# Environmental Noise Assessment

# Rancho Del Oro Estates

Placer County, California

Job # 2008-162

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March 23, 2009

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# NOISE/VIBRATION

## INTRODUCTION

This report has been prepared to address the noise impacts due to and upon the proposed Rancho Del Oro development located in the community of Granite Bay in Placer County, California. The project site is generally located north of Olive Ranch Road and approximately 0.25 miles east of Cavitt-Stallman Road.

The project site includes approximately 119.4 acres of land and proposes 89 single-family residential lots ranging in size from 42,000 s.f. to 51,773 s.f. The project also includes nine open space lots ranging in size from 5,671 s.f. to 440,623 s.f. Figure 1 shows an aerial photo of the project site. Figure 2 shows the project site plan.

The purpose of this study if to evaluate potential noise impacts relative to the applicable Placer County and Granite Bay Community Plan noise standards. Where potential impacts are identified, practical mitigation measures will be identified.

## ENVIRONMENTAL SETTING

### BACKGROUND INFORMATION ON NOISE AND VIBRATION

#### *Fundamentals of Acoustics*

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

**Figure 1**

Rancho Del Oro Estates - Placer County, California

Project Area and Noise Measurement Sites

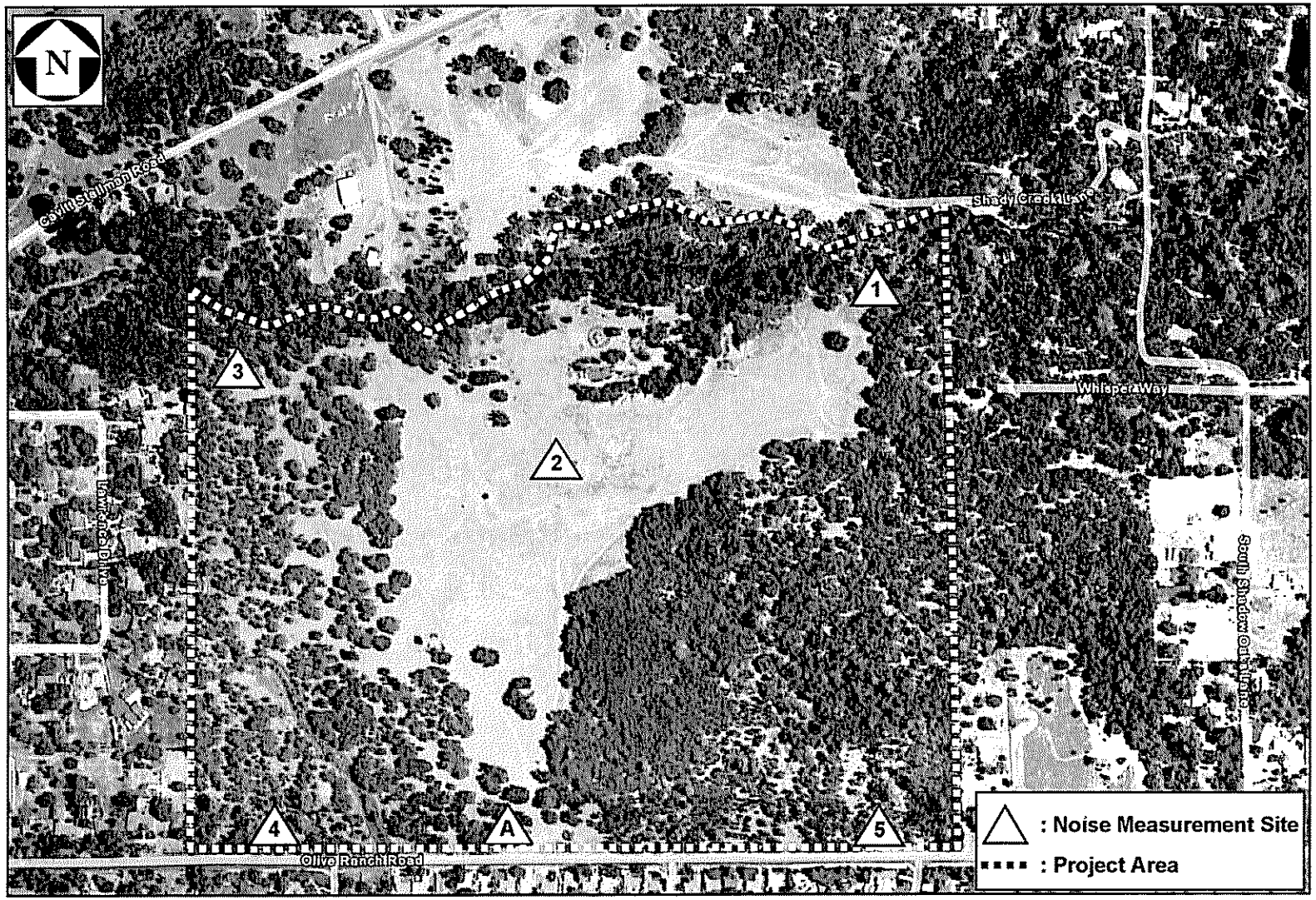


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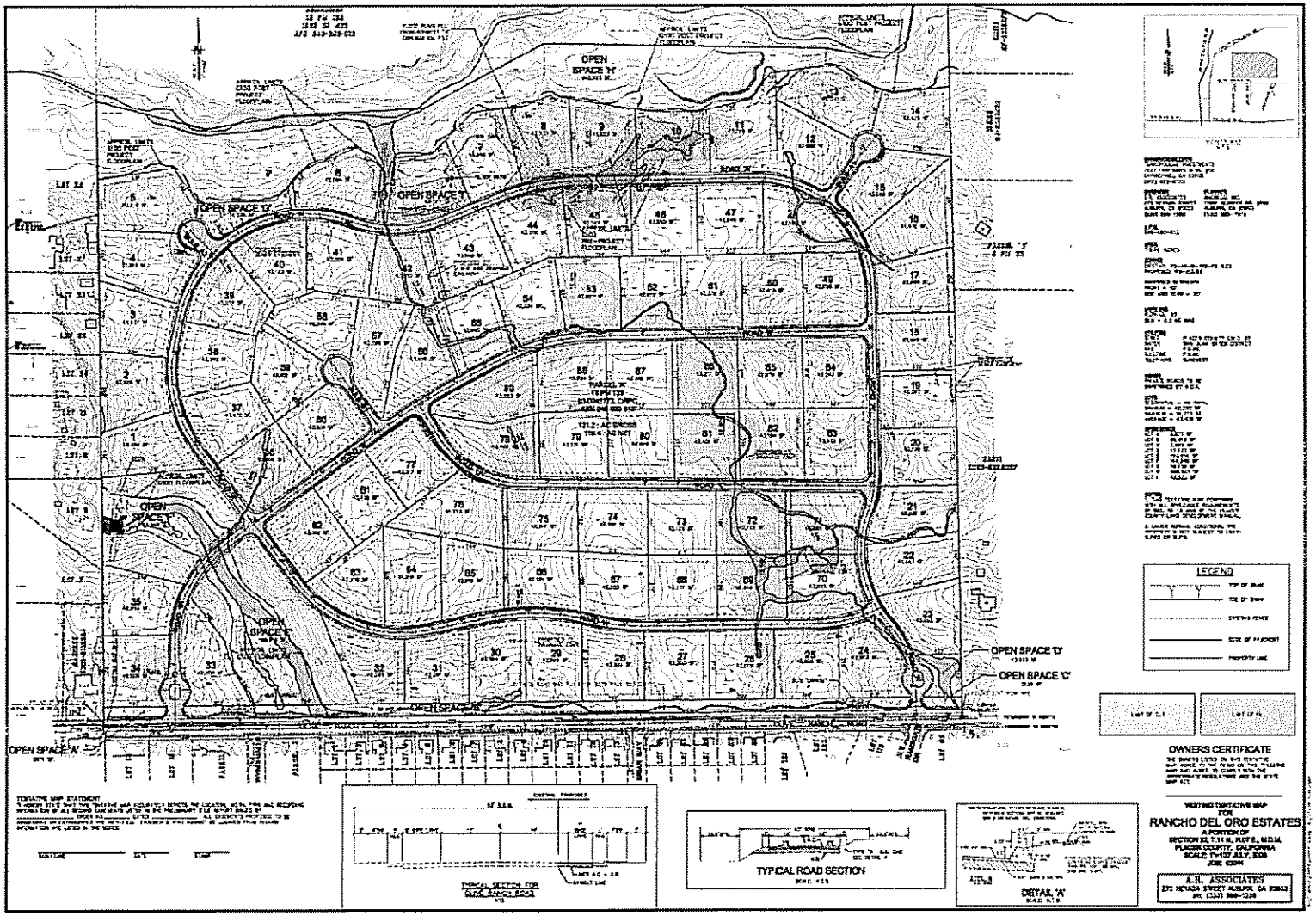
**Figure 2**

Rancho Del Oro Estates - Placer County, California

Site Plan

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Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

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

The day/night average level ($L_{dn}$) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because $L_{dn}$ represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. Appendix A provides a summary of acoustical terms used in this report.

**TABLE 1**
**TYPICAL NOISE LEVELS**

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|---|---|---|
| | --110-- | Rock Band |
| Jet Fly-over at 300 m (1,000 ft) | --100-- | |
| Gas Lawn Mower at 1 m (3 ft) | --90-- | |
| Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph) | --80-- | Food Blender at 1 m (3 ft)<br>Garbage Disposal at 1 m (3 ft) |
| Noisy Urban Area, Daytime<br>Gas Lawn Mower, 30 m (100 ft) | --70-- | Vacuum Cleaner at 3 m (10 ft) |
| Commercial Area<br>Heavy Traffic at 90 m (300 ft) | --60-- | Normal Speech at 1 m (3 ft) |
| Quiet Urban Daytime | --50-- | Large Business Office<br>Dishwasher in Next Room |
| Quiet Urban Nighttime | --40-- | Theater, Large Conference Room (Background) |
| Quiet Suburban Nighttime | --30-- | Library |
| Quiet Rural Nighttime | --20-- | Bedroom at Night, Concert Hall (Background) |
| | --10-- | Broadcast/Recording Studio |
| Lowest Threshold of Human Hearing | --0-- | Lowest Threshold of Human Hearing |

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol October 1998

*Effects of Noise on People*

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

# EXISTING CONDITIONS

The project site has moderately sloping areas consisting of scattered woodlands and grasslands. The site is surrounded on three sides by existing single-family development. The north side of the project site is bordered by the Miners Ravine watershed.

### EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to ambient noise levels than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses consist of single-family residential uses located to the west, east and south of the project site.

### EXISTING AMBIENT NOISE LEVELS

To quantify existing ambient noise levels in the vicinity of the project site, j.c. brennan & associates, Inc. staff conducted short-term noise level measurements at five locations on the project site, and continuous 24-hour noise level measurements at one location. See Figure 1 for noise measurement locations. The noise level measurements were conducted on June 10-11, 2008. The noise level measurements were conducted to determine typical background noise levels and for comparison to the project related noise levels. Table 2 shows a summary of the noise measurement results. Appendix B provides the complete results of the 24-hr hour noise measurements.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted $L_{max}$, represents the highest noise level measured. The average value, denoted $L_{eq}$, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted $L_{50}$, represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

**Table 2**
**Existing Ambient Noise Monitoring Results**
**Rancho Del Oro Estates – Placer County, California**

| Site | Location | Date | Average Measured Hourly Noise Levels, dBA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Ldn/ CNEL | Daytime (7:00 am - 10:00 pm) | | | Nighttime (10:00 pm – 7:00 am) | | |
| | | | | Leq | L50 | Lmax | Leq | L50 | Lmax |
| **Continuous 24-hour Noise Measurement Site** | | | | | | | | | |
| A | Southern Project Boundary, (75' from the centerline of Olive Ranch Road) | June 10-11, 2008 (10:00 a m -9:00 a m) | 57 6 | 56 1 | 49 0 | 73 7 | 49 4 | 38 8 | 67 7 |
| **Short-term Noise Measurement Sites** | | | | | | | | | |
| 1 | NE Corner of Site | June 10, 2008 10:24 a.m. | NA | 46 7 | 45 3 | 55 1 | NA | | |
| 2 | Center of Site | June 10, 2008 10:43 a.m. | NA | 50 2 | 47 1 | 63 5 | NA | | |
| 3 | NW Corner of Site | June 10, 2008 11:00 a.m. | NA | 50 8 | 49 7 | 58 1 | NA | | |
| 4 | SW Corner of Site | June 10, 2008 11:21 a.m. | NA | 55 9 | 52 1 | 71 0 | NA | | |
| 5 | SE Corner of Site | June 10, 2008 11:42 a.m. | NA | 62 1 | 51 4 | 78 4 | NA | | |

Source: j c brennan & associates, Inc – 2009

### *Existing Roadway Noise Levels*

To determine the existing traffic noise levels along the project-area roadways, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used with the California Vehicle Noise Emission Levels (Calveno). The FHWA Model is based upon the Calveno reference noise emissions for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. Traffic volumes were obtained from the traffic study prepared for the project by Omni-Means (February 2009). Truck usage and vehicle speeds on the project roadways were estimated from field observations.

Table 3 shows the existing traffic noise levels in terms of $L_{dn}$ at a reference distance of 100 feet from the centerlines of the existing project-area roadways identified in the traffic study (existing conditions). This table also shows the distances to existing traffic noise contours. A complete listing of the FHWA Model input data is contained in Appendix C.

**TABLE 3**
**EXISTING NOISE LEVELS AND DISTANCES TO CONTOURS**
**RANCHO DEL ORO ESTATES – PLACER COUNTY, CALIFORNIA**

| Roadway | Segment | $L_{dn}$ @ 100 Feet (dB) | Distance to Contours (feet) | | |
|---|---|---|---|---|---|
| | | | 70 dB | 65 dB | 60 dB |
| Olive Ranch Road | Cavitt-Stallman to Ramsgate | 52.5 | 7 | 15 | 32 |
| Olive Ranch Road | Ramsgate to Barton | 52.1 | 6 | 14 | 30 |
| Douglas Blvd. | West of Sierra College | 69.2 | 88 | 189 | 408 |
| Douglas Blvd. | Sierra College to Cavitt-Stallman | 71.3 | 122 | 262 | 565 |
| Douglas Blvd. | Cavitt-Stallman to Seeno | 70.3 | 105 | 227 | 489 |
| Douglas Blvd. | Seeno to Kingsgate | 70.3 | 104 | 225 | 484 |
| Douglas Blvd. | Kingsgate to Barton | 70.0 | 100 | 215 | 462 |
| Douglas Blvd. | East of Barton | 68.7 | 82 | 178 | 383 |
| Sierra College Blvd. | North of Cavitt-Stallman | 67.0 | 63 | 135 | 291 |
| Sierra College Blvd. | Cavitt-Stallman to Douglas | 65.5 | 50 | 108 | 232 |
| Cavitt-Stallman Road | North of Olive Ranch | 53.0 | 7 | 16 | 34 |
| Cavitt-Stallman Road | South of Olive Ranch | 56.3 | 12 | 26 | 57 |
| Cavitt-Stallman Road | North of Douglas | 58.9 | 18 | 39 | 84 |
| Cavitt-Stallman Road | South of Douglas | 56.5 | 13 | 27 | 58 |
| Ramsgate Drive | South of Olive Ranch | 43.2 | 2 | 4 | 8 |
| Seeno Ave. | North of Douglas | 49.2 | 4 | 9 | 19 |
| Kingsgate Drive | North of Douglas | 47.7 | 3 | 7 | 15 |
| Barton Road | North of Olive Ranch | 56.5 | 13 | 27 | 59 |
| Barton Road | Olive Ranch to Douglas | 56.1 | 12 | 25 | 55 |
| Barton Road | South of Douglas | 59.4 | 20 | 42 | 92 |

Notes: Distances to traffic noise contours are measured in feet from the centerlines of the roadways

Source: FHWA-RD-77-108 with inputs from Omni-Means, and j.c. brennan & associates, Inc. 2009.

# REGULATORY CONTEXT

### FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

### STATE

There are no state regulations related to noise that apply to the Proposed Project.

**Placer County General Plan Criteria:**

For transportation noise sources, such as roadway traffic, the Placer County General Plan Noise Element establishes a "Normally Acceptable" exterior noise level standard for residential uses of 60 dBA Ldn, which is applied in "outdoor activity" areas. A "Conditionally Acceptable" exterior noise level standard of 65 dBA Ldn may be applied provided that "practical" exterior noise reduction measures have been implemented and interior noise levels are in compliance with County standards. The County also establishes an interior noise level criterion of 45 dB Ldn.

With regards to where the exterior noise level standard is applied, the Noise Element provides the following guidance:

> *Outdoor activity areas are generally considered to be the back yard or patio of the receiving land use. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.*

**Granite Bay Community Plan:**

The Granite Bay Community Plan establishes specific goals and policies which are indented to provide a means to achieve noise-compatible land uses in the vicinity of existing or planned noise producing sources. The following is a list the specific goals and policies of the Granite Bay Community Plans Noise Element relative to this project.

**GOAL:**

*To provide the health, safety, and welfare of the Granite Bay area residents by providing a livable environment free from excessive noise.*

**Policies**

1. *Locate noise-sensitive land uses within areas of acceptable community noise equivalent levels.*

2. *Encourage the use of greenbelts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.*

3. *Continue program of monitoring noise sources to assure conformance with noise standards adopted in the Countywide Noise Element.*

4. *Avoid the interface of noise-producing and noise-sensitive land uses.*

5. *Require implementation of noise abatement techniques within new projects where warranted.*

7. *Require project specific noise studies for most commercial, office, public, institutional and residential projects.*

8. *Limit construction activities to daytime hours (7 a.m. to 7 p.m., Monday through Friday).*

*Tables 5 and 6* (Tables 4 and 5 in this document) *explain acceptable noise exposure levels based upon the standards adopted in the Countywide Noise Element.*

**Table 4**
**(Table 5 of the Granite Bay Community Plan)**
**Allowable Ldn Noise Levels Within Specified Zone Districts**
**Applicable to New Projects Affected by or**
**Including Non-Transportation Noise Sources**

| Zone District of Receptor | Property Line of Receiving Use | Interior Space[1] |
|---|---|---|
| Residential adjacent to industrial | 60 dBA | 45 dBA |
| Other Residential | 50 dBA | 45 dBA |
| Office/Professional | 70 dBA | 45 dBA |
| Neighborhood Commercial | 70 dBA | 45 dBA |

Notes for Table 1:

- *Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
- *Where existing transportation noise levels exceed the standards of this table, the allowable Ldn shall be raised to the same level as that of the ambient level
- *If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- [1]Interior spaces are defined as any locations where some degree of noise sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

Please see the Granite Bay Community Plan for the full Table footnotes.

The proposed project does not include the creation of new non-transportation noise sources. Additionally, the project site is not currently exposed to existing significant sources of non-transportation noise. Therefore, consideration of the Table 4 standards for this project is not warranted.

**Table 5**
**(Table 6 of the Granite Bay Community Plan)**
**Maximum Allowable Noise Exposure (Ldn)**
**Transportation Noise Sources**

| Land Use | Outdoor Activity Areas [1] | Interior Spaces | |
|---|---|---|---|
| | Ldn/CNEL, dB | Ldn/CNEL, dB | Leq, dB [2] |
| Residential | 60 [3] | 45 | -- |
| Transient Lodging | 60 [3] | 45 | -- |
| Hospitals, Nursing Homes | 60 [3] | 45 | -- |
| Theaters, Auditoriums | -- | -- | 35 |
| Churches, Meeting Halls | 60 [3] | -- | 40 |
| Office Buildings | -- | -- | 45 |
| Schools, Libraries, Museums | -- | -- | |

[1] Where the location of outdoor activity areas is unknown the exterior noise level standard shall be applied to the property line of the receiving land use.
[2] As determined for a typical worst-case hour during periods of use.
[3] Where it is not possible to reduce noise in outdoor activity areas to 60 Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

# IMPACTS AND MITIGATION MEASURES

## METHOD OF ANALYSIS

### *Traffic Noise Impact Assessment Methodology*

To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels are predicted at a representative distance for both short term and future, project and no-project conditions for the Proposed Project. Noise impacts are identified at existing noise-sensitive areas if the noise levels generated by the project create significant increase in existing noise levels.

To describe existing and projected noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly $L_{eq}$ values for free-flowing traffic conditions. To predict traffic noise levels in terms of $L_{dn}$, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

The p.m. peak hour traffic volumes were compiled into segment volumes and converted into daily traffic volumes using a factor of 10. Truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for existing and future conditions which would result from the project are provided in terms of $L_{dn}$ at a standard distance of 100 feet from the centerlines of the project-area roadways.

### *Construction Noise Impact Methodology*

Construction noise was analyzed using data compiled for various pieces of construction equipment at a representative distance of 50 feet. Construction activities are discussed relative to the applicable Placer County noise policies. Potential impacts and mitigation measures are discussed.

#### STANDARDS OF SIGNIFICANCE

CEQA Guidelines define a significant adverse impact on the environment as an impact that would:

a. Exposure of persons to or generation of noise levels in excess of standards established in the Placer County General Plan Noise Element or the Granite Bay Community Plan Noise Element.

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

c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, typically defined as 4 dB.

d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, typically defined as 4 dB.

e. For a project located within an airport land use plan or, where such a plan has not be adopted, within two miles of a public airport or public use airport, where the project would expose people residing or working in the area to excessive noise levels.

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

The project site is not predicted to generate significant amounts of groundborne noise or vibration. Therefore, item "b" would not apply. Additionally, the project site is not located within an airport land use plan or within two miles of a public or private airport.

## PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

### *Impact 1 Construction noise at sensitive receptors*

Construction of the Proposed Project would temporarily increase noise levels during construction. This would be a ***potentially significant*** impact.

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in Table 6, ranging from 76 to 90 dB at a distance of 50 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites. This noise increase would be of short duration, and would likely occur primarily during daytime hours.

**Table 6**
**Construction Equipment Noise**
**Rancho Del Oro Estates – Placer County, California**

| Type of Equipment | Maximum Level, dB at 50 feet |
|---|---|
| Backhoe | 78 |
| Compactor | 83 |
| Compressor (air) | 78 |
| Concrete Saw | 90 |
| Dozer | 82 |
| Dump Truck | 76 |
| Excavator | 81 |
| Generator | 81 |
| Jackhammer | 89 |
| Pneumatic Tools | 85 |

Source: *Roadway Construction Noise Model User's Guide* Federal Highway Administration. FHWA-HEP-05-054 January 2006

Construction activities are conditionally exempt from the Placer County Noise Ordinance during certain hours. Construction activities are exempt from the noise standard from 6 a.m. to 8 p.m. Monday through Friday, and from 7 a.m. to 8 p.m. on Saturdays and Sundays.

*Mitigation Measures*

The following mitigation measures are required for the Proposed Project to minimize construction noise impacts.

MM1a Construction activities shall comply with the Placer County Noise Ordinance.

MM1b Locate fixed construction equipment such as compressors and generators as far as possible from sensitive receptors. Shroud or shield all impact tools, and muffle or shield all intake and exhaust ports on power construction equipment.

MM1c Designate a disturbance coordinator and conspicuously post this person's number around the project site and in adjacent public spaces. The disturbance coordinator will receive all public complaints about construction noise disturbances and will be responsible for determining the cause of the complaint, and implement any feasible measures to be taken to alleviate the problem.

*Significance after Mitigation*

**Less than significant**

***Impact 2*** ***The Proposed Project could expose existing receptors to significant increases in traffic noise levels***

Traffic generated by the Proposed Project could generate traffic noise increases exceeding the 4 dB standard of significance. This would be a ***significant*** impact.

Traffic volumes were obtained from Omni-Means Transportation Engineers. The p.m. peak hour traffic volumes were compiled into segment volumes and converted into daily traffic volumes using a factor of 10. Truck usage and vehicle speeds on the local area roadways were estimated from field observations.

Table 7 shows the predicted traffic noise level increases on the local roadway network for existing conditions. Table 8 shows the predicted traffic noise levels and potential traffic noise level increases on the local roadway network for the Cumulative (2025) conditions. Appendix C provides the complete inputs and results of the FHWA traffic noise modeling.

**Table 7**
**Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases**
**Rancho Del Oro Estates – Placer County, California**

| Roadway | Segment | Noise Levels (Ldn, dB) 100 Feet From Centerline[1] | | |
|---|---|---|---|---|
| | | Existing (dB) | Existing + Project (dB) | Change (dB) |
| Olive Ranch Road | Cavitt-Stallman to Ramsgate | 52.5 | 53.5 | 1.0 |
| Olive Ranch Road | Ramsgate to Barton | 52.1 | 53.0 | 0.9 |
| Douglas Blvd. | West of Sierra College | 69.2 | 69.2 | 0.0 |
| Douglas Blvd | Sierra College to Cavitt-Stallman | 71 3 | 71.3 | 0 0 |
| Douglas Blvd. | Cavitt-Stallman to Seeno | 70.3 | 70.3 | 0.0 |
| Douglas Blvd. | Seeno to Kingsgate | 70.3 | 70.3 | 0.0 |
| Douglas Blvd. | Kingsgate to Barton | 70.0 | 70.0 | 0.0 |
| Douglas Blvd. | East of Barton | 68.7 | 68.8 | 0.1 |
| Sierra College Blvd. | North of Cavitt-Stallman | 67.0 | 67.0 | 0.0 |
| Sierra College Blvd. | Cavitt-Stallman to Douglas | 65.5 | 65.5 | 0.0 |
| Cavitt-Stallman Road | North of Olive Ranch | 53.0 | 53.0 | 0.0 |
| Cavitt-Stallman Road | South of Olive Ranch | 56.3 | 56.9 | 0.6 |
| Cavitt-Stallman Road | North of Douglas | 58.9 | 59.0 | 0.1 |
| Cavitt-Stallman Road | South of Douglas | 56.5 | 56.5 | 0.0 |
| Ramsgate Drive | South of Olive Ranch | 43.2 | 45.1 | 1.9 |
| Seeno Ave. | North of Douglas | 49.2 | 49.4 | 0.2 |
| Kingsgate Drive | North of Douglas | 47.7 | 48.5 | 0.8 |
| Barton Road | North of Olive Ranch | 56.5 | 56.6 | 0.1 |
| Barton Road | Olive Ranch to Douglas | 56.1 | 56.4 | 0.3 |
| Barton Road | South of Douglas | 59.4 | 59.5 | 0.1 |

[1] Distances to traffic noise contours are measured in feet from the centerlines of the roadways
[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j c brennan & associates, Inc 2009

**Table 8**
**Cumulative (2025) Noise Levels With and Without Project**
**Rancho Del Oro Estates – Placer County, California**

| Roadway | Segment | Noise Levels (Ldn, dB) 100 Feet From Centerline[1] | | | Distance to Traffic Noise Contour (feet)[1] | | |
|---|---|---|---|---|---|---|---|
| | | Cumulative (dB) | Cumulative + Project (dB) | Change (dB) | 70 dB Ldn | 65 dB Ldn | 60 dB Ldn |
| Olive Ranch Road | Cavitt-Stallman to Ramsgate | 54 7 | 55 3 | 0 6 | 10 | 23 | 49 |
| Olive Ranch Road | Ramsgate to Barton | 54 5 | 55 1 | 0 6 | 10 | 22 | 47 |
| Douglas Blvd | West of Sierra College | 70 0 | 70 0 | 0 0 | 100 | 216 | 465 |
| Douglas Blvd | Sierra College to Cavitt-Stallman | 71 8 | 71 8 | 0 0 | 132 | 285 | 614 |
| Douglas Blvd | Cavitt-Stallman to Seeno | 71 1 | 71 1 | 0 0 | 119 | 256 | 552 |
| Douglas Blvd. | Seeno to Kingsgate | 71.1 | 71.1 | 0.0 | 118 | 255 | 550 |
| Douglas Blvd. | Kingsgate to Barton | 70.7 | 70.7 | 0.0 | 111 | 239 | 515 |
| Douglas Blvd. | East of Barton | 69.5 | 69.6 | 0.1 | 93 | 201 | 434 |
| Sierra College Blvd. | North of Cavitt-Stallman | 69 6 | 69 6 | 0 0 | 94 | 203 | 438 |
| Sierra College Blvd. | Cavitt-Stallman to Douglas | 68 5 | 68 5 | 0 0 | 79 | 171 | 367 |
| Cavitt-Stallman Road | North of Olive Ranch | 55 6 | 55 6 | 0 0 | 11 | 24 | 51 |
| Cavitt-Stallman Road | South of Olive Ranch | 58 0 | 58 4 | 0 4 | 17 | 36 | 78 |
| Cavitt-Stallman Road | North of Douglas | 59 3 | 59 4 | 0 1 | 20 | 43 | 92 |
| Cavitt-Stallman Road | South of Douglas | 57 9 | 57 9 | 0 0 | 16 | 33 | 72 |
| Ramsgate Drive | South of Olive Ranch | 45 2 | 46 3 | 1 1 | 3 | 6 | 12 |
| Seeno Ave. | North of Douglas | 49.8 | 50.1 | 0.3 | 5 | 10 | 22 |
| Kingsgate Drive | North of Douglas | 48 5 | 49 0 | 0 5 | 4 | 9 | 19 |
| Barton Road | North of Olive Ranch | 60.5 | 60.5 | 0.0 | 23 | 50 | 108 |
| Barton Road | Olive Ranch to Douglas | 59 6 | 59 7 | 0 1 | 21 | 45 | 96 |
| Barton Road | South of Douglas | 61.4 | 61.4 | 0.0 | 27 | 58 | 125 |

[1] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures Traffic noise levels may vary depending on actual setback distances and localized shielding
[2] Distances to traffic noise contours are measured in feet from the centerlines of the roadways

Source: j c brennan & associates, Inc 2009

Based upon the Table 7 and 8 data, the proposed project is not predicted to result in traffic noise level increases exceeding 4 dB. Therefore, this impact is considered less-than-significant relative to the project's significance criteria.

Mitigation for Impact 2

**None required**

***Impact 3:*** ***The proposed project could expose new noise-sensitive uses to transportation noise levels that exceed the Placer County exterior and interior noise level standards. This is considered to be a potentially significant impact.***

Future noise-sensitive uses adjacent to Olive Ranch Road could be affected by traffic noise levels exceeding the Placer County 60 dB Ldn and exterior and 45 dB Ldn interior noise level standards. The FHWA traffic noise prediction model was used to predict cumulative + project traffic noise levels adjacent to these roadways. The Table 8 data show the distances to the 60, 65, and 70 dB Ldn noise contours for these roadways.

However, the cumulative + project data provided by Omni-Means is not a 20-year traffic projection, as required by the Placer County General Plan Noise Element for assessing on-site traffic noise levels. Therefore, j.c. brennan & associates, Inc. assumed a 2% per year increase in Olive Ranch Road traffic until 2030. Using this increase, an ADT traffic volume of 3,367 was calculated for Olive Ranch Road. Based upon this ADT, the predicted 60 dB Ldn traffic noise contour would be located approximately 52 feet from the centerline of Olive Ranch Road. Figure 3 shows the location of the noise contour. Appendix D shows the results of the 2030 FHWA traffic noise modeling.

Based upon review of the 60 dB Ldn traffic noise contour, no new outdoor recreation areas are predicted to be exposed to traffic noise levels exceeding 60 dB Ldn under the proposed project.

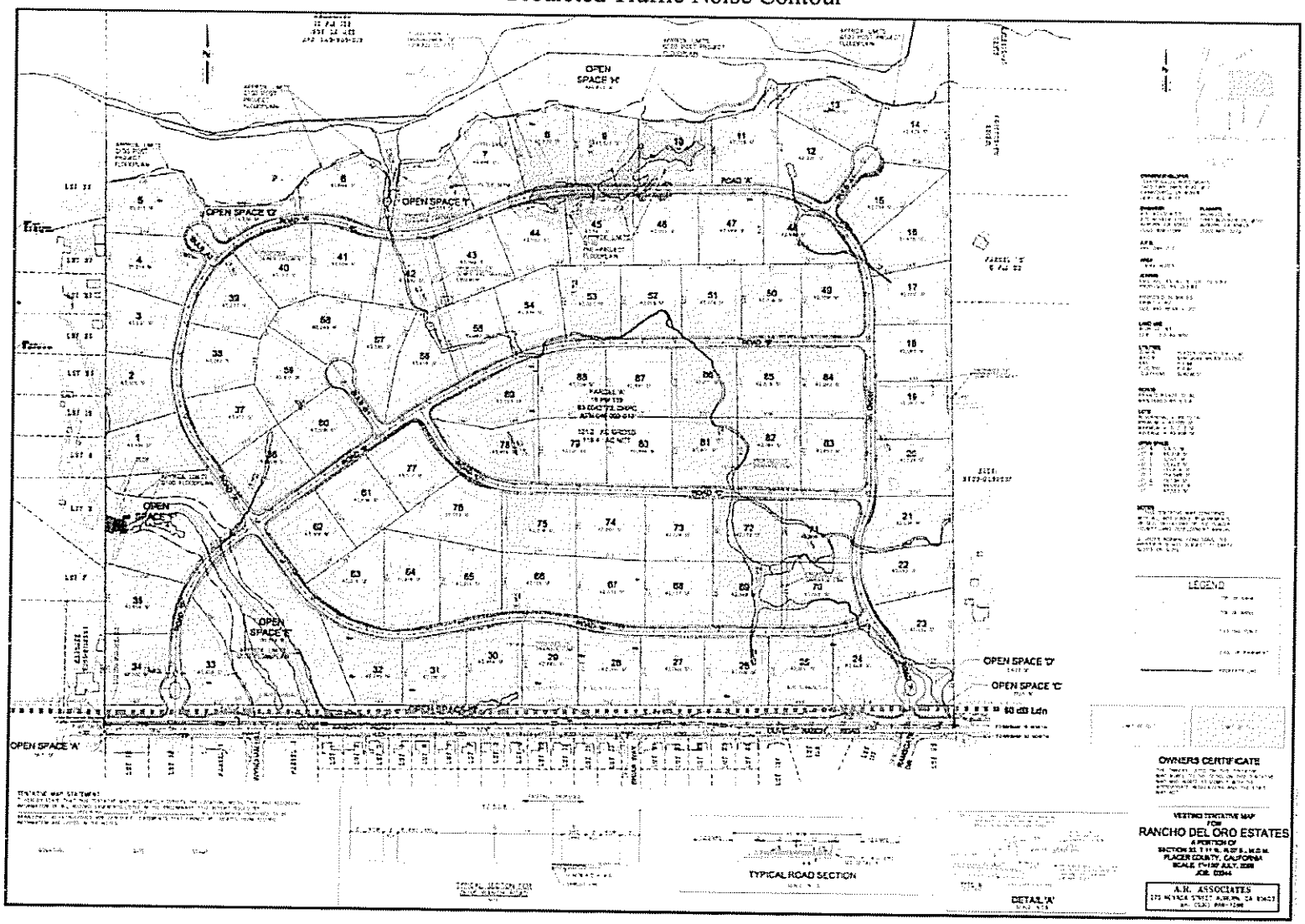
*Mitigation for Impact 3*

**None required**

**Figure 3**

Rancho Del Oro Estates - Placer County, California

Predicted Traffic Noise Contour




▫▫▫▫▫▫ : Future (2030) 60 dB $L_{dn}$ Traffic Noise Contour

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## CUMULATIVE IMPACTS AND MITIGATION MEASURES

The cumulative context for noise impacts associated with the Proposed Project consists of the existing and future noise sources that could affect the project or surrounding uses. Noise generated by construction would be temporary, and would not add to the permanent noise environment or be considered as part of the cumulative context.

***Impact 4*** ***The Proposed Project would add to cumulative noise levels in the project vicinity.***

The cumulative context for noise impacts associated with the Proposed Project consists of the existing and future noise sources that could affect the project or surrounding uses. Noise generated by construction would be temporary, and would not add to the permanent noise environment or be considered as part of the cumulative context. The total noise impact of the Proposed Project would be fairly small and would not be a substantial increase to the existing future noise environment. Thus, the Proposed Project would result in a ***less than significant cumulative impact.***

*Traffic*

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the Proposed Project and on site activities resulting from operation of the proposed project. Table 8 above shows cumulative traffic noise levels with and without the Proposed Project. As discussed, the project would not result in significant increases in traffic noise levels at sensitive receptors.

*Non-Traffic Noise*

The Proposed Project is expected to create noise due to on-site residential use of the project site. Non-traffic noise includes increased pedestrian activity in and around the project site. The number of people walking and interacting on surrounding roads would increase slightly. This could raise noise levels on these streets slightly as more people utilize the site. This is not expected to substantially influence interior or exterior noise levels at nearby receptors.

*Cumulative Conclusion*

The combination of traffic and non-traffic noise from the Proposed Project is not expected to produce noise levels that would exceed County standards or produce isolated events that could disrupt sleep. As discussed above, the Proposed Project would not create non-transportation or stationary noise exceeding local ordinances. Increased project related traffic would increase traffic noise levels by less than 4 dBA $L_{dn}$ at sensitive receptors. Consequently, the total noise impact of the Proposed Project would not be a substantial increase to the future noise environment. The Proposed Project would result in a less than significant cumulative impact.

*Mitigation for Impact 4*

**None required**

## Appendix A
## Acoustical Terminology

| | |
|---|---|
| **Acoustics** | The science of sound. |
| **Ambient Noise** | The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study. |
| **Attenuation** | The reduction of an acoustic signal. |
| **A-Weighting** | A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response. |
| **Decibel or dB** | Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. |
| **CNEL** | Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging. |
| **Frequency** | The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz. |
| **Ldn** | Day/Night Average Sound Level. Similar to CNEL but with no evening weighting. |
| **Leq** | Equivalent or energy-averaged sound level. |
| **Lmax** | The highest root-mean-square (RMS) sound level measured over a given period of time. |
| **L(n)** | The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one hour period. |
| **Loudness** | A subjective term for the sensation of the magnitude of sound. |
| **Noise** | Unwanted sound. |
| **Peak Noise** | The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level. |
| **$RT_{60}$** | The time it takes reverberant sound to decay by 60 dB once the source has been removed. |
| **Sabin** | The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin. |
| **SEL** | A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event. |
| **Threshold of Hearing** | The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing. |
| **Threshold of Pain** | Approximately 120 dB above the threshold of hearing. |
| **Impulsive** | Sound of short duration, usually less than one second, with an abrupt onset and rapid decay. |
| **Simple Tone** | Any sound which can be judged as audible as a single pitch or set of single pitches. |

Appendix B

## Rancho Del Oro Estates
## 24hr Continuous Noise Monitoring - Site A
## June 10-11, 2008

| Hour | Leq | Lmax | L50 | L90 |
|---|---|---|---|---|
| 10:00 | 55 | 72 | 47 | 43 |
| 11:00 | 56 | 75 | 50 | 46 |
| 12:00 | 55 | 69 | 50 | 46 |
| 13:00 | 55 | 73 | 49 | 45 |
| 14:00 | 57 | 80 | 50 | 45 |
| 15:00 | 56 | 73 | 48 | 44 |
| 16:00 | 56 | 72 | 48 | 44 |
| 17:00 | 57 | 72 | 52 | 47 |
| 18:00 | 57 | 76 | 52 | 47 |
| 19:00 | 55 | 70 | 49 | 45 |
| 20:00 | 54 | 74 | 45 | 42 |
| 21:00 | 54 | 73 | 45 | 41 |
| 22:00 | 51 | 72 | 42 | 37 |
| 23:00 | 47 | 67 | 36 | 33 |
| 0:00 | 43 | 66 | 34 | 32 |
| 1:00 | 43 | 67 | 34 | 32 |
| 2:00 | 41 | 65 | 36 | 34 |
| 3:00 | 40 | 59 | 35 | 34 |
| 4:00 | 44 | 70 | 38 | 36 |
| 5:00 | 50 | 69 | 46 | 41 |
| 6:00 | 56 | 74 | 49 | 46 |
| 7:00 | 58 | 76 | 50 | 47 |
| 8:00 | 58 | 79 | 51 | 47 |
| 9:00 | 55 | 72 | 50 | 47 |

| Statistical Summary | | | | | | |
|---|---|---|---|---|---|---|
| | Daytime (7 a.m. - 10 p.m.) | | | Nighttime (10 p.m. - 7 a.m.) | | |
| | High | Low | Average | High | Low | Average |
| Leq (Average) | 58.4 | 54.2 | 56.1 | 56.2 | 40.2 | 49.4 |
| Lmax (Maximum) | 80.4 | 69.0 | 73.7 | 73.8 | 59.1 | 67.7 |
| L50 (Median) | 52.1 | 44.7 | 49.0 | 48.7 | 33.8 | 38.8 |
| L90 (Background) | 47.4 | 41.4 | 45.2 | 46.0 | 31.8 | 36.1 |

| | |
|---|---|
| Computed Ldn, dB | 57.6 |
| % Daytime Energy | 89% |
| % Nighttime Energy | 11% |

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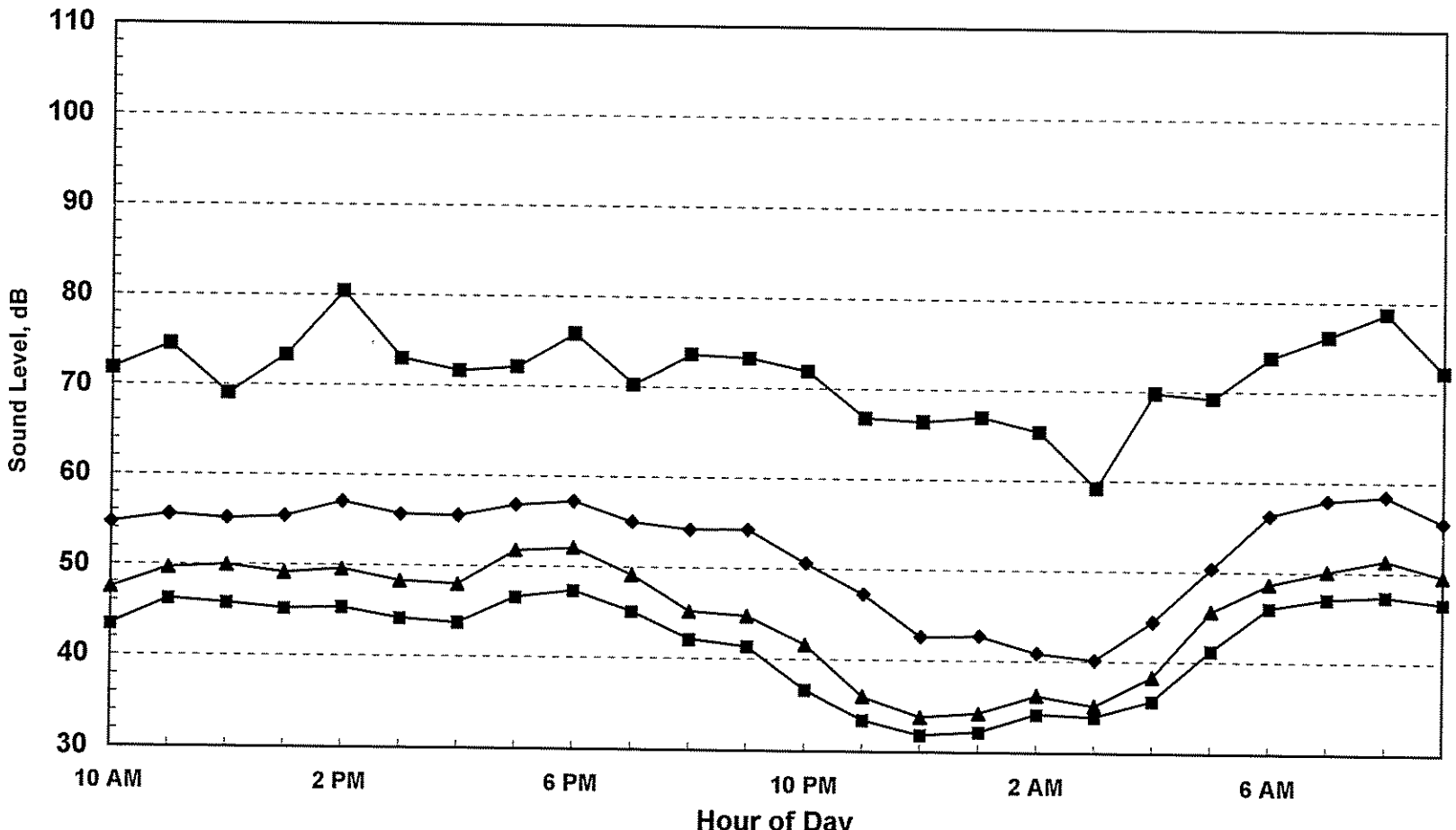
Appendix B
24hr Continuous Noise Monitoring - Site A
Rancho Del Oro Estates
June 10-11, 2008




Ldn = 57.6 dB

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**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Data Input Sheet

Project #: 2008-162 Rancho Del Oro Estates
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | ADT | Day % | Eve % | Night % | % Med. Trucks | % Hvy. Trucks | Speed | Distance | Offset (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 1,600 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 2 | Olive Ranch Road | Ramsgate to Barton | 1,470 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 3 | Douglas Blvd. | West of Sierra College | 40,910 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 40,250 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 32,360 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 31,950 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 7 | Douglas Blvd. | Kingsgate to Barton | 29,790 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 8 | Douglas Blvd. | East of Barton | 28,560 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 18,920 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 17,550 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 1,320 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 2,820 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 13 | Cavitt-Stallman Road | North of Douglas | 5,100 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 14 | Cavitt-Stallman Road | South of Douglas | 2,930 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 15 | Ramsgate Drive | South of Olive Ranch | 350 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 16 | Seeno Ave. | North of Douglas | 1,390 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 17 | Kingsgate Drive | North of Douglas | 970 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 18 | Barton Road | North of Olive Ranch | 2,980 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 19 | Barton Road | Olive Ranch to Douglas | 3,650 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 20 | Barton Road | South of Douglas | 5,780 | 83 | | 17 | 2 | 1 | 40 | 100 | |

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Appendix C

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Predicted Levels

Project #: 2008-162 Rancho Del Oro Estates
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Autos | Medium Trucks | Heavy Trucks | Total |
|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 51 | 44 | 46 | 52.5 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 50 | 43 | 45 | 52.1 |
| 3 | Douglas Blvd. | West of Sierra College | 68 | 59 | 61 | 69.2 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 70 | 61 | 62 | 71.3 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 69 | 60 | 61 | 70.3 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 69 | 60 | 61 | 70.3 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 69 | 59 | 60 | 70.0 |
| 8 | Douglas Blvd. | East of Barton | 68 | 58 | 60 | 68.7 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 66 | 57 | 58 | 67.0 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 64 | 56 | 57 | 65.5 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 52 | 44 | 45 | 53.0 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 55 | 47 | 49 | 56.3 |
| 13 | Cavitt-Stallman Road | North of Douglas | 57 | 49 | 51 | 58.9 |
| 14 | Cavitt-Stallman Road | South of Douglas | 55 | 47 | 49 | 56.5 |
| 15 | Ramsgate Drive | South of Olive Ranch | 40 | 35 | 39 | 43.2 |
| 16 | Seeno Ave. | North of Douglas | 46 | 41 | 45 | 49.2 |
| 17 | Kingsgate Drive | North of Douglas | 44 | 39 | 44 | 47.7 |
| 18 | Barton Road | North of Olive Ranch | 55 | 47 | 49 | 56.5 |
| 19 | Barton Road | Olive Ranch to Douglas | 54 | 47 | 49 | 56.1 |
| 20 | Barton Road | South of Douglas | 58 | 50 | 52 | 59.4 |

**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Noise Contour Output

Project #: 2008-162 Rancho Del Oro Estates
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Distances to Traffic Noise Contours | | | | |
|---|---|---|---|---|---|---|---|
| | | | 75 | 70 | 65 | 60 | 55 |
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 3 | 7 | 15 | 32 | 68 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 3 | 6 | 14 | 30 | 64 |
| 3 | Douglas Blvd. | West of Sierra College | 41 | 88 | 189 | 408 | 879 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 57 | 122 | 262 | 565 | 1217 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 49 | 105 | 227 | 489 | 1052 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 48 | 104 | 225 | 484 | 1044 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 46 | 100 | 215 | 462 | 996 |
| 8 | Douglas Blvd. | East of Barton | 38 | 82 | 178 | 383 | 824 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 29 | 63 | 135 | 291 | 626 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 23 | 50 | 108 | 232 | 500 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 3 | 7 | 16 | 34 | 74 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 6 | 12 | 26 | 57 | 122 |
| 13 | Cavitt-Stallman Road | North of Douglas | 8 | 18 | 39 | 84 | 181 |
| 14 | Cavitt-Stallman Road | South of Douglas | 6 | 13 | 27 | 58 | 125 |
| 15 | Ramsgate Drive | South of Olive Ranch | 1 | 2 | 4 | 8 | 16 |
| 16 | Seeno Ave. | North of Douglas | 2 | 4 | 9 | 19 | 41 |
| 17 | Kingsgate Drive | North of Douglas | 2 | 3 | 7 | 15 | 32 |
| 18 | Barton Road | North of Olive Ranch | 6 | 13 | 27 | 59 | 127 |
| 19 | Barton Road | Olive Ranch to Douglas | 5 | 12 | 25 | 55 | 118 |
| 20 | Barton Road | South of Douglas | 9 | 20 | 42 | 92 | 197 |

**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Data Input Sheet

Project #: 2008-162 Rancho Del Oro Estates
Description: Existing + Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | ADT | Day % | Eve % | Night % | % Med. Trucks | % Hvy. Trucks | Speed | Distance | Offset (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 2,020 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 2 | Olive Ranch Road | Ramsgate to Barton | 1,790 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 3 | Douglas Blvd. | West of Sierra College | 41,070 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 40,440 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 32,410 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 32,060 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 7 | Douglas Blvd. | Kingsgate to Barton | 29,960 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 8 | Douglas Blvd. | East of Barton | 28,940 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 19,060 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 17,660 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 1,330 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 3,230 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 13 | Cavitt-Stallman Road | North of Douglas | 5,250 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 14 | Cavitt-Stallman Road | South of Douglas | 2,940 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 15 | Ramsgate Drive | South of Olive Ranch | 540 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 16 | Seeno Ave. | North of Douglas | 1,450 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 17 | Kingsgate Drive | North of Douglas | 1,160 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 18 | Barton Road | North of Olive Ranch | 3,000 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 19 | Barton Road | Olive Ranch to Douglas | 3,950 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 20 | Barton Road | South of Douglas | 5,870 | 83 | | 17 | 2 | 1 | 40 | 100 | |

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Appendix C

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Predicted Levels

Project #: 2008-162 Rancho Del Oro Estates
Description: Existing + Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Autos | Medium Trucks | Heavy Trucks | Total |
|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 52 | 45 | 47 | 53.5 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 51 | 44 | 46 | 53.0 |
| 3 | Douglas Blvd. | West of Sierra College | 68 | 59 | 61 | 69.2 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 70 | 61 | 62 | 71.3 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 69 | 60 | 61 | 70.3 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 69 | 60 | 61 | 70.3 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 69 | 59 | 60 | 70.0 |
| 8 | Douglas Blvd. | East of Barton | 68 | 59 | 60 | 68.8 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 66 | 57 | 58 | 67.0 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 64 | 56 | 57 | 65.5 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 52 | 44 | 45 | 53.0 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 55 | 47 | 49 | 56.9 |
| 13 | Cavitt-Stallman Road | North of Douglas | 58 | 50 | 51 | 59.0 |
| 14 | Cavitt-Stallman Road | South of Douglas | 55 | 47 | 49 | 56.5 |
| 15 | Ramsgate Drive | South of Olive Ranch | 42 | 37 | 41 | 45.1 |
| 16 | Seeno Ave. | North of Douglas | 46 | 41 | 45 | 49.4 |
| 17 | Kingsgate Drive | North of Douglas | 45 | 40 | 44 | 48.5 |
| 18 | Barton Road | North of Olive Ranch | 55 | 47 | 49 | 56.6 |
| 19 | Barton Road | Olive Ranch to Douglas | 55 | 47 | 50 | 56.4 |
| 20 | Barton Road | South of Douglas | 58 | 50 | 52 | 59.5 |

**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Noise Contour Output

Project #: 2008-162 Rancho Del Oro Estates
Description: Existing + Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Distances to Traffic Noise Contours | | | | |
|---|---|---|---|---|---|---|---|
| | | | 75 | 70 | 65 | 60 | 55 |
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 4 | 8 | 17 | 37 | 79 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 3 | 7 | 16 | 34 | 73 |
| 3 | Douglas Blvd. | West of Sierra College | 41 | 88 | 190 | 409 | 882 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 57 | 122 | 263 | 567 | 1221 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 49 | 105 | 227 | 489 | 1054 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 49 | 105 | 225 | 485 | 1046 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 46 | 100 | 215 | 464 | 1000 |
| 8 | Douglas Blvd. | East of Barton | 39 | 83 | 179 | 386 | 831 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 29 | 63 | 136 | 292 | 629 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 23 | 50 | 108 | 233 | 502 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 3 | 7 | 16 | 34 | 74 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 6 | 13 | 29 | 62 | 134 |
| 13 | Cavitt-Stallman Road | North of Douglas | 9 | 18 | 40 | 86 | 185 |
| 14 | Cavitt-Stallman Road | South of Douglas | 6 | 13 | 27 | 58 | 126 |
| 15 | Ramsgate Drive | South of Olive Ranch | 1 | 2 | 5 | 10 | 22 |
| 16 | Seeno Ave. | North of Douglas | 2 | 4 | 9 | 20 | 42 |
| 17 | Kingsgate Drive | North of Douglas | 2 | 4 | 8 | 17 | 37 |
| 18 | Barton Road | North of Olive Ranch | 6 | 13 | 27 | 59 | 127 |
| 19 | Barton Road | Olive Ranch to Douglas | 6 | 12 | 27 | 58 | 124 |
| 20 | Barton Road | South of Douglas | 9 | 20 | 43 | 92 | 199 |

**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Data Input Sheet

Project #: 2008-162 Rancho Del Oro Estates
Description: Cumulative (2025) Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | ADT | Day % | Eve % | Night % | % Med. Trucks | % Hvy. Trucks | Speed | Distance | Offset (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 2,640 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 2 | Olive Ranch Road | Ramsgate to Barton | 2,570 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 3 | Douglas Blvd. | West of Sierra College | 49,490 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 45,260 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 38,850 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 38,480 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 7 | Douglas Blvd. | Kingsgate to Barton | 34,840 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 8 | Douglas Blvd. | East of Barton | 34,100 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 34,820 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 34,820 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 2,400 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 4,160 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 13 | Cavitt-Stallman Road | North of Douglas | 5,660 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 14 | Cavitt-Stallman Road | South of Douglas | 4,030 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 15 | Ramsgate Drive | South of Olive Ranch | 550 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 16 | Seeno Ave. | North of Douglas | 1,590 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 17 | Kingsgate Drive | North of Douglas | 1,170 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 18 | Barton Road | North of Olive Ranch | 7,370 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 19 | Barton Road | Olive Ranch to Douglas | 8,200 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 20 | Barton Road | South of Douglas | 9,080 | 83 | | 17 | 2 | 1 | 40 | 100 | |

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Appendix C

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Predicted Levels

Project #: 2008-162 Rancho Del Oro Estates
Description: Cumulative (2025) Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Autos | Medium Trucks | Heavy Trucks | Total |
|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 53 | 46 | 48 | 54.7 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 53 | 46 | 48 | 54.5 |
| 3 | Douglas Blvd. | West of Sierra College | 69 | 60 | 62 | 70.0 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 71 | 61 | 62 | 71.8 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 70 | 60 | 61 | 71.1 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 70 | 60 | 61 | 71.1 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 70 | 60 | 61 | 70.7 |
| 8 | Douglas Blvd. | East of Barton | 68 | 59 | 60 | 69.5 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 69 | 59 | 61 | 69.6 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 67 | 59 | 60 | 68.5 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 54 | 46 | 48 | 55.6 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 57 | 49 | 50 | 58.0 |
| 13 | Cavitt-Stallman Road | North of Douglas | 58 | 50 | 52 | 59.3 |
| 14 | Cavitt-Stallman Road | South of Douglas | 56 | 48 | 50 | 57.9 |
| 15 | Ramsgate Drive | South of Olive Ranch | 42 | 37 | 41 | 45.2 |
| 16 | Seeno Ave. | North of Douglas | 46 | 41 | 46 | 49.8 |
| 17 | Kingsgate Drive | North of Douglas | 45 | 40 | 45 | 48.5 |
| 18 | Barton Road | North of Olive Ranch | 59 | 51 | 53 | 60.5 |
| 19 | Barton Road | Olive Ranch to Douglas | 58 | 51 | 53 | 59.6 |
| 20 | Barton Road | South of Douglas | 60 | 52 | 54 | 61.4 |

Appendix C

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Noise Contour Output

Project #: 2008-162 Rancho Del Oro Estates
Description: Cumulative (2025) Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Distances to Traffic Noise Contours | | | | |
|---|---|---|---|---|---|---|---|
| | | | 75 | 70 | 65 | 60 | 55 |
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 4 | 9 | 20 | 44 | 95 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 4 | 9 | 20 | 43 | 93 |
| 3 | Douglas Blvd. | West of Sierra College | 46 | 100 | 215 | 463 | 999 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 61 | 132 | 284 | 611 | 1316 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 55 | 119 | 256 | 552 | 1189 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 55 | 118 | 255 | 548 | 1181 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 51 | 111 | 238 | 513 | 1106 |
| 8 | Douglas Blvd. | East of Barton | 43 | 93 | 200 | 431 | 928 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 44 | 94 | 203 | 437 | 941 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 37 | 79 | 170 | 367 | 790 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 5 | 11 | 24 | 51 | 110 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 7 | 16 | 34 | 74 | 158 |
| 13 | Cavitt-Stallman Road | North of Douglas | 9 | 19 | 42 | 90 | 194 |
| 14 | Cavitt-Stallman Road | South of Douglas | 7 | 16 | 33 | 72 | 155 |
| 15 | Ramsgate Drive | South of Olive Ranch | 1 | 2 | 5 | 10 | 22 |
| 16 | Seeno Ave. | North of Douglas | 2 | 5 | 10 | 21 | 45 |
| 17 | Kingsgate Drive | North of Douglas | 2 | 4 | 8 | 17 | 37 |
| 18 | Barton Road | North of Olive Ranch | 11 | 23 | 50 | 108 | 232 |
| 19 | Barton Road | Olive Ranch to Douglas | 9 | 20 | 44 | 94 | 202 |
| 20 | Barton Road | South of Douglas | 12 | 27 | 57 | 124 | 267 |

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**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Data Input Sheet

Project #: 2008-162 Rancho Del Oro Estates
Description: Cumulative (2025) + Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | ADT | Day % | Eve % | Night % | % Med. Trucks | % Hvy. Trucks | Speed | Distance | Offset (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 3,050 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 2 | Olive Ranch Road | Ramsgate to Barton | 2,890 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 3 | Douglas Blvd. | West of Sierra College | 49,730 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 45,550 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 38,900 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 38,620 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 7 | Douglas Blvd. | Kingsgate to Barton | 35,010 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 8 | Douglas Blvd. | East of Barton | 34,470 | 83 | | 17 | 2 | 1 | 55 | 100 | |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 34,960 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 34,930 | 83 | | 17 | 2 | 1 | 50 | 100 | |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 2,410 | 83 | | 17 | 2 | 1 | 45 | 100 | |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 4,560 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 13 | Cavitt-Stallman Road | North of Douglas | 5,810 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 14 | Cavitt-Stallman Road | South of Douglas | 4,040 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 15 | Ramsgate Drive | South of Olive Ranch | 710 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 16 | Seeno Ave. | North of Douglas | 1,680 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 17 | Kingsgate Drive | North of Douglas | 1,320 | 83 | | 17 | 2 | 1 | 25 | 100 | |
| 18 | Barton Road | North of Olive Ranch | 7,390 | 83 | | 17 | 2 | 1 | 40 | 100 | |
| 19 | Barton Road | Olive Ranch to Douglas | 8,490 | 83 | | 17 | 2 | 1 | 35 | 100 | |
| 20 | Barton Road | South of Douglas | 9,170 | 83 | | 17 | 2 | 1 | 40 | 100 | |

**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Predicted Levels

Project #: 2008-162 Rancho Del Oro Estates
Description: Cumulative (2025) + Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Autos | Medium Trucks | Heavy Trucks | Total |
|---|---|---|---|---|---|---|
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 54 | 46 | 49 | 55.3 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 53 | 46 | 48 | 55.1 |
| 3 | Douglas Blvd. | West of Sierra College | 69 | 60 | 62 | 70.0 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 71 | 61 | 62 | 71.8 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 70 | 60 | 61 | 71.1 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 70 | 60 | 61 | 71.1 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 70 | 60 | 61 | 70.7 |
| 8 | Douglas Blvd. | East of Barton | 68 | 59 | 60 | 69.6 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 69 | 59 | 61 | 69.6 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 67 | 59 | 60 | 68.5 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 54 | 46 | 48 | 55.6 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 57 | 49 | 51 | 58.4 |
| 13 | Cavitt-Stallman Road | North of Douglas | 58 | 50 | 52 | 59.4 |
| 14 | Cavitt-Stallman Road | South of Douglas | 56 | 48 | 50 | 57.9 |
| 15 | Ramsgate Drive | South of Olive Ranch | 43 | 38 | 42 | 46.3 |
| 16 | Seeno Ave. | North of Douglas | 47 | 41 | 46 | 50.1 |
| 17 | Kingsgate Drive | North of Douglas | 46 | 40 | 45 | 49.0 |
| 18 | Barton Road | North of Olive Ranch | 59 | 51 | 53 | 60.5 |
| 19 | Barton Road | Olive Ranch to Douglas | 58 | 51 | 53 | 59.7 |
| 20 | Barton Road | South of Douglas | 60 | 52 | 54 | 61.4 |

**Appendix C**

## FHWA-RD-77-108 Highway Traffic Noise Prediction Model
## Noise Contour Output

Project #: 2008-162 Rancho Del Oro Estates
Description: Cumulative (2025) + Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

| Segment | Roadway Name | Segment Description | Distances to Traffic Noise Contours | | | | |
|---|---|---|---|---|---|---|---|
| | | | 75 | 70 | 65 | 60 | 55 |
| 1 | Olive Ranch Road | Cavitt-Stallman to Ramsgate | 5 | 10 | 23 | 49 | 105 |
| 2 | Olive Ranch Road | Ramsgate to Barton | 5 | 10 | 22 | 47 | 101 |
| 3 | Douglas Blvd. | West of Sierra College | 46 | 100 | 216 | 465 | 1002 |
| 4 | Douglas Blvd. | Sierra College to Cavitt-Stallman | 61 | 132 | 285 | 614 | 1322 |
| 5 | Douglas Blvd. | Cavitt-Stallman to Seeno | 55 | 119 | 256 | 552 | 1190 |
| 6 | Douglas Blvd. | Seeno to Kingsgate | 55 | 118 | 255 | 550 | 1184 |
| 7 | Douglas Blvd. | Kingsgate to Barton | 51 | 111 | 239 | 515 | 1109 |
| 8 | Douglas Blvd. | East of Barton | 43 | 93 | 201 | 434 | 934 |
| 9 | Sierra College Blvd. | North of Cavitt-Stallman | 44 | 94 | 203 | 438 | 943 |
| 10 | Sierra College Blvd. | Cavitt-Stallman to Douglas | 37 | 79 | 171 | 367 | 792 |
| 11 | Cavitt-Stallman Road | North of Olive Ranch | 5 | 11 | 24 | 51 | 110 |
| 12 | Cavitt-Stallman Road | South of Olive Ranch | 8 | 17 | 36 | 78 | 168 |
| 13 | Cavitt-Stallman Road | North of Douglas | 9 | 20 | 43 | 92 | 198 |
| 14 | Cavitt-Stallman Road | South of Douglas | 7 | 16 | 33 | 72 | 155 |
| 15 | Ramsgate Drive | South of Olive Ranch | 1 | 3 | 6 | 12 | 26 |
| 16 | Seeno Ave. | North of Douglas | 2 | 5 | 10 | 22 | 47 |
| 17 | Kingsgate Drive | North of Douglas | 2 | 4 | 9 | 19 | 40 |
| 18 | Barton Road | North of Olive Ranch | 11 | 23 | 50 | 108 | 232 |
| 19 | Barton Road | Olive Ranch to Douglas | 10 | 21 | 45 | 96 | 207 |
| 20 | Barton Road | South of Douglas | 12 | 27 | 58 | 125 | 268 |

Appendix D

## FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
## Noise Prediction Worksheet

**Project Information:**

Job Number: 2008-162
Project Name: Rancho Del Oro Estates
Roadway Name: Olive Ranch Road

**Traffic Data:**

| | |
|---|---|
| Year: | 2030 |
| Average Daily Traffic Volume: | 3,367 |
| Percent Daytime Traffic: | 83 |
| Percent Nighttime Traffic: | 17 |
| Percent Medium Trucks (2 axle): | 2 |
| Percent Heavy Trucks (3+ axle): | 1 |
| Assumed Vehicle Speed (mph): | 35 |
| Intervening Ground Type (hard/soft): | **Soft** |

**Traffic Noise Levels:**

| | | | | ----------$L_{dn}$, dB---------- | | | |
|---|---|---|---|---|---|---|---|
| Location: | Description | Distance | Offset (dB) | Autos | Medium Trucks | Heavy Trucks | Total |
| 1 | Property Lines, Lots 23-34 | 75 | 0 | 56 | 49 | 51 | 58 |

**Traffic Noise Contours (No Calibration Offset):**

| $L_{dn}$ Contour, dB | Distance from Centerline, (ft) |
|---|---|
| 75 | 5 |
| 70 | 11 |
| 65 | 24 |
| 60 | 52 |

**Notes:**

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