APPENDIX H
NOISE ANALYSIS

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Planning ❖ Environmental Analysis ❖ Economics ❖ Mapping

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Mr. Daniel Singh, Dentec Holdings
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Subject: Supplemental Noise and Air Quality Analysis for Vista Verde Ranch Project Site

Mr. Singh:

The purpose of this memorandum is to respond to your request for an update of the air quality and noise analysis for the proposed Vista Verde Ranch development. The Los Angeles County Department of Regional Planning (LADRP) requested an update of information included in the environmental impact report (EIR) prepared for the proposed project. Specifically, the LADRP requested new noise measurements to be taken and the air quality analysis to be revised to consider the revised project (70 single-family homes).

Overview of Study

The purpose of this report is to provide the LADRP with an update of the noise and air quality analysis for a proposed residential development consisting of 70-units. This memorandum, and the analysis it contains, will serve as a supplement to the analysis contained in the EIR prepared for the proposed Vista Verde Ranch development. This memorandum includes the following:

- The noise analysis provides an overview of the characteristics of noise, characterizes the potential noise impacts associated with the proposed project's construction and subsequent occupancy, and includes an update of the existing noise environment.
- The air quality analysis considers both the long-term (operational) and short-term (construction-related) air quality impacts.
- The last section summarizes the findings of the study.

Characteristics of Sound

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). Noise may be defined as unwanted sound. The decibel (dB) scale (a logarithmic loudness scale) is most commonly used metric to quantify sound intensity in a convenient and manageable manner. Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity using an *A-weighting*.

The human ear can detect changes in sound levels of approximately 3 dBA under normal ambient conditions. Changes of 1 dBA to 3 dBA are noticeable to some people under relatively quiet conditions while changes of less than 1 dBA are only discernable by a few people under controlled, extremely quiet conditions. Noise may be generated from a point source, such as a piece of construction equipment, or from a line source, such as a road containing moving vehicles. Because the area of the sound wave increases as the sound gets further and

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further from the source, less energy strikes any given point over the surface area of the wave. This phenomenon is known as *spreading loss*. Due to spreading loss, noise *attenuates* or decreases with distance. Objects that block the line-of-sight attenuate the noise source if the receptor is located within the shadow of the blockage (such as behind a sound wall). If a receptor is located behind a wall, but has a view of the noise source, the wall will do little to attenuate the noise. Additionally, a receptor located on the same side of the wall as the noise source may experience an increase in the perceived noise level as the wall can reflect noise back to the receptor compounding the noise.

Time variation in noise exposure is typically expressed in terms of the average energy over time (called Leq), or alternatively, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50% of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. Other values typically noted during a noise survey include the minimum noise level during the measurement period (L_{min}) and the maximum noise level during the measurement period (L_{max}).

Noise Survey

An on-site noise measurement survey was conducted a site visit on Monday, November 7, 2005. The noise measurements were taken at three locations between 4:00 PM and 5:00 PM. A total of 150 measurements were taken with 50 measurements recorded at each location. The field measurements were taken using a *Sper* digital noise meter that was recently calibrated.

The ambient temperature during the measurement period ranged from 62 degrees F to 65 degrees F. The weather was cloudy with scattered showers during the afternoon. However, no rainfall occurred during the measurement period. The ambient noise environment for locations 1 and 2 reflected a quiet suburban residential setting. Noise peaks were limited to aircraft over-flights from small planes taking off from the nearby Bracket Airport, barking dogs, and children playing in the nearby mini-park. The noise environment for location 3 was dominated by traffic on the nearby freeway (SR-57) and San Dimas Avenue.

- *Location 1* was located in the western portion of the site near the mesa area. The ambient noise levels at this location reflected a relatively quiet environment with noise levels ranging from 42.1 dBA up to 60.1 dBA. The average noise level over the measurement period was 48.0 dBA.

- *Location 2* was in the central portion of the site near the existing mini park. The ambient noise levels at this location also reflected a relatively quiet environment with noise levels ranging from 41.7 dBA up to 54.7 dBA. The average noise level over the measurement period was 41.7 dBA.

- *Location 3* was located at the easternmost portion of the site next to San Dimas Avenue. The ambient noise levels at this location was largely impacted by traffic noise emanating from the SR-57 Freeway and San Dimas Avenue. Noise levels at this located ranged between 67.0 dBA up to 70.6 dBA. The average noise level over the measurement period was 71.8 dBA.

The noise measurement results for the three locations are detailed in Table 1 and are illustrated in Exhibit 1.

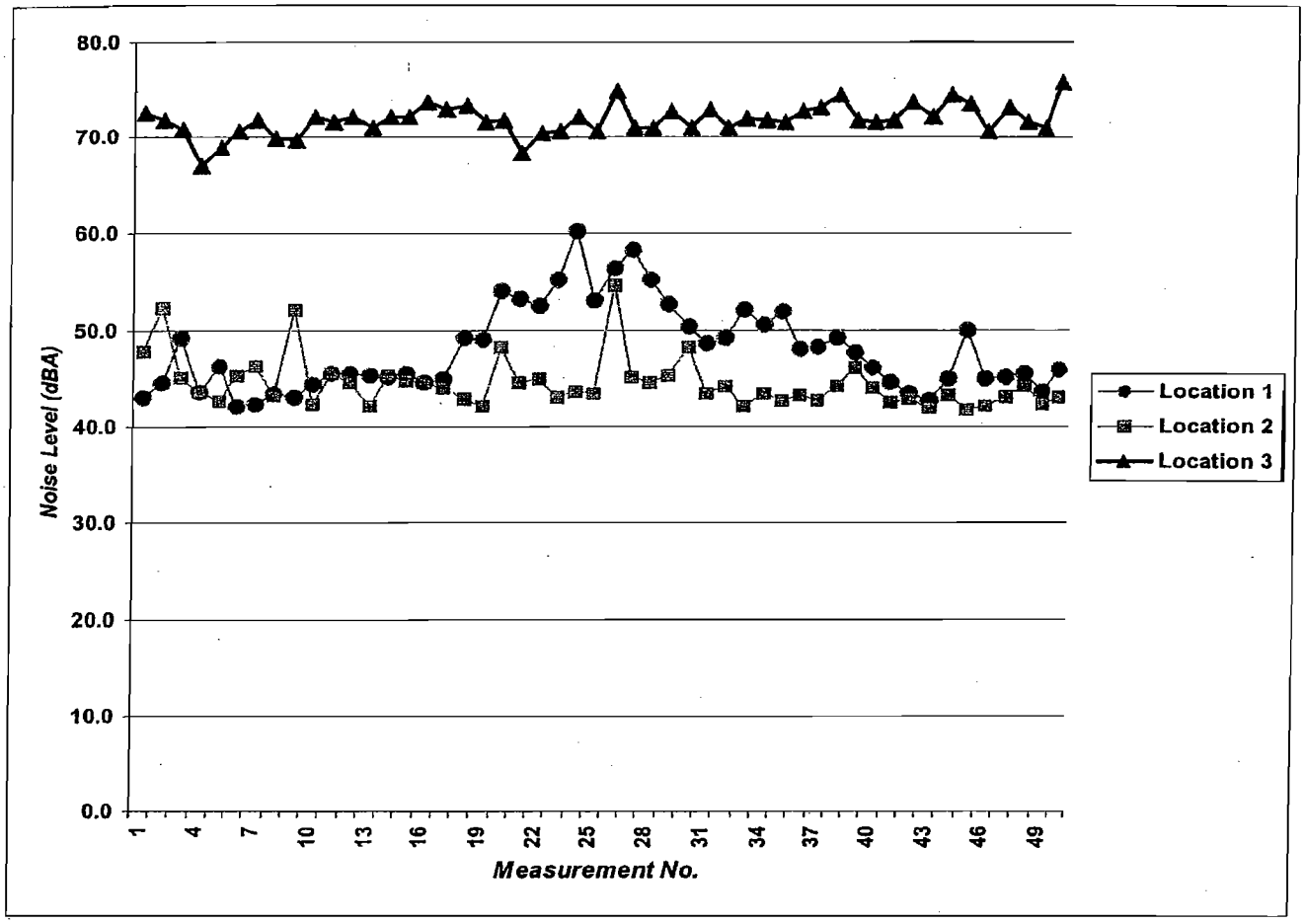
Table 1 - Noise Measurement Results

No.	Site #1	Site #2	Site #3	Site #4
1	43.0	47.9	72.5	0.0
2	44.6	52.4	71.7	0.0
3	49.3	45.1	70.7	0.0
4	43.6	43.6	67.0	0.0
5	46.3	42.6	68.8	0.0
6	42.1	45.3	70.6	0.0
7	42.3	46.4	71.7	0.0
8	43.5	43.3	69.9	0.0
9	43.0	52.1	69.6	0.0
10	44.4	42.3	72.2	0.0
11	45.6	45.6	71.6	0.0
12	45.6	44.7	72.2	0.0
13	45.3	42.2	71.0	0.0
14	45.2	45.3	72.1	0.0
15	45.5	44.9	72.2	0.0
16	44.6	44.7	73.6	0.0
17	45.0	44.0	72.9	0.0
18	49.3	42.8	73.3	0.0
19	49.1	42.1	71.6	0.0
20	54.1	48.3	71.8	0.0
21	53.3	44.6	68.3	0.0
22	52.5	45.0	70.3	0.0
23	55.2	43.1	70.5	0.0
24	60.1	43.6	72.1	0.0
25	53.1	43.5	70.5	0.0
26	56.3	54.7	74.8	0.0
27	58.2	45.2	70.9	0.0
28	55.2	44.7	70.9	0.0
29	52.6	45.3	72.7	0.0
30	50.3	48.3	71.0	0.0
31	48.7	43.4	72.8	0.0
32	49.2	44.2	71.0	0.0
33	52.1	42.1	72.0	0.0
34	50.6	43.5	71.7	0.0
35	51.9	42.6	71.6	0.0
36	48.1	43.3	72.7	0.0
37	48.2	42.6	73.1	0.0
38	49.2	44.3	74.4	0.0
39	47.6	46.1	71.8	0.0
40	46.1	44.1	71.6	0.0
41	44.7	42.5	71.8	0.0
42	43.5	42.8	73.6	0.0
43	42.7	42.0	72.1	0.0
44	45.0	43.3	74.4	0.0
45	50.0	41.7	73.4	0.0
46	45.0	42.1	70.6	0.0
47	45.2	43.0	73.1	0.0
48	45.6	44.3	71.5	0.0
49	43.7	42.4	70.9	0.0
50	45.9	43.0	75.7	0.0
Average	48.0	44.5	71.8	0.0

	Site #1	Site #2	Site #3	Site #4
5% ▼	60.1	54.7	70.6	0.0
	58.2	52.4	75.7	0.0
10% ▼	56.3	52.1	74.8	0.0
	55.2	48.3	74.4	0.0
	55.2	48.3	74.4	0.0
	54.1	47.9	73.6	0.0
	53.3	46.4	73.6	0.0
	53.1	46.1	73.4	0.0
	52.6	45.8	73.3	0.0
	52.5	45.3	73.1	0.0
	52.1	45.3	73.1	0.0
	51.9	45.3	72.9	0.0
	50.6	45.2	72.8	0.0
	50.3	45.1	72.7	0.0
	50.0	45.0	72.7	0.0
	49.3	44.9	72.5	0.0
	49.3	44.7	72.2	0.0
	49.2	44.7	72.2	0.0
	49.2	44.7	72.2	0.0
	49.1	44.6	72.1	0.0
	48.7	44.3	72.1	0.0
	48.2	44.3	72.1	0.0
	48.1	44.2	72.0	0.0
	47.6	44.1	71.8	0.0
50% ▼	46.3	44.0	71.8	0.0
	46.1	43.6	71.8	0.0
	45.9	43.6	71.7	0.0
	45.6	43.5	71.7	0.0
	45.6	43.5	71.7	0.0
	45.6	43.4	71.6	0.0
	45.5	43.3	71.6	0.0
	45.3	43.3	71.6	0.0
	45.2	43.3	71.6	0.0
	45.2	43.1	71.5	0.0
	45.0	43.0	71.0	0.0
	45.0	43.0	71.0	0.0
	45.0	42.8	71.0	0.0
	44.7	42.8	70.9	0.0
	44.6	42.6	70.9	0.0
	44.6	42.6	70.9	0.0
	44.4	42.6	70.7	0.0
	43.7	42.5	70.6	0.0
	43.6	42.4	70.5	0.0
	43.5	42.3	70.5	0.0
90% ▼	43.5	42.2	70.3	0.0
	43.0	42.1	69.9	0.0
95% ▼	43.0	42.1	69.6	0.0
	42.7	42.1	68.8	0.0
	42.3	42.0	68.3	0.0
	42.1	41.7	67.0	0.0

	Site #1	Site #2	Site #3	Site #4
Minimum Noise Level	42.1	41.7	67.0	0.0
Maximum Noise Level	60.1	54.7	70.6	0.0

Exhibit 1 Noise Measurement Results



Overview of Air Quality Analysis

This memorandum also considers the short-term (construction) emissions and the long-term (operational) emissions associated with the potential development that will consist of 70 single-family units. For purposes of analysis, the total disturbed land area was assumed to be 35-acres. Short-term airborne emissions will occur during the various development phases and include the following:

- Activities related to land clearance, grading, and excavation will result in fugitive dust emissions;
- Equipment emissions associated with the use of construction equipment during site preparation and construction will be generated (the construction equipment is generally diesel-powered, resulting in high levels of nitrogen oxide [NO_x] and particulate emissions); and,

- Mobile emissions will be generated by delivery vehicles and workers traveling to and from the construction site.

Long-term emissions refer to those air quality impacts that will occur once the homes are occupied, and these impacts will continue over the operational life of the development. The long-term air quality impacts associated with the proposed project includes the following:

- Mobile emissions associated with vehicular traffic;
- On-site stationary emissions related to various activities; and
- Off-site stationary emissions associated with the generation of energy (natural gas and electrical).

Short-term (Construction Emissions)

To evaluate the proposed project's potential short-term and long–term air quality impacts, a computer model developed for the California Air Resources Board. The computer model, *Urbemis 2002*, is a Windows® based program that calculates to the short-term and long-term emissions for various land uses. Various development assumptions (independent variables) must be identified before the program can determine potential emissions. The characteristics of short-term impacts will be dependent on the nature and extent of activities being undertaken as part of future construction activities. For purposes of this analysis, the computer model considered construction-related impacts for the following phases: land clearance and grading; and building construction.

Assumptions used in the calculation of projected construction emissions included the duration of a particular activity, the site area being graded, the number of units, the number of construction employees, and the types of equipment typically used. The results of the analysis are indicated in Table 2.

Table 2: Construction Emissions (Lbs./Day)

Activity	ROG	NO_x	CO	PM_{10}	SO_2
Site Grading	36.34	256.86	289.26	44.76	0.01
Building Construction	286.62	0.26	6.82	0.10	--
Thresholds	75	100	550	150	150

ROG = reactive organic gasses
NO_x = nitrogen oxide
CO = carbon monoxide
PM_{10} = particulates 10 microns in size or less

Source: URBEMIS 7G, 2005.

As indicated in Table 2, *maximum worse case* construction emissions related to reactive organic gases (ROG) may exceed acceptable thresholds as set by the SCAQMD. The construction activities may generate ROG. The daily threshold limit of ROG is 55 pounds per day. This projected emissions figure does not assume any mitigation of the use of low emission coatings. The ROG emissions are related to the coatings that are used in the finishing phases of construction. These pollutants are precursors to ozone formation. This is important in that the SCAB is currently non-attainment for ozone. To address the potential impacts from architectural coatings, the SCAQMD has promulgated Rule Number 1113 as a means to control volatile organic compound emissions that include ROG. Adherence to SCAQMD Rule No. 1113 will ensure that ROG emissions are less than significant. As a result, the ROG emissions can be reduced to levels that are less than significant by using these low emission architectural coatings.[1] Another short-term impact will be related to the generation of fugitive dust, especially PM_{10} during land clearance and grading activities. The PM_{10} is associated with soil disturbance during grading and excavation activities. The total estimated daily PM_{10} emissions are projected to be approximately 102 pounds while the SCAQMD threshold is 150 pound per day. The watering of the soils (refer to the mitigation measures identified in Section 3.4) would reduce the PM_{10} emissions by as much as 50%.

Long Term Emissions

Long-term emissions will be associated with the vehicle trips generated by future development and the use of electricity and natural gas for energy and other activities (referred to as area-wide emissions). The analysis of long-term operational impacts related to vehicle trips used the same computer model referred to previously The computer model requires the knowledge of a number of independent variables to ascertain project emissions, such as trip generation rates, development characteristics, and opening year of operation.[2] The projected long-term emissions are summarized in Table 3.

Table 3 Estimated Long-Term Emissions (lbs/day)

Source	ROG	NO_x	CO	PM_{10}
Area-wide Emissions	3.59	0.89	1.23	Negl.
Mobile Emissions	8.88	9.57	109.52	7.59
Total Emissions	12.47	10.46	110.75	7.59
Thresholds	**550**	**55**	**150**	**100**

ROG = reactive organic gasses
NO_x = nitrogen oxide
CO = carbon monoxide
PM_{10} = particulates 10 microns in size or less

Source: URBEMIS 7G, 2005.

[1] The ROG emissions are quite high when considering the relatively small size of the project. However, the figures were taken from a worse case analysis reflecting the results of the California Air Resources Board's (CARB) computer model.

[2] California Air Resources Board. URBEMIS 7G. 2001

The long-term emissions from future development will generate daily emissions that will not exceed the SCAQMD's thresholds, as indicated in Table 3. According to the analysis, the long-term mobile and stationary emissions projected for the new development will be below SCAQMD significance thresholds (refer to Table 3). As indicated in Table 3, the actual daily increase in operational emissions will be 12,47 pounds of ROG, 10.46 pounds of NO_x, 110.75 pounds of CO, and 7.59 pounds of PM_{10}. As a result, the operational (long-term) air quality impacts are considered to be less than significant.

Conclusions

The following standard conditions will be required as a means to reduce short-term air quality impacts below the thresholds considered to be a significant adverse impact:

- To minimize dust and particulate matter generation during construction and site preparation activities, SCAQMD Rule 403 shall be adhered to, which requires regular watering of exposed soils during earth moving operations.
- All trucks hauling debris removed during clearance and grading operations must be covered.
- The contractor will be required to maintain construction equipment in tune to reduce heavy equipment emissions. The contractor will be required to use low emission architectural coatings approved by the SCAQMD pursuant to Rule No. 1113.

Long-term (operational) emissions will be below the thresholds considered to be a significant adverse impact. As a result, no specific mitigation will be required to reduce operational emissions.