51.1	10	61.1
7	51.3	0	51.3
8	49.5	0	49.5
9	50.1	0	50.1
10	51.2	0	51.2
11	51.2	0	51.2
12	51.1	0	51.1
13	50.6	0	50.6
14	52.7	0	52.7
15	52.6	0	52.6
16	52.1	0	52.1
17	52.0	0	52.0
18	51.5	0	51.5
19	51.0	5	56.0
20	50.8	5	55.8
21	50.0	5	55.0
22	47.3	10	57.3
23	46.9	10	56.9

Calculated CNEL: 55.1

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L3
Analyst: J.T. Stephens
Description: L3
Start Date: Tuesday, April 19, 2011

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 17

Measured Peak Hour dBA Leq: 59.5

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L3
Analyst: J.T. Stephens
Description: L3
Start Date: Tuesday, April 19, 2011

Leq To CNEL Noise Calculations

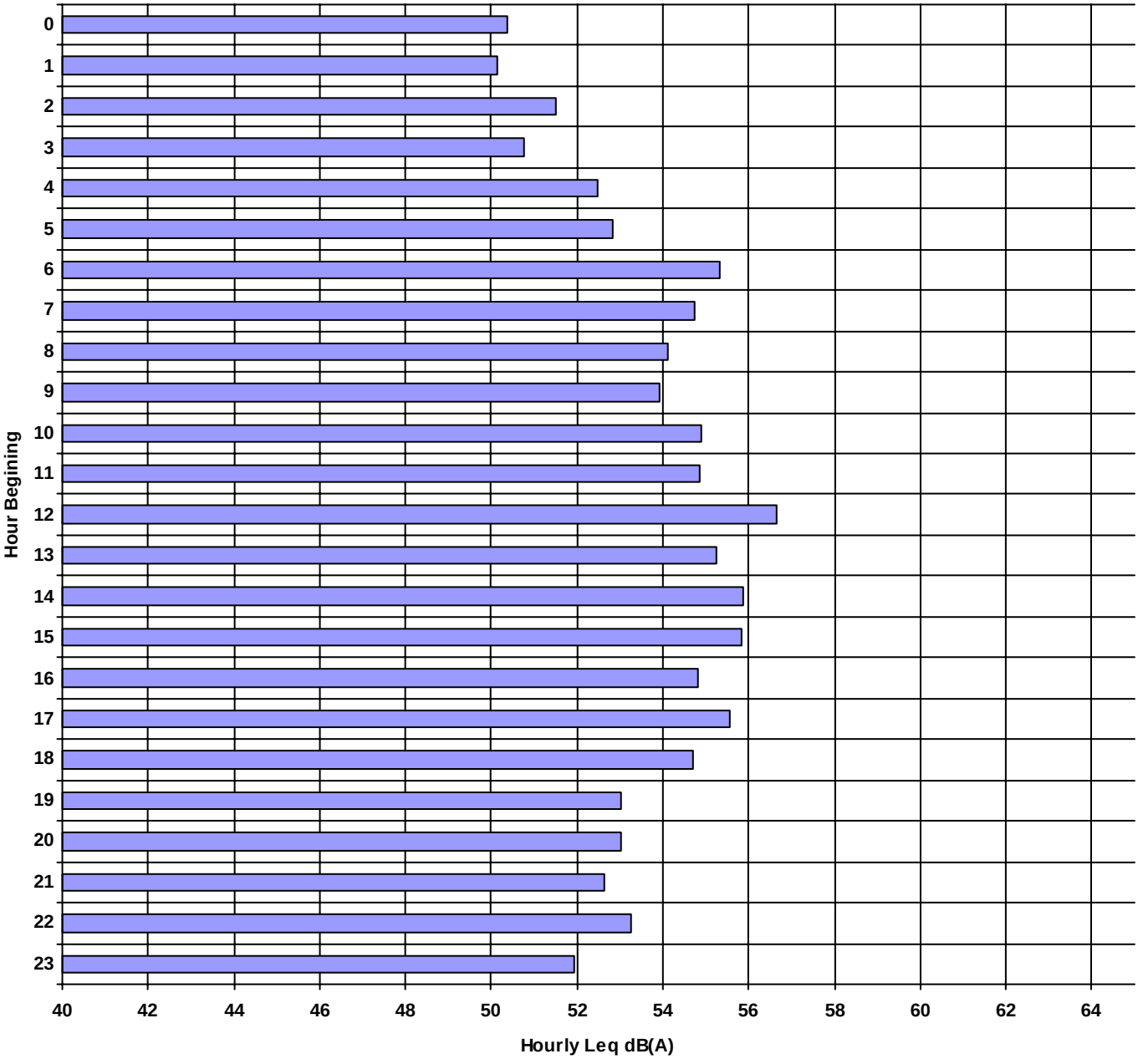
Noise Hour	*Hourly Leq*	*CNEL Penalty*	*Adjusted Hourly Leq*
0	52.6	10	62.6
1	51.2	10	61.2
2	50.8	10	60.8
3	52.4	10	62.4
4	51.5	10	61.5
5	54.0	10	64.0
6	56.1	10	66.1
7	58.7	0	58.7
8	57.5	0	57.5
9	58.5	0	58.5
10	56.8	0	56.8
11	57.1	0	57.1
12	58.1	0	58.1
13	58.3	0	58.3
14	57.7	0	57.7
15	58.3	0	58.3
16	58.9	0	58.9
17	59.5	0	59.5
18	57.5	0	57.5
19	56.0	5	61.0
20	55.3	5	60.3
21	54.3	5	59.3
22	53.9	10	63.9
23	52.5	10	62.5

Calculated CNEL: 60.9

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L4
Analyst: J.T. Stephens
Description: L4
Start Date: Tuesday, April 19, 2011

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 12

Measured Peak Hour dBA Leq: 56.6

24-Hour Noise Level Measurement Summary

Project Name: Tuscana Village Noise Study
Job Number: 07647
Location #: L4
Analyst: J.T. Stephens
Description: L4
Start Date: Tuesday, April 19, 2011

Leq To CNEL Noise Calculations

Noise Hour	*Hourly Leq*	*CNEL Penalty*	*Adjusted Hourly Leq*
0	50.4	10	60.4
1	50.2	10	60.2
2	51.5	10	61.5
3	50.8	10	60.8
4	52.5	10	62.5
5	52.8	10	62.8
6	55.3	10	65.3
7	54.7	0	54.7
8	54.1	0	54.1
9	53.9	0	53.9
10	54.9	0	54.9
11	54.9	0	54.9
12	56.6	0	56.6
13	55.2	0	55.2
14	55.9	0	55.9
15	55.8	0	55.8
16	54.8	0	54.8
17	55.6	0	55.6
18	54.7	0	54.7
19	53.0	5	58.0
20	53.0	5	58.0
21	52.6	5	57.6
22	53.3	10	63.3
23	51.9	10	61.9

Calculated CNEL: 59.5

File Translated: U:\UcJobs_07600-08000\07600\07674\FIELDWORK\MEASUREMENTS\SHORT TERM\07674_001.slmdl
Model/Serial Number: 824 / A2629
Firmware/Software Revs: 4.283 / 3.120
Name: Urban Crossroads
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: slm&rta.ssa / SLM & Real-Time Analyzer
Location:
Note1:
Note2:

Overall Any Data
Start Time: 20-Apr-2011 13:44:23
Elapsed Time: 00:10:00.1

	A Weight		C Weight		Flat	
Leq:	63.9 dBA		76.0 dBC		77.5 dBF	
SEL:	91.6 dBA		103.8 dBC		105.3 dBF	
Peak:	89.6 dBA		96.9 dBC		98.1 dBF	
	20-Apr-2011	13:48:11	20-Apr-2011	13:53:28	20-Apr-2011	13:48:11
Lmax (slow):	75.6 dBA		85.1 dBC		86.1 dBF	
	20-Apr-2011	13:52:00	20-Apr-2011	13:50:23	20-Apr-2011	13:46:57
Lmin (slow):	52.5 dBA		68.1 dBC		69.4 dBF	
	20-Apr-2011	13:53:59	20-Apr-2011	13:52:32	20-Apr-2011	13:52:32
Lmax (fast):	76.9 dBA		88.0 dBC		88.6 dBF	
	20-Apr-2011	13:52:00	20-Apr-2011	13:49:30	20-Apr-2011	13:49:30
Lmin (fast):	51.4 dBA		65.5 dBC		67.2 dBF	
	20-Apr-2011	13:53:59	20-Apr-2011	13:53:59	20-Apr-2011	13:53:53
Lmax (impulse):	77.9 dBA		88.7 dBC		89.7 dBF	
	20-Apr-2011	13:50:45	20-Apr-2011	13:49:30	20-Apr-2011	13:46:57
Lmin (impulse):	51.8 dBA		68.6 dBC		70.4 dBF	
	20-Apr-2011	13:53:59	20-Apr-2011	13:52:32	20-Apr-2011	13:52:32

Spectra

Date	Time	Run Time
20-Apr-2011	13:44:23	00:10:00.1

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	67.9		77.3		45.8		630	52.3		66.1		39.6	
16.0	67.6	72.4	70.5	81.0	50.2	53.9	800	53.2		63.3		41.7	
20.0	67.5		77.9		50.1		1000	53.7	58.3	64.4	69.7	42.7	46.9
25.0	66.6		69.1		49.5		1250	53.6		66.4		42.0	
31.5	66.9	71.1	72.2	76.9	51.8	55.7	1600	53.3		66.2		40.2	
40.0	65.5		73.8		51.1		2000	52.6	57.3	65.7	70.6	37.6	42.7
50.0	66.0		70.2		52.5		2500	51.4		65.4		33.6	
63.0	69.4	73.6	78.9	81.5	51.9	56.9	3150	50.3		63.8		29.4	
80.0	70.1		77.2		52.0		4000	47.8	53.1	61.3	66.6	26.4	31.9
100	66.0		83.6		50.5		5000	45.4		59.1		24.1	
125	64.5	69.3	72.8	84.2	49.6	53.8	6300	43.6		56.9		22.0	
160	62.2		72.5		45.4		8000	41.2	46.4	54.7	59.6	21.4	26.3
200	58.9		72.7		41.9		10000	38.6		51.3		21.0	
250	57.7	62.6	69.4	77.2	38.4	44.5	12500	35.8		49.0		21.1	
315	56.5		74.1		37.4		16000	32.8	38.0	45.2	50.8	22.3	27.3
400	53.9		68.9		36.5		20000	28.1		39.3		23.8	
500	53.0	57.9	63.6	71.5	38.5	43.2							

File Translated: U:\UcJobs_07600-08000\07600\07674\FIELDWORK\MEASUREMENTS\SHORT TERM\07674_001.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	76.4	70.9	66.4	62.9	56.4	51.9	630	61.9	56.9	52.4	48.9	42.9	40.9
16.0	73.9	70.9	67.9	64.9	59.4	54.4	800	61.9	56.9	53.4	50.4	44.4	42.4
20.0	74.9	70.9	66.9	63.9	58.9	54.4	1000	62.4	57.9	54.4	50.9	45.4	43.4
25.0	73.9	69.9	66.4	63.4	58.4	54.4	1250	62.9	57.9	53.9	50.9	44.4	42.4
31.5	73.9	69.9	66.9	64.4	58.9	55.4	1600	60.4	57.4	53.4	50.4	43.4	40.9
40.0	71.9	68.9	65.4	62.9	57.9	54.4	2000	62.4	57.4	52.4	48.9	41.4	38.4
50.0	72.9	69.4	65.9	63.4	58.4	54.9	2500	59.9	55.9	50.4	46.4	37.9	34.4
63.0	77.9	71.9	67.9	64.9	59.9	56.4	3150	59.4	54.9	49.4	44.4	35.4	31.4
80.0	79.9	73.9	67.9	64.4	59.4	55.9	4000	57.4	51.4	45.9	41.4	31.4	24.9
100	73.9	68.9	64.4	61.4	56.9	53.9	5000	54.9	49.4	42.9	38.4	28.9	25.4
125	71.9	68.4	63.9	60.4	54.9	51.9	6300	53.4	47.9	41.4	35.4	26.4	22.9
160	70.9	65.9	60.4	56.4	50.4	47.4	8000	50.4	45.4	38.4	32.4	24.4	22.4
200	66.9	62.9	57.9	53.9	46.9	43.9	10000	48.4	42.9	34.9	28.9	22.4	21.4
250	66.4	61.9	56.4	51.9	44.4	41.4	12500	45.9	38.9	30.4	25.4	21.9	21.4
315	66.4	59.9	53.4	48.9	41.9	38.9	16000	41.9	34.4	26.9	23.9	22.4	22.4
400	62.4	57.4	52.4	47.9	41.4	38.9	20000	34.9	28.4	24.9	24.4	23.9	23.9
500	60.9	55.9	51.9	47.9	41.9	39.9							

Ln Start Level: 15 dB

L2.00	72.0 dBA	L25.00	63.9 dBA	L90.00	54.3 dBA
L8.00	68.0 dBA	L50.00	60.5 dBA	L99.00	52.7 dBA

Detector: Fast
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 20-Apr-2011 13:44:23
Elapsed Time: 00:10:00.1

	A Weight	C Weight	Flat
Leq:	63.9 dBA	76.0 dBC	77.5 dBF
SEL:	91.6 dBA	103.8 dBC	105.3 dBF
Peak:	89.6 dBA	96.9 dBC	98.1 dBF
	20-Apr-2011 13:48:11	20-Apr-2011 13:53:28	20-Apr-2011 13:48:11
Lmax (slow):	75.6 dBA	85.1 dBC	86.1 dBF
	20-Apr-2011 13:52:00	20-Apr-2011 13:50:23	20-Apr-2011 13:46:57
Lmin (slow):	52.5 dBA	68.1 dBC	69.4 dBF
	20-Apr-2011 13:53:59	20-Apr-2011 13:52:32	20-Apr-2011 13:52:32
Lmax (fast):	76.9 dBA	88.0 dBC	88.6 dBF
	20-Apr-2011 13:52:00	20-Apr-2011 13:49:30	20-Apr-2011 13:49:30
Lmin (fast):	51.4 dBA	65.5 dBC	67.2 dBF
	20-Apr-2011 13:53:59	20-Apr-2011 13:53:59	20-Apr-2011 13:53:53
Lmax (impulse):	77.9 dBA	88.7 dBC	89.7 dBF
	20-Apr-2011 13:50:45	20-Apr-2011 13:49:30	20-Apr-2011 13:46:57
Lmin (impulse):	51.8 dBA	68.6 dBC	70.4 dBF
	20-Apr-2011 13:53:59	20-Apr-2011 13:52:32	20-Apr-2011 13:52:32

Calibrated: 20-Apr-2011 13:43:47 Offset: -45.0 dB
Checked: 20-Apr-2011 13:43:47 Level: 114.0 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 1

Interval Records: Disabled Number Interval Records: 0
History Records: Enabled Number History Records: 2402
Run/Stop Records: Number Run/Stop Records: 2

File Translated: U:\UcJobs_07600-08000\07600\07674\FIELDWORK\MEASUREMENTS\SHORT TERM\07674_002.slmdl
Model/Serial Number: 824 / A2629
Firmware/Software Revs: 4.283 / 3.120
Name: Urban Crossroads
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: slm&rta.ssa / SLM & Real-Time Analyzer
Location:
Note1:
Note2:

Overall Any Data
Start Time: 20-Apr-2011 14:00:04
Elapsed Time: 00:09:59.1

	A Weight		C Weight		Flat	
Leq:	54.5 dBA		68.6 dBC		72.2 dBF	
SEL:	82.3 dBA		96.4 dBC		100.0 dBF	
Peak:	85.7 dBA		91.8 dBC		94.9 dBF	
	20-Apr-2011	14:07:33	20-Apr-2011	14:04:19	20-Apr-2011	14:09:54
Lmax (slow):	68.6 dBA		82.3 dBC		83.0 dBF	
	20-Apr-2011	14:07:34	20-Apr-2011	14:04:19	20-Apr-2011	14:04:19
Lmin (slow):	46.4 dBA		61.3 dBC		64.1 dBF	
	20-Apr-2011	14:00:04	20-Apr-2011	14:00:06	20-Apr-2011	14:00:06
Lmax (fast):	71.2 dBA		85.7 dBC		87.6 dBF	
	20-Apr-2011	14:04:19	20-Apr-2011	14:04:19	20-Apr-2011	14:09:55
Lmin (fast):	46.0 dBA		59.3 dBC		61.5 dBF	
	20-Apr-2011	14:09:01	20-Apr-2011	14:00:06	20-Apr-2011	14:00:06
Lmax (impulse):	72.9 dBA		86.2 dBC		90.9 dBF	
	20-Apr-2011	14:07:33	20-Apr-2011	14:04:19	20-Apr-2011	14:09:54
Lmin (impulse):	46.3 dBA		61.5 dBC		64.4 dBF	
	20-Apr-2011	14:09:01	20-Apr-2011	14:00:05	20-Apr-2011	14:00:04

Spectra

Date	Time	Run Time
20-Apr-2011	14:00:04	00:09:59.1

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	67.0		74.0		43.7		630	46.3		55.5		33.9	
16.0	65.8	70.6	74.2	79.3	45.7	49.9	800	46.5		54.8		35.6	
20.0	64.1		75.2		45.6		1000	46.4	50.6	55.9	59.9	35.9	40.4
25.0	61.6		71.6		44.7		1250	44.3		54.4		35.5	
31.5	58.9	64.5	69.1	74.1	44.4	48.8	1600	41.6		49.3		33.4	
40.0	57.9		64.9		42.7		2000	38.4	43.9	46.5	52.7	30.7	36.0
50.0	56.9		63.0		43.8		2500	35.3		47.4		28.2	
63.0	57.1	64.3	63.8	69.3	44.8	49.0	3150	33.1		42.6		26.1	
80.0	62.3		66.1		44.0		4000	31.3	36.2	37.2	44.3	25.3	30.2
100	55.6		69.1		42.0		5000	29.1		35.1		24.7	
125	58.3	61.0	85.3	85.8	41.3	45.6	6300	28.5		34.0		23.8	
160	53.4		75.5		38.2		8000	34.5	35.9	29.8	36.1	23.4	28.0
200	49.8		54.5		33.5		10000	25.2		27.6		22.5	
250	49.0	54.1	69.5	70.2	34.4	38.3	12500	23.8		26.2		21.8	
315	49.1		61.4		32.6		16000	23.6	28.7	25.3	30.3	22.3	27.4
400	45.3		58.5		32.0		20000	24.3		24.9		23.6	
500	45.1	50.4	55.4	61.5	34.6	38.4							

File Translated: U:\UcJobs_07600-08000\07600\07674\FIELDWORK\MEASUREMENTS\SHORT TERM\07674_002.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	74.4	70.9	67.4	63.4	56.4	50.9	630	53.4	48.9	44.9	40.4	36.9	35.4
16.0	72.9	69.9	66.4	62.9	56.4	50.9	800	53.9	50.4	45.4	41.9	37.9	36.9
20.0	71.4	67.9	64.4	60.9	55.4	51.4	1000	53.9	49.9	45.4	41.9	38.9	36.9
25.0	68.9	65.4	61.4	58.4	52.9	49.4	1250	50.9	47.9	43.9	40.9	37.9	36.4
31.5	66.4	62.4	58.9	55.9	51.4	48.4	1600	47.9	45.4	41.9	38.9	35.4	34.4
40.0	63.9	60.9	58.4	55.9	51.9	47.9	2000	44.9	41.9	38.4	35.9	32.4	31.4
50.0	63.4	59.9	56.4	54.4	50.4	47.4	2500	41.9	38.4	34.9	32.4	29.9	28.9
63.0	63.4	59.9	56.4	53.9	50.4	47.4	3150	39.4	35.9	32.9	30.4	28.4	27.4
80.0	71.9	65.4	58.9	53.9	49.9	47.4	4000	37.9	33.9	30.9	28.9	27.4	26.4
100	64.9	59.4	53.9	50.4	46.9	44.4	5000	33.4	30.9	28.9	27.9	26.4	25.4
125	62.4	57.4	52.9	50.4	46.9	43.9	6300	31.9	28.9	27.4	26.9	25.4	24.4
160	61.4	55.9	51.4	47.9	43.4	40.9	8000	29.9	27.4	26.4	25.4	24.4	23.9
200	57.4	52.9	48.4	44.4	39.9	37.9	10000	28.4	25.9	24.9	24.4	23.4	22.9
250	55.4	51.4	48.4	45.9	41.4	37.9	12500	25.4	23.9	23.4	22.9	22.4	21.9
315	57.9	49.4	45.4	42.4	37.9	35.4	16000	24.4	23.4	23.4	22.9	22.4	22.4
400	53.9	48.4	44.4	40.4	35.9	33.9	20000	24.4	24.4	23.9	23.9	23.9	23.4
500	52.4	47.4	44.4	40.9	36.9	35.4							

Ln Start Level: 15 dB
L2.00 62.5 dBA L25.00 53.9 dBA L90.00 47.8 dBA
L8.00 57.5 dBA L50.00 51.0 dBA L99.00 46.8 dBA

Detector: Fast
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 20-Apr-2011 14:00:04
Elapsed Time: 00:09:59.1

	A Weight	C Weight	Flat
Leq:	54.5 dBA	68.6 dBC	72.2 dBF
SEL:	82.3 dBA	96.4 dBC	100.0 dBF
Peak:	85.7 dBA	91.8 dBC	94.9 dBF
	20-Apr-2011 14:07:33	20-Apr-2011 14:04:19	20-Apr-2011 14:09:54
Lmax (slow):	68.6 dBA	82.3 dBC	83.0 dBF
	20-Apr-2011 14:07:34	20-Apr-2011 14:04:19	20-Apr-2011 14:04:19
Lmin (slow):	46.4 dBA	61.3 dBC	64.1 dBF
	20-Apr-2011 14:00:04	20-Apr-2011 14:00:06	20-Apr-2011 14:00:06
Lmax (fast):	71.2 dBA	85.7 dBC	87.6 dBF
	20-Apr-2011 14:04:19	20-Apr-2011 14:04:19	20-Apr-2011 14:09:55
Lmin (fast):	46.0 dBA	59.3 dBC	61.5 dBF
	20-Apr-2011 14:09:01	20-Apr-2011 14:00:06	20-Apr-2011 14:00:06
Lmax (impulse):	72.9 dBA	86.2 dBC	90.9 dBF
	20-Apr-2011 14:07:33	20-Apr-2011 14:04:19	20-Apr-2011 14:09:54
Lmin (impulse):	46.3 dBA	61.5 dBC	64.4 dBF
	20-Apr-2011 14:09:01	20-Apr-2011 14:00:05	20-Apr-2011 14:00:04

Calibrated: 20-Apr-2011 13:43:47 Offset: -45.0 dB
Checked: 20-Apr-2011 13:43:47 Level: 114.0 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Enabled Number History Records: 2398
Run/Stop Records: Number Run/Stop Records: 2

APPENDIX 4.3

Leq To CNEL Conversion Printouts

MEASURED Leq TO CNEL CONVERSION

Reference 24h Measurement Location: L4
Noise Measurement location: S1
Measurement Time: 1300
Measurement Level (dBA Leq): 63.9

Project : Tuscana Village
Job Number: 7674
Analyst: J. Stephens

Hour Beginning	***Adjusted Hourly Leq***		***CNEL Penalty***	***Hourly Leq With CNEL Penalty***
0000	59.1		10.0	69.1
0100	58.9		10.0	68.9
0200	60.2		10.0	70.2
0300	59.5		10.0	69.5
0400	61.2		10.0	71.2
0500	61.5		10.0	71.5
0600	64.0		10.0	74.0
0700	63.4		0.0	63.4
0800	62.8		0.0	62.8
0900	62.6		0.0	62.6
1000	63.6		0.0	63.6
1100	63.6		0.0	63.6
1200	65.3		0.0	65.3
1300	63.9	*	0.0	63.9
1400	64.6		0.0	64.6
1500	64.5		0.0	64.5
1600	63.5		0.0	63.5
1700	64.3		0.0	64.3
1800	63.4		0.0	63.4
1900	61.7		5.0	66.7
2000	61.7		5.0	66.7
2100	61.3		5.0	66.3
2200	62.0		10.0	72.0
2300	60.6		10.0	70.6

Resulting CNEL (dBA) : ***68.2***

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MEASURED Leq TO CNEL CONVERSION

Reference 24h Measurement Location: L3
Noise Measurement location: S3
Measurement Time: 1400
Measurement Level (dBA Leq): 54.5

Project : Tuscana Village
Job Number: 7674
Analyst: J. Stephens

Hour Beginning	***Adjusted Hourly Leq***		***CNEL Penalty***	***Hourly Leq With CNEL Penalty***
0000	49.4		10.0	59.4
0100	48.0		10.0	58.0
0200	47.6		10.0	57.6
0300	49.2		10.0	59.2
0400	48.3		10.0	58.3
0500	50.8		10.0	60.8
0600	52.9		10.0	62.9
0700	55.5		0.0	55.5
0800	54.3		0.0	54.3
0900	55.3		0.0	55.3
1000	53.6		0.0	53.6
1100	53.9		0.0	53.9
1200	54.9		0.0	54.9
1300	55.1		0.0	55.1
1400	54.5	*	0.0	54.5
1500	55.1		0.0	55.1
1600	55.7		0.0	55.7
1700	56.3		0.0	56.3
1800	54.3		0.0	54.3
1900	52.8		5.0	57.8
2000	52.1		5.0	57.1
2100	51.1		5.0	56.1
2200	50.7		10.0	60.7
2300	49.3		10.0	59.3

Resulting CNEL (dBA) : ***57.7***

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APPENDIX 6.1

Off-Site FHWA Traffic Noise Model Contours

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Milliken Avenue
Road Segment: n/o SR-60

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,520 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.38	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.86	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.82	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.5	59.6	57.9	51.8	60.5	61.1
Medium Trucks:	55.5	54.0	47.6	46.1	54.6	54.8
Heavy Trucks:	56.8	55.4	46.4	47.6	56.0	56.1
Vehicle Noise:	63.6	61.8	58.5	54.0	62.5	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	32	68	148	318
CNEL:	34	73	158	340

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Milliken Avenue
Road Segment: b/w SR-60 and Street "B"

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,320 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.23	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.47	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.43	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.4	59.5	57.7	51.7	60.3	60.9
Medium Trucks:	55.4	53.9	47.5	45.9	54.4	54.6
Heavy Trucks:	56.7	55.3	46.2	47.5	55.8	56.0
Vehicle Noise:	63.4	61.7	58.4	53.8	62.4	62.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	67	144	310
CNEL:	33	72	154	332

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Milliken Avenue
Road Segment: b/w Street "B" and Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,210 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.61	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.85	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.81	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.0	59.1	57.3	51.3	59.9	60.5
Medium Trucks:	55.0	53.5	47.1	45.6	54.0	54.3
Heavy Trucks:	56.3	54.9	45.8	47.1	55.4	55.6
Vehicle Noise:	63.0	61.3	58.0	53.5	62.0	62.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	29	63	136	293
CNEL:	31	68	146	314

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hamner Avenue
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,170 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.76	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-18.00	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.95	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.4	58.5	56.7	50.7	59.3	59.9
Medium Trucks:	54.4	52.9	46.5	45.0	53.4	53.7
Heavy Trucks:	55.7	54.3	45.2	46.5	54.8	55.0
Vehicle Noise:	62.4	60.7	57.4	52.9	61.4	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	124	267
CNEL:	29	62	133	286

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hamner Avenue
Road Segment: b/w Samantha Drive and Chino A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,100 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.03	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-18.26	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-22.22	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	56.5	50.4	59.0	59.7
Medium Trucks:	54.1	52.6	46.2	44.7	53.2	53.4
Heavy Trucks:	55.4	54.0	45.0	46.2	54.6	54.7
Vehicle Noise:	62.2	60.4	57.1	52.6	61.1	61.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	26	55	119	256
CNEL:	27	59	127	274

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hamner Avenue
Road Segment: b/w Chino Avenue and Cantu-Gall

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,080 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.11	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-18.34	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-22.30	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	56.4	50.3	59.0	59.6
Medium Trucks:	54.0	52.5	46.2	44.6	53.1	53.3
Heavy Trucks:	55.4	53.9	44.9	46.1	54.5	54.6
Vehicle Noise:	62.1	60.3	57.1	52.5	61.0	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	55	117	253
CNEL:	27	58	126	271

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Hamner Avenue
Road Segment: s/o Cantu-Galleano Ranch Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,180 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.72	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.96	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.91	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.4	58.5	56.8	50.7	59.4	60.0
Medium Trucks:	54.4	52.9	46.5	45.0	53.5	53.7
Heavy Trucks:	55.7	54.3	45.3	46.5	54.9	55.0
Vehicle Noise:	62.5	60.7	57.4	52.9	61.4	61.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	125	268
CNEL:	29	62	133	287

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Mill Creek Road
Road Segment: n/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	240 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-7.06	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-24.30	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-28.25	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.4	49.5	47.8	41.7	50.3	50.9
Medium Trucks:	45.6	44.1	37.8	36.2	44.7	44.9
Heavy Trucks:	47.5	46.1	37.0	38.3	46.7	46.8
Vehicle Noise:	53.7	51.9	48.5	44.1	52.6	53.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	7	15	32	70
CNEL:	7	16	35	74

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Mill Creek Road
Road Segment: s/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	100 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-10.86	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-28.10	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-32.05	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	47.8	45.9	44.2	38.1	46.7	47.3
Medium Trucks:	42.0	40.5	34.2	32.6	41.1	41.3
Heavy Trucks:	43.9	42.5	33.4	34.7	43.0	43.2
Vehicle Noise:	50.1	48.3	44.9	40.5	49.0	49.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	4	9	19	40
CNEL:	4	9	20	43

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Sharp Street
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	70 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-12.41	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-29.65	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-33.60	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	46.1	44.2	42.4	36.4	45.0	45.6
Medium Trucks:	40.3	38.8	32.4	30.9	39.3	39.6
Heavy Trucks:	42.2	40.7	31.7	32.9	41.3	41.4
Vehicle Noise:	48.3	46.6	43.2	38.8	47.3	47.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	14	31
CNEL:	3	7	15	33

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Riverside Drive
Road Segment: w/o Mill Creek Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	750 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.66	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-20.90	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-24.85	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.9	59.0	57.3	51.2	59.8	60.4
Medium Trucks:	54.5	53.0	46.6	45.1	53.5	53.8
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	62.6	60.9	57.8	53.0	61.6	62.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	28	59	128	275
CNEL:	30	64	137	296

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Riverside Drive
Road Segment: b/w Mill Creek Road and Street "A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	620 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.48	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-21.72	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-25.68	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	56.4	50.4	59.0	59.6
Medium Trucks:	53.7	52.2	45.8	44.3	52.7	52.9
Heavy Trucks:	54.1	52.7	43.6	44.9	53.2	53.4
Vehicle Noise:	61.8	60.0	57.0	52.2	60.8	61.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	24	52	113	242
CNEL:	26	56	121	260

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Riverside Drive
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	630 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.42	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-21.65	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-25.61	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.2	58.3	56.5	50.5	59.1	59.7
Medium Trucks:	53.7	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	54.2	52.7	43.7	44.9	53.3	53.4
Vehicle Noise:	61.9	60.1	57.1	52.3	60.8	61.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	53	114	245
CNEL:	26	57	122	263

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Riverside Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	410 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-6.28	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-23.52	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-27.47	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.3	56.4	54.6	48.6	57.2	57.8
Medium Trucks:	51.9	50.4	44.0	42.5	50.9	51.2
Heavy Trucks:	52.3	50.9	41.8	43.1	51.4	51.6
Vehicle Noise:	60.0	58.3	55.2	50.4	59.0	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	18	40	85	184
CNEL:	20	43	92	198

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Riverside Drive
Road Segment: b/w Sharp Street and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	390 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-6.50	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-23.74	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-27.69	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.2	54.4	48.4	57.0	57.6
Medium Trucks:	51.7	50.1	43.8	42.2	50.7	50.9
Heavy Trucks:	52.1	50.7	41.6	42.9	51.2	51.3
Vehicle Noise:	59.8	58.0	55.0	50.2	58.8	59.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	18	38	83	178
CNEL:	19	41	89	191

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Samantha Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	40 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-14.84	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-32.08	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-36.03	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	43.7	41.8	40.0	33.9	42.6	43.2
Medium Trucks:	37.9	36.4	30.0	28.5	36.9	37.1
Heavy Trucks:	39.7	38.3	29.3	30.5	38.9	39.0
Vehicle Noise:	45.9	44.2	40.7	36.3	44.9	45.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	10	21
CNEL:	2	5	10	23

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w Hamner Avenue and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	570 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-3.30	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-20.54	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-24.49	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.3	53.4	51.6	45.6	54.2	54.8
Medium Trucks:	49.5	48.0	41.6	40.1	48.5	48.8
Heavy Trucks:	51.4	49.9	40.9	42.1	50.5	50.6
Vehicle Noise:	57.5	55.8	52.4	48.0	56.5	56.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	27	58	126
CNEL:	13	29	62	134

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w I-15 and Wineville Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	630 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-2.87	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-20.10	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-24.06	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.7	53.8	52.1	46.0	54.6	55.2
Medium Trucks:	49.9	48.4	42.1	40.5	49.0	49.2
Heavy Trucks:	51.8	50.4	41.3	42.6	50.9	51.1
Vehicle Noise:	57.9	56.2	52.8	48.4	56.9	57.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	13	29	62	134
CNEL:	14	31	67	144

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Milliken Avenue
Road Segment: n/o SR-60

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,760 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.02	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.22	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.18	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.2	60.3	58.5	52.5	61.1	61.7
Medium Trucks:	56.2	54.6	48.3	46.7	55.2	55.4
Heavy Trucks:	57.5	56.1	47.0	48.3	56.6	56.7
Vehicle Noise:	64.2	62.5	59.2	54.6	63.2	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	35	76	163	350
CNEL:	38	81	174	375

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Milliken Avenue
Road Segment: b/w SR-60 and Street "B"

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,540 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.44	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.80	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.76	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.3	61.0	61.6
Medium Trucks:	56.0	54.5	48.2	46.6	55.1	55.3
Heavy Trucks:	57.4	55.9	46.9	48.1	56.5	56.6
Vehicle Noise:	64.1	62.3	59.1	54.5	63.0	63.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	34	74	160	344
CNEL:	37	79	171	368

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Milliken Avenue
Road Segment: b/w Street "B" and Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,630 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.68	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.56	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.51	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	56.3	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	57.6	56.2	47.1	48.4	56.7	56.9
Vehicle Noise:	64.3	62.6	59.3	54.8	63.3	63.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	36	77	166	357
CNEL:	38	82	178	382

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Hamner Avenue
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,480 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.26	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.98	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.93	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.4	59.5	57.8	51.7	60.3	60.9
Medium Trucks:	55.4	53.9	47.5	46.0	54.4	54.7
Heavy Trucks:	56.7	55.3	46.3	47.5	55.9	56.0
Vehicle Noise:	63.4	61.7	58.4	53.9	62.4	62.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	67	145	312
CNEL:	33	72	155	334

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Hamner Avenue
Road Segment: b/w Samantha Drive and Chino A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,390 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.01	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.25	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.20	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	59.3	57.5	51.4	60.1	60.7
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	56.4	55.0	46.0	47.2	55.6	55.7
Vehicle Noise:	63.2	61.4	58.2	53.6	62.1	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	65	139	299
CNEL:	32	69	149	321

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Hamner Avenue
Road Segment: b/w Chino Avenue and Cantu-Gall

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,340	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	74	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.17	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.41	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.36	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.0	59.1	57.3	51.3	59.9	60.5
Medium Trucks:	55.0	53.5	47.1	45.6	54.0	54.2
Heavy Trucks:	56.3	54.9	45.8	47.1	55.4	55.6
Vehicle Noise:	63.0	61.3	58.0	53.4	62.0	62.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	29	63	136	292
CNEL:	31	67	145	313

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Hamner Avenue
Road Segment: s/o Cantu-Galleano Ranch Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,370 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.07	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.31	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.27	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.1	59.2	57.4	51.4	60.0	60.6
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.3
Heavy Trucks:	56.4	55.0	45.9	47.2	55.5	55.7
Vehicle Noise:	63.1	61.4	58.1	53.5	62.1	62.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	64	138	297
CNEL:	32	68	147	318

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Mill Creek Road
Road Segment: n/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	270 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-6.55	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-23.78	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-27.74	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.9	50.0	48.3	42.2	50.8	51.5
Medium Trucks:	46.2	44.6	38.3	36.7	45.2	45.4
Heavy Trucks:	48.0	46.6	37.6	38.8	47.2	47.3
Vehicle Noise:	54.2	52.5	49.0	44.6	53.2	53.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	8	16	35	75
CNEL:	8	17	37	80

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Mill Creek Road
Road Segment: s/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	160 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-8.82	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-26.06	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-30.01	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	49.9	48.0	46.2	40.2	48.8	49.4
Medium Trucks:	44.1	42.6	36.2	34.7	43.1	43.4
Heavy Trucks:	45.9	44.5	35.5	36.7	45.1	45.2
Vehicle Noise:	52.1	50.4	46.9	42.6	51.1	51.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	12	25	55
CNEL:	6	13	27	59

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Sharp Street
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	70 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-12.41	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-29.65	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-33.60	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	46.1	44.2	42.4	36.4	45.0	45.6
Medium Trucks:	40.3	38.8	32.4	30.9	39.3	39.6
Heavy Trucks:	42.2	40.7	31.7	32.9	41.3	41.4
Vehicle Noise:	48.3	46.6	43.2	38.8	47.3	47.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	14	31
CNEL:	3	7	15	33

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Riverside Drive
Road Segment: w/o Mill Creek Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	910 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-2.82	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-20.06	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-24.01	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.8	59.9	58.1	52.1	60.7	61.3
Medium Trucks:	55.3	53.8	47.5	45.9	54.4	54.6
Heavy Trucks:	55.8	54.3	45.3	46.5	54.9	55.0
Vehicle Noise:	63.5	61.7	58.7	53.9	62.4	62.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	67	145	313
CNEL:	34	72	156	336

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Riverside Drive
Road Segment: b/w Mill Creek Road and Street "A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	790 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.43	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-20.67	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-24.63	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	59.3	57.5	51.4	60.1	60.7
Medium Trucks:	54.7	53.2	46.9	45.3	53.8	54.0
Heavy Trucks:	55.1	53.7	44.7	45.9	54.3	54.4
Vehicle Noise:	62.9	61.1	58.1	53.3	61.8	62.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	28	61	132	285
CNEL:	31	66	142	306

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Riverside Drive
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.01	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-20.25	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-24.21	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	55.6	54.1	45.1	46.4	54.7	54.8
Vehicle Noise:	63.3	61.5	58.5	53.7	62.2	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	65	141	304
CNEL:	33	70	152	326

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Riverside Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	550 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.00	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-22.24	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-26.20	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.6	57.7	55.9	49.9	58.5	59.1
Medium Trucks:	53.1	51.6	45.3	43.7	52.2	52.4
Heavy Trucks:	53.6	52.1	43.1	44.4	52.7	52.8
Vehicle Noise:	61.3	59.5	56.5	51.7	60.2	60.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	48	104	224
CNEL:	24	52	112	240

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Riverside Drive
Road Segment: b/w Sharp Street and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	510 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.33	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-22.57	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-26.53	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.3	57.4	55.6	49.5	58.2	58.8
Medium Trucks:	52.8	51.3	45.0	43.4	51.9	52.1
Heavy Trucks:	53.2	51.8	42.8	44.0	52.4	52.5
Vehicle Noise:	61.0	59.2	56.2	51.4	59.9	60.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	21	46	99	213
CNEL:	23	49	106	229

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Samantha Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	50 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-13.87	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-31.11	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-35.06	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	44.6	42.7	41.0	34.9	43.5	44.1
Medium Trucks:	38.8	37.3	31.0	29.4	37.9	38.1
Heavy Trucks:	40.7	39.3	30.2	31.5	39.8	40.0
Vehicle Noise:	46.8	45.1	41.7	37.3	45.8	46.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	24
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w Hamner Avenue and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	740 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-2.17	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-19.41	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-23.36	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.4	54.5	52.8	46.7	55.3	55.9
Medium Trucks:	50.6	49.1	42.8	41.2	49.7	49.9
Heavy Trucks:	52.5	51.1	42.0	43.3	51.6	51.8
Vehicle Noise:	58.6	56.9	53.5	49.1	57.6	58.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	32	69	150
CNEL:	16	34	74	160

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 Without Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w I-15 and Wineville Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,560	vehicles
Vehicle Speed:	35	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	1.07	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-16.17	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-20.12	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.7	57.8	56.0	49.9	58.6	59.2
Medium Trucks:	53.9	52.4	46.0	44.5	52.9	53.1
Heavy Trucks:	55.7	54.3	45.3	46.5	54.9	55.0
Vehicle Noise:	61.9	60.2	56.7	52.3	60.9	61.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	53	114	246
CNEL:	26	57	122	263

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Milliken Avenue
Road Segment: n/o SR-60

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,820 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.16	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.08	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.03	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.7	52.6	61.2	61.8
Medium Trucks:	56.3	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	57.6	56.2	47.2	48.4	56.8	56.9
Vehicle Noise:	64.3	62.6	59.3	54.8	63.3	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	36	77	166	358
CNEL:	38	83	178	384

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Milliken Avenue
Road Segment: b/w SR-60 and Street "B"

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,710 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.89	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.35	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.30	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.5	60.6	58.9	52.8	61.4	62.0
Medium Trucks:	56.5	55.0	48.6	47.1	55.5	55.8
Heavy Trucks:	57.8	56.4	47.3	48.6	57.0	57.1
Vehicle Noise:	64.5	62.8	59.5	55.0	63.5	63.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	79	171	369
CNEL:	39	85	183	395

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Milliken Avenue
Road Segment: b/w Street "B" and Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,730 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.94	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.30	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.25	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.6	60.7	58.9	52.8	61.5	62.1
Medium Trucks:	56.5	55.0	48.7	47.1	55.6	55.8
Heavy Trucks:	57.9	56.4	47.4	48.6	57.0	57.1
Vehicle Noise:	64.6	62.8	59.6	55.0	63.6	64.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	80	173	372
CNEL:	40	86	185	398

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Hamner Avenue
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,540 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.44	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-16.80	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-20.76	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	55.6	54.1	47.7	46.2	54.6	54.9
Heavy Trucks:	56.9	55.5	46.4	47.7	56.0	56.2
Vehicle Noise:	63.6	61.9	58.6	54.1	62.6	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	32	69	149	321
CNEL:	34	74	159	343

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Hamner Avenue
Road Segment: b/w Samantha Drive and Chino A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,440 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.14	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.09	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.05	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.3	59.4	57.6	51.6	60.2	60.8
Medium Trucks:	55.3	53.8	47.4	45.9	54.3	54.6
Heavy Trucks:	56.6	55.2	46.1	47.4	55.7	55.9
Vehicle Noise:	63.3	61.6	58.3	53.8	62.3	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	31	66	142	307
CNEL:	33	71	152	328

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Hamner Avenue
Road Segment: b/w Chino Avenue and Cantu-Gall

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,400 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.02	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.22	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.17	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	59.3	57.5	51.5	60.1	60.7
Medium Trucks:	55.2	53.7	47.3	45.7	54.2	54.4
Heavy Trucks:	56.5	55.1	46.0	47.3	55.6	55.8
Vehicle Noise:	63.2	61.5	58.2	53.6	62.2	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	65	140	301
CNEL:	32	69	150	322

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Hamner Avenue
Road Segment: s/o Cantu-Galleano Ranch Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,390	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	74	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.01	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-17.25	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-21.20	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.2	59.3	57.5	51.4	60.1	60.7
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	56.4	55.0	46.0	47.2	55.6	55.7
Vehicle Noise:	63.2	61.4	58.2	53.6	62.1	62.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	65	139	299
CNEL:	32	69	149	321

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Mill Creek Road
Road Segment: n/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	290 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-6.24	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-23.47	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-27.43	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	52.3	50.4	48.6	42.5	51.2	51.8
Medium Trucks:	46.5	45.0	38.6	37.1	45.5	45.7
Heavy Trucks:	48.3	46.9	37.9	39.1	47.5	47.6
Vehicle Noise:	54.5	52.8	49.3	44.9	53.5	53.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	8	17	37	79
CNEL:	8	18	39	84

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Mill Creek Road
Road Segment: s/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	170 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-8.56	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-25.79	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-29.75	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	50.1	48.2	46.5	40.4	49.0	49.6
Medium Trucks:	44.3	42.8	36.5	34.9	43.4	43.6
Heavy Trucks:	46.2	44.8	35.7	37.0	45.4	45.5
Vehicle Noise:	52.4	50.6	47.2	42.8	51.3	51.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	6	12	26	57
CNEL:	6	13	28	61

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Sharp Street
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	70 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-12.41	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-29.65	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-33.60	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	46.1	44.2	42.4	36.4	45.0	45.6
Medium Trucks:	40.3	38.8	32.4	30.9	39.3	39.6
Heavy Trucks:	42.2	40.7	31.7	32.9	41.3	41.4
Vehicle Noise:	48.3	46.6	43.2	38.8	47.3	47.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	7	14	31
CNEL:	3	7	15	33

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Riverside Drive
Road Segment: w/o Mill Creek Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	950 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-2.63	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-19.87	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-23.83	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.0	60.1	58.3	52.2	60.9	61.5
Medium Trucks:	55.5	54.0	47.7	46.1	54.6	54.8
Heavy Trucks:	55.9	54.5	45.5	46.7	55.1	55.2
Vehicle Noise:	63.7	61.9	58.9	54.1	62.6	63.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	32	69	150	322
CNEL:	35	75	161	346

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Riverside Drive
Road Segment: b/w Mill Creek Road and Street "A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-3.01	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-20.25	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-24.21	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.6	59.7	57.9	51.9	60.5	61.1
Medium Trucks:	55.1	53.6	47.3	45.7	54.2	54.4
Heavy Trucks:	55.6	54.1	45.1	46.4	54.7	54.8
Vehicle Noise:	63.3	61.5	58.5	53.7	62.2	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	30	65	141	304
CNEL:	33	70	152	326

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Riverside Drive
Road Segment: b/w Street "A" and Milliken Avenu
Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,130 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-1.88	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-19.12	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-23.07	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.7	60.8	59.0	53.0	61.6	62.2
Medium Trucks:	56.3	54.8	48.4	46.9	55.3	55.6
Heavy Trucks:	56.7	55.3	46.2	47.5	55.8	56.0
Vehicle Noise:	64.4	62.7	59.6	54.8	63.4	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	36	78	168	362
CNEL:	39	84	180	389

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Riverside Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	560 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-4.93	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-22.17	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-26.12	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.7	57.8	56.0	49.9	58.6	59.2
Medium Trucks:	53.2	51.7	45.4	43.8	52.3	52.5
Heavy Trucks:	53.6	52.2	43.2	44.4	52.8	52.9
Vehicle Noise:	61.4	59.6	56.6	51.8	60.3	60.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	23	49	105	227
CNEL:	24	52	113	243

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Riverside Drive
Road Segment: b/w Sharp Street and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	520 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-5.25	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-22.49	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-26.44	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.3	57.4	55.7	49.6	58.2	58.9
Medium Trucks:	52.9	51.4	45.0	43.5	52.0	52.2
Heavy Trucks:	53.3	51.9	42.9	44.1	52.5	52.6
Vehicle Noise:	61.0	59.3	56.2	51.5	60.0	60.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	22	46	100	216
CNEL:	23	50	108	232

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Samantha Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	50 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-13.87	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-31.11	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-35.06	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	44.6	42.7	41.0	34.9	43.5	44.1
Medium Trucks:	38.8	37.3	31.0	29.4	37.9	38.1
Heavy Trucks:	40.7	39.3	30.2	31.5	39.8	40.0
Vehicle Noise:	46.8	45.1	41.7	37.3	45.8	46.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	11	24
CNEL:	3	6	12	26

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w Hamner Avenue and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	770 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-1.99	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-19.23	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-23.19	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	50.8	49.3	42.9	41.4	49.9	50.1
Heavy Trucks:	52.7	51.2	42.2	43.5	51.8	51.9
Vehicle Noise:	58.8	57.1	53.7	49.3	57.8	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	33	71	154
CNEL:	16	35	76	164

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2012 With Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w I-15 and Wineville Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,570 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	1.10	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-16.14	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-20.09	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	59.7	57.8	56.0	50.0	58.6	59.2
Medium Trucks:	53.9	52.4	46.0	44.5	52.9	53.2
Heavy Trucks:	55.8	54.3	45.3	46.6	54.9	55.0
Vehicle Noise:	61.9	60.2	56.8	52.4	60.9	61.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	53	115	247
CNEL:	26	57	123	264

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Milliken Avenue
Road Segment: n/o SR-60

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,630 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.22	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-12.02	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.98	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.4	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	61.7	60.3	51.2	52.5	60.8	60.9
Vehicle Noise:	68.4	66.7	63.4	58.8	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	67	144	310	668
CNEL:	72	154	332	715

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Milliken Avenue
Road Segment: b/w SR-60 and Street "B"

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	57,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,760 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	6.16	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.07	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.03	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.3	60.8	61.0
Heavy Trucks:	63.1	61.7	52.6	53.9	62.2	62.4
Vehicle Noise:	69.8	68.1	64.8	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	83	179	385	829
CNEL:	89	191	412	887

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Milliken Avenue
Road Segment: b/w Street "B" and Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	60,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,030 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	6.36	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-10.87	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-14.83	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.5	61.0	61.2
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	70.0	68.3	65.0	60.4	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	85	184	397	854
CNEL:	91	197	425	915

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Hamner Avenue
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,470 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.94	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.30	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.25	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.1	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.2	51.7	60.1	60.4
Heavy Trucks:	62.4	61.0	51.9	53.2	61.5	61.7
Vehicle Noise:	69.1	67.4	64.1	59.6	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	75	161	346	746
CNEL:	80	172	371	799

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Hamner Avenue
Road Segment: b/w Samantha Drive and Chino A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,450 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.92	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.31	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.27	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.1	65.2	63.4	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.2	51.6	60.1	60.3
Heavy Trucks:	62.4	61.0	51.9	53.2	61.5	61.7
Vehicle Noise:	69.1	67.4	64.1	59.5	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	74	160	346	745
CNEL:	80	172	370	797

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Hamner Avenue
Road Segment: b/w Chino Avenue and Cantu-Gall

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,000 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	4.58	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-12.66	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-16.61	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.8	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	59.7	58.2	51.8	50.3	58.8	59.0
Heavy Trucks:	61.0	59.6	50.6	51.8	60.2	60.3
Vehicle Noise:	67.8	66.0	62.7	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	131	281	606
CNEL:	65	140	301	649

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Hamner Avenue
Road Segment: s/o Cantu-Galleano Ranch Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,120 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	3.50	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-13.74	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-17.69	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.7	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	58.6	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	60.0	58.5	49.5	50.8	59.1	59.2
Vehicle Noise:	66.7	64.9	61.7	57.1	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	51	111	238	513
CNEL:	55	118	255	550

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Mill Creek Road
Road Segment: n/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	710 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-2.35	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-19.59	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-23.54	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.1	54.2	52.5	46.4	55.0	55.7
Medium Trucks:	50.4	48.8	42.5	40.9	49.4	49.6
Heavy Trucks:	52.2	50.8	41.8	43.0	51.4	51.5
Vehicle Noise:	58.4	56.7	53.2	48.8	57.4	57.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	31	67	144
CNEL:	15	33	71	153

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Mill Creek Road
Road Segment: s/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	280 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-6.39	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-23.63	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-27.58	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	52.3	50.4	48.6	42.6	51.2	51.8
Medium Trucks:	46.5	45.0	38.6	37.1	45.6	45.8
Heavy Trucks:	48.4	47.0	37.9	39.2	47.5	47.6
Vehicle Noise:	54.5	52.8	49.4	45.0	53.5	53.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	8	17	37	80
CNEL:	9	18	39	85

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Sharp Street
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	90 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-11.32	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-28.56	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-32.51	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	47.2	45.3	43.5	37.5	46.1	46.7
Medium Trucks:	41.4	39.9	33.5	32.0	40.4	40.7
Heavy Trucks:	43.2	41.8	32.8	34.0	42.4	42.5
Vehicle Noise:	49.4	47.7	44.2	39.9	48.4	48.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	4	8	17	36
CNEL:	4	8	18	39

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Riverside Drive
Road Segment: w/o Mill Creek Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,950 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.49	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-16.75	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-20.70	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	58.6	57.1	50.8	49.2	57.7	57.9
Heavy Trucks:	59.1	57.6	48.6	49.9	58.2	58.3
Vehicle Noise:	66.8	65.0	62.0	57.2	65.7	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	112	242	520
CNEL:	56	120	260	559

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Riverside Drive
Road Segment: b/w Mill Creek Road and Street "A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,740 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.00	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.24	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.20	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.6	62.7	60.9	54.9	63.5	64.1
Medium Trucks:	58.2	56.6	50.3	48.7	57.2	57.4
Heavy Trucks:	58.6	57.1	48.1	49.4	57.7	57.8
Vehicle Noise:	66.3	64.5	61.5	56.7	65.3	65.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	48	104	224	482
CNEL:	52	112	241	518

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Riverside Drive
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,230	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	50	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.07	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-16.16	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-20.12	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	59.2	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	59.6	58.2	49.2	50.4	58.8	58.9
Vehicle Noise:	67.4	65.6	62.6	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	57	123	264	569
CNEL:	61	132	284	611

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Riverside Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,610 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.34	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.58	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.53	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.3	62.4	60.6	54.5	63.2	63.8
Medium Trucks:	57.8	56.3	49.9	48.4	56.9	57.1
Heavy Trucks:	58.2	56.8	47.8	49.0	57.4	57.5
Vehicle Noise:	65.9	64.2	61.2	56.4	64.9	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	46	99	213	458
CNEL:	49	106	228	492

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Riverside Drive
Road Segment: b/w Sharp Street and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,660 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.21	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.45	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.40	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.4	62.5	60.7	54.7	63.3	63.9
Medium Trucks:	57.9	56.4	50.1	48.5	57.0	57.2
Heavy Trucks:	58.4	56.9	47.9	49.2	57.5	57.6
Vehicle Noise:	66.1	64.3	61.3	56.5	65.0	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	101	217	467
CNEL:	50	108	233	502

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Samantha Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	60 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-13.08	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-30.32	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-34.27	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	45.4	43.5	41.7	35.7	44.3	44.9
Medium Trucks:	39.6	38.1	31.8	30.2	38.7	38.9
Heavy Trucks:	41.5	40.1	31.0	32.3	40.6	40.8
Vehicle Noise:	47.6	45.9	42.5	38.1	46.6	47.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	6	13	28
CNEL:	3	6	14	30

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w Hamner Avenue and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,120 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	5.29	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-11.95	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-15.90	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.9	62.0	60.2	54.2	62.8	63.4
Medium Trucks:	58.1	56.6	50.2	48.7	57.1	57.4
Heavy Trucks:	59.9	58.5	49.5	50.7	59.1	59.2
Vehicle Noise:	66.1	64.4	60.9	56.6	65.1	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	101	218	470
CNEL:	50	108	233	502

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout No Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w I-15 and Wineville Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	60,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,040 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	6.95	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-10.29	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-14.24	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.5	63.6	61.9	55.8	64.4	65.0
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	61.6	60.2	51.2	52.4	60.8	60.9
Vehicle Noise:	67.8	66.0	62.6	58.2	66.7	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	131	282	607
CNEL:	65	140	301	648

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Milliken Avenue
Road Segment: n/o SR-60

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	46,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,630 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.22	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-12.02	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.98	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.4	58.8	52.5	50.9	59.4	59.6
Heavy Trucks:	61.7	60.3	51.2	52.5	60.8	60.9
Vehicle Noise:	68.4	66.7	63.4	58.8	67.4	67.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	67	144	310	668
CNEL:	72	154	332	715

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Milliken Avenue
Road Segment: b/w SR-60 and Street "B"

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	57,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,730 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	6.14	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.10	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.05	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.8	65.9	64.1	58.0	66.7	67.3
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	63.1	61.6	52.6	53.8	62.2	62.3
Vehicle Noise:	69.8	68.0	64.8	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	83	178	383	826
CNEL:	88	190	410	884

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Milliken Avenue
Road Segment: b/w Street "B" and Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,420 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.90	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.34	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.29	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.5	65.6	63.9	57.8	66.4	67.0
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	62.8	61.4	52.4	53.6	62.0	62.1
Vehicle Noise:	69.5	67.8	64.5	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	80	171	369	796
CNEL:	85	184	395	852

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Hamner Avenue
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,480 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.95	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.29	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.25	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.1	65.2	63.5	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.2	51.7	60.1	60.4
Heavy Trucks:	62.4	61.0	51.9	53.2	61.6	61.7
Vehicle Noise:	69.1	67.4	64.1	59.6	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	75	161	347	747
CNEL:	80	172	371	800

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Hamner Avenue
Road Segment: b/w Samantha Drive and Chino A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,490 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	5.96	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.28	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.24	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.1	65.2	63.5	57.4	66.0	66.6
Medium Trucks:	61.1	59.6	53.2	51.7	60.1	60.4
Heavy Trucks:	62.4	61.0	52.0	53.2	61.6	61.7
Vehicle Noise:	69.1	67.4	64.1	59.6	68.1	68.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	75	161	347	748
CNEL:	80	173	372	801

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Hamner Avenue
Road Segment: b/w Chino Avenue and Cantu-Gall

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	4.62	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-12.61	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-16.57	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.8	63.9	62.1	56.1	64.7	65.3
Medium Trucks:	59.8	58.3	51.9	50.3	58.8	59.0
Heavy Trucks:	61.1	59.7	50.6	51.9	60.2	60.4
Vehicle Noise:	67.8	66.1	62.8	58.2	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	131	283	610
CNEL:	65	141	303	653

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Hamner Avenue
Road Segment: s/o Cantu-Galleano Ranch Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	31,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,140 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	74 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	92.952
Medium Trucks:	92.909
Heavy Trucks:	92.952

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	3.53	-4.14	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-13.71	-4.14	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-17.66	-4.14	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.7	62.8	61.0	55.0	63.6	64.2
Medium Trucks:	58.7	57.2	50.8	49.3	57.7	57.9
Heavy Trucks:	60.0	58.6	49.5	50.8	59.1	59.3
Vehicle Noise:	66.7	65.0	61.7	57.1	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	111	239	516
CNEL:	55	119	256	552

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Mill Creek Road
Road Segment: n/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	710 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-2.35	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-19.59	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-23.54	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.1	54.2	52.5	46.4	55.0	55.7
Medium Trucks:	50.4	48.8	42.5	40.9	49.4	49.6
Heavy Trucks:	52.2	50.8	41.8	43.0	51.4	51.5
Vehicle Noise:	58.4	56.7	53.2	48.8	57.4	57.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	31	67	144
CNEL:	15	33	71	153

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Mill Creek Road
Road Segment: s/o Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	220 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-7.44	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-24.67	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-28.63	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	51.3	49.4	47.6	41.5	50.2	50.8
Medium Trucks:	45.5	44.0	37.6	36.1	44.5	44.7
Heavy Trucks:	47.3	45.9	36.9	38.1	46.5	46.6
Vehicle Noise:	53.5	51.8	48.3	43.9	52.5	52.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	7	15	31	68
CNEL:	7	16	34	72

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Sharp Street
Road Segment: b/w Riverside Drive and Samanth

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	90 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-11.32	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-28.56	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-32.51	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	47.2	45.3	43.5	37.5	46.1	46.7
Medium Trucks:	41.4	39.9	33.5	32.0	40.4	40.7
Heavy Trucks:	43.2	41.8	32.8	34.0	42.4	42.5
Vehicle Noise:	49.4	47.7	44.2	39.9	48.4	48.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	4	8	17	36
CNEL:	4	8	18	39

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Riverside Drive
Road Segment: w/o Mill Creek Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,960 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.51	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-16.72	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-20.68	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.1	63.2	61.4	55.4	64.0	64.6
Medium Trucks:	58.7	57.2	50.8	49.3	57.7	57.9
Heavy Trucks:	59.1	57.7	48.6	49.9	58.2	58.4
Vehicle Noise:	66.8	65.0	62.0	57.2	65.8	66.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	113	242	522
CNEL:	56	121	260	561

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Riverside Drive
Road Segment: b/w Mill Creek Road and Street "A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,680 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.16	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.39	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.35	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.4	62.5	60.8	54.7	63.3	63.9
Medium Trucks:	58.0	56.5	50.1	48.6	57.0	57.3
Heavy Trucks:	58.4	57.0	48.0	49.2	57.6	57.7
Vehicle Noise:	66.1	64.4	61.3	56.5	65.1	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	102	219	471
CNEL:	51	109	235	506

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Riverside Drive
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,510 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.62	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.86	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.81	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.0	62.1	60.3	54.3	62.9	63.5
Medium Trucks:	57.5	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	58.0	56.5	47.5	48.7	57.1	57.2
Vehicle Noise:	65.7	63.9	60.9	56.1	64.6	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	95	204	439
CNEL:	47	102	219	471

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Riverside Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,610 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.34	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.58	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.53	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.3	62.4	60.6	54.5	63.2	63.8
Medium Trucks:	57.8	56.3	49.9	48.4	56.9	57.1
Heavy Trucks:	58.2	56.8	47.8	49.0	57.4	57.5
Vehicle Noise:	65.9	64.2	61.2	56.4	64.9	65.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	46	99	213	458
CNEL:	49	106	228	492

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Riverside Drive
Road Segment: b/w Sharp Street and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,660 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.21	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.45	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.40	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.4	62.5	60.7	54.7	63.3	63.9
Medium Trucks:	57.9	56.4	50.1	48.5	57.0	57.2
Heavy Trucks:	58.4	56.9	47.9	49.2	57.5	57.6
Vehicle Noise:	66.1	64.3	61.3	56.5	65.0	65.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	101	217	467
CNEL:	50	108	233	502

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Samantha Drive
Road Segment: b/w Milliken Avenue and Sharp St

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	60 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-13.08	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-30.32	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-34.27	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	45.4	43.5	41.7	35.7	44.3	44.9
Medium Trucks:	39.6	38.1	31.8	30.2	38.7	38.9
Heavy Trucks:	41.5	40.1	31.0	32.3	40.6	40.8
Vehicle Noise:	47.6	45.9	42.5	38.1	46.6	47.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	3	6	13	28
CNEL:	3	6	14	30

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w Hamner Avenue and I-15

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,160 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	5.33	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-11.91	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-15.86	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.9	62.0	60.3	54.2	62.8	63.4
Medium Trucks:	58.1	56.6	50.3	48.7	57.2	57.4
Heavy Trucks:	60.0	58.6	49.5	50.8	59.1	59.3
Vehicle Noise:	66.1	64.4	61.0	56.6	65.1	65.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	47	102	220	473
CNEL:	51	109	235	506

Monday, April 25, 2011

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Project Buildout With Project
Road Name: Cantu-Galleano Ranch Road
Road Segment: b/w I-15 and Wineville Road

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	60,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,060 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.412
Medium Trucks:	98.372
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	6.97	-4.51	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-10.27	-4.51	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-14.23	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.6	63.7	61.9	55.8	64.5	65.1
Medium Trucks:	59.8	58.3	51.9	50.4	58.8	59.0
Heavy Trucks:	61.6	60.2	51.2	52.4	60.8	60.9
Vehicle Noise:	67.8	66.1	62.6	58.2	66.8	67.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	131	282	608
CNEL:	65	140	302	650

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APPENDIX 7.1

On-Site FHWA Traffic Noise Model Printouts

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Street "A"
Road Segment: b/w Hartford Street and Riverside

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	680 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-2.53	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-19.77	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-23.73	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.0	54.1	52.3	46.2	54.9	55.5
Medium Trucks:	50.2	48.7	42.3	40.8	49.2	49.4
Heavy Trucks:	52.0	50.6	41.6	42.8	51.2	51.3
Vehicle Noise:	58.2	56.5	53.0	48.6	57.2	57.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	30	65	139
CNEL:	15	32	69	149

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Hartford Street
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	210 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-7.64	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-24.88	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-28.83	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	50.9	49.0	47.2	41.1	49.8	50.4
Medium Trucks:	45.1	43.6	37.2	35.7	44.1	44.3
Heavy Trucks:	46.9	45.5	36.5	37.7	46.1	46.2
Vehicle Noise:	53.1	51.4	47.9	43.5	52.1	52.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	6	14	30	64
CNEL:	7	15	32	68

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Street "B"
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,160 vehicles
Vehicle Speed:	35 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.865
Medium Trucks:	99.825
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	64.30	-0.21	-4.61	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	75.75	-17.45	-4.61	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	81.57	-21.41	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.3	56.4	54.6	48.6	57.2	57.8
Medium Trucks:	52.5	51.0	44.6	43.1	51.5	51.8
Heavy Trucks:	54.3	52.9	43.9	45.1	53.5	53.6
Vehicle Noise:	60.5	58.8	55.3	51.0	59.5	59.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	20	43	92	199
CNEL:	21	46	99	213

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Milliken Avenue
Road Segment: b/w SR-60 and Street "B"

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	57,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,760 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	6.16	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-11.07	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-15.03	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.8	65.9	64.1	58.1	66.7	67.3
Medium Trucks:	61.8	60.3	53.9	52.3	60.8	61.0
Heavy Trucks:	63.1	61.7	52.6	53.9	62.2	62.4
Vehicle Noise:	69.8	68.1	64.8	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	83	179	385	829
CNEL:	89	191	412	887

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Milliken Avenue
Road Segment: b/w Street "B" and Riverside Drive

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	60,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,030 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	100 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	86.654
Medium Trucks:	86.608
Heavy Trucks:	86.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	6.36	-3.69	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	77.72	-10.87	-3.68	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	82.99	-14.83	-3.69	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.0	66.1	64.3	58.3	66.9	67.5
Medium Trucks:	62.0	60.5	54.1	52.5	61.0	61.2
Heavy Trucks:	63.3	61.9	52.8	54.1	62.4	62.6
Vehicle Noise:	70.0	68.3	65.0	60.4	69.0	69.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	85	184	397	854
CNEL:	91	197	425	915

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Riverside Drive
Road Segment: b/w Mill Creek Road and Street "A

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,740 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.00	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-17.24	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-21.20	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.6	62.7	60.9	54.9	63.5	64.1
Medium Trucks:	58.2	56.6	50.3	48.7	57.2	57.4
Heavy Trucks:	58.6	57.1	48.1	49.4	57.7	57.8
Vehicle Noise:	66.3	64.5	61.5	56.7	65.3	65.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	48	104	224	482
CNEL:	52	112	241	518

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: On-Site Project Buildout
Road Name: Riverside Drive
Road Segment: b/w Street "A" and Milliken Avenu

Project Name: Tuscana Village
Job Number: 7674
Analyst: J.T. Stephens

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,230 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	2.000		
Medium Trucks:	4.000		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.871
Medium Trucks:	96.830
Heavy Trucks:	96.871

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.07	-4.41	-1.20	*-4.87*	0.000	0.000
Medium Trucks:	81.00	-16.16	-4.41	-1.20	*-4.97*	0.000	0.000
Heavy Trucks:	85.38	-20.12	-4.41	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	59.2	57.7	51.4	49.8	58.3	58.5
Heavy Trucks:	59.6	58.2	49.2	50.4	58.8	58.9
Vehicle Noise:	67.4	65.6	62.6	57.8	66.3	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	57	123	264	569
CNEL:	61	132	284	611

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APPENDIX 8.1

Project Related Operation Noise Impact Printouts

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Air Conditioning
Observer Location: R1

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	77.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	67.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	15.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	100.0	51.8
Distance Attenuation	77.0	2.3
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**77.0**	**54.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Air Conditioning
Observer Location: R1

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	150.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	140.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	15.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	100.0	51.8
Distance Attenuation	150.0	-3.5
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**150.0**	**48.3**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Air Conditioning
Observer Location: R2

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	142.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	132.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	15.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	100.0	51.8
Distance Attenuation	142.0	-3.0
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**142.0**	**48.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Vehicle Activity
Observer Location: R2

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	145.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	145.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	0.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	6.0	63.8
Distance Attenuation	145.0	-27.7
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**145.0**	**36.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Speakerphones
Observer Location: R2

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	123.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	123.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	0.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	3.0	73.2
Distance Attenuation	123.0	-32.3
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**123.0**	**40.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Air Conditioning
Observer Location: R3

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	173.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	163.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	15.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	100.0	51.8
Distance Attenuation	173.0	-4.8
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**173.0**	**47.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Air Conditioning
Observer Location: R3

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	235.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	225.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	15.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	100.0	51.8
Distance Attenuation	235.0	-7.4
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**235.0**	**44.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Car Wash
Observer Location: R3

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	200.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	200.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	0.0	feet		
Noise Height:	8.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	140.0	60.0
Distance Attenuation	200.0	-3.1
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**200.0**	**56.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Air Conditioning
Observer Location: R4

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	271.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	261.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	3.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	15.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	100.0	51.8
Distance Attenuation	271.0	-8.7
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**271.0**	**43.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Delivery Truck
Observer Location: R5

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	60.0	feet	***Barrier Height:***	**9.0 feet**
Noise Distance to Barrier:	50.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	8.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	40.0	60.8
Distance Attenuation	60.0	-3.5
Shielding (Barrier Attenuation)		-9.3
Adjusted (Distance + Barrier)	**60.0**	**48.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Delivery Truck
Observer Location: R2

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	116.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	106.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	8.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	40.0	60.8
Distance Attenuation	116.0	-9.2
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**116.0**	**51.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Delivery Truck
Observer Location: R6

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	60.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	50.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	8.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	10.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	40.0	60.8
Distance Attenuation	60.0	-3.5
Shielding (Barrier Attenuation)		-7.3
Adjusted (Distance + Barrier)	**60.0**	**50.0**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Delivery Truck
Observer Location: R6 Night

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	125.0	feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	115.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	8.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	10.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	40.0	60.8
Distance Attenuation	125.0	-9.9
Shielding (Barrier Attenuation)		-6.2
Adjusted (Distance + Barrier)	**125.0**	**44.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

Source: Delivery Truck
Observer Location: R2 Night

Project Name: Tuscana Village
Job Number: 7674
Analyst: J. Stephens

NOISE MODEL INPUTS

Noise Distance to Observer	116.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	106.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0.0
Barrier Distance to Observer:	10.0	feet		
Noise Height:	8.0	feet		
Observer Height (Above Pad):	5.0	feet		
Observer Elevation:	0.0	feet		
Noise Source Elevation:	0.0	feet		

Drop Off Coefficient: 20.0 (20 = 6 dBA per doubling of distance, 15 = 4.5 dBA per doubling of distance)

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*
Reference (Sample)	40.0	60.8
Distance Attenuation	116.0	-9.2
Shielding (Barrier Attenuation)		0.0
Adjusted (Distance + Barrier)	**116.0**	**51.6**

APPENDIX 9.1

RCNM (Roadway Construction Noise Model) Database

Table 1. CA/T equipment noise emissions and acoustical usage factors database.

CA/T Noise Emission Reference Levels and Usage Factors					
filename: EQUIPLST.xls					
revised: 7/26/05		Acoustical	Spec 721.560	Actual Measured	No. of Actual
	Impact	Use Factor	Lmax @ 50ft	Lmax @ 50ft	Data Samples
Equipment Description	Device ?	(%)	(dBA, slow)	(dBA, slow)	(Count)
				(samples averaged)	
All Other Equipment > 5 HP	No	50	85	-- N/A --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-- N/A --	0
Blasting	Yes	-- N/A --	94	-- N/A --	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-- N/A --	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-- N/A --	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-- N/A --	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-- N/A --	0
Tractor	No	40	84	-- N/A --	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5