Appendix G: Noise

ACOUSTICAL ANALYSIS REPORT
for
Proposed Sares Regis Distribution Center
Ontario, California

Prepared For:

Sares Regis Group
18802 Bardeen Avenue
Irvine, CA 92612-1521

Contact: Peter M. Rooney

Prepared by:

Michael Brandman Associates
621 East Carnegie Drive, Suite #100
San Bernardino, CA 92408
909.884.2255

Contact: Michael Hendrix
Senior Project Manager

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SECTION 1:
INTRODUCTION AND SETTING

1.1 - Purpose of Report and Study Objectives

This noise study was prepared to address the potential for significant effects related to noise. The objectives of this study include the following:

- Determine if City of Ontario land use compatibility standards would be exceeded;
- Discuss analytical methodology and parameters used for noise modeling and evaluate the noise level results; and
- Determine necessary mitigation measures that would maintain required noise levels.

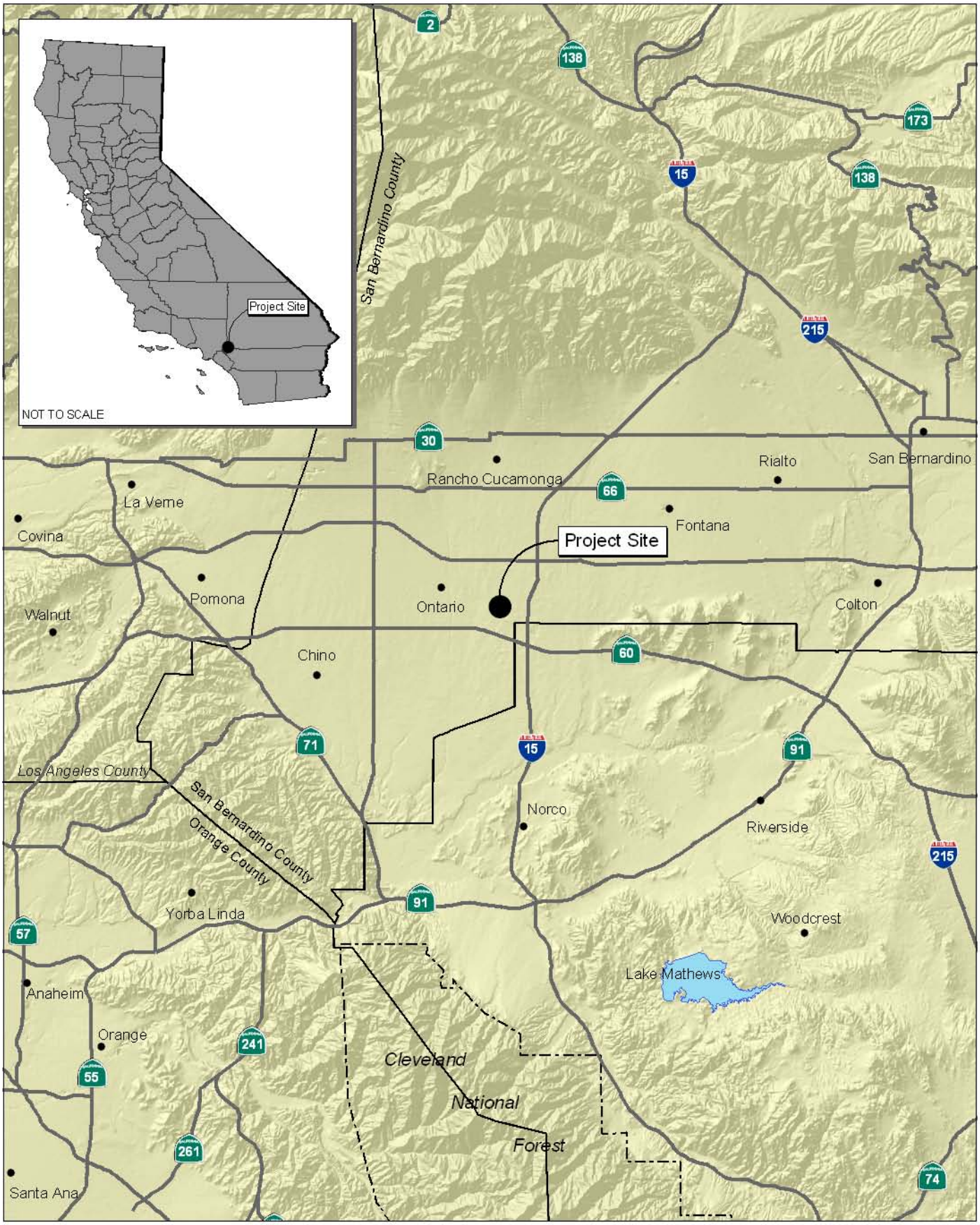
1.2 - Project Description and Setting

1.2.1 - Site Location

The proposed Project is located in the southwest portion of the California Commerce Center in the eastern portion of the City of Ontario, California, as displayed in Exhibit 1. The City of Ontario is located in southwest San Bernardino County in Southern California. The site is located approximately one mile north of the State Route 60 (SR-60) and approximately 1.1 miles west of the Interstate 15 (I-15). Regional access to the Project site is from I-15 at the E. Jurupa Street Exit and from SR-60 at the Haven Avenue Exit. The Project site is bounded by Haven Avenue to the west, Francis Avenue and the Nordstrom industrial distribution building (1600 S. Milliken Avenue) on the north, and Milliken Avenue on the east (Exhibit 2).

1.2.2 - Development Description

The project includes approximately ~~1,874,087~~1,970,150 square-feet of warehouse/distribution buildings (designated “high cube” in the traffic study), 85,491 square feet of light industrial uses, and an additional 10,572 square feet of free-standing office space. Access to the site will be via Francis Street or Milliken Avenue, as is shown in the proposed site plan (Exhibit 3). The project is expected to be completed by the Year 2008. The land use designation of the project site is Planned Industrial/Landfill Impact Area, as shown on the City of Ontario Land Use Map (1992).



Source: Census 2000 Data, The CaSIL, MBA GIS 2005.

NORTH

5 2.5 0 5 Miles

Michael Brandman Associates

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Exhibit 1
Regional Location Map

SARES - REGIS DISTRIBUTION CENTER

Source: Google Earth Pro.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

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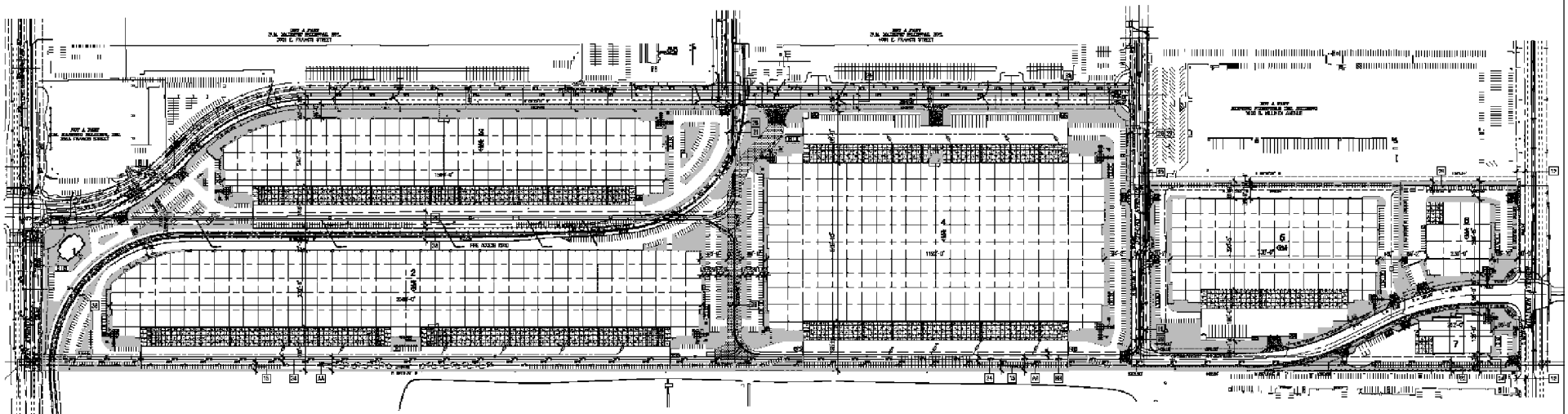
Exhibit 2
Local Vicinity Aerial Map

SARES - REGIS DISTRIBUTION CENTER



Source: RKZ, INC. & MBA (2006).

NORTH

Michael Brandman Associates

30280002 • 12/2006 | 3_site_plan.mxd

Exhibit 3
Site Plan

SARES • REGIS DISTRIBUTION CENTER

1.3 - Existing Noise Levels

As shown in Exhibit 2, the Project site is undeveloped and consists of three contiguous parcels totaling approximately 103 gross acres. The site has historically been used for agricultural purposes and is relatively flat with elevations on site ranging between 880 feet above mean seal level (msl) to 870 above msl. Most of the surrounding land is developed, with some parcels currently in agricultural production. Adjacent properties to the west, north, and east are developed with industrial buildings. Properties to the north of the Project site have been developed under the California Commerce Center Specific Plan. Properties to the west of the Project site are developed or are planned for development under the ACCO Airport Center Specific Plan. Properties to the east of the Project site are planned for development under the Toyota Specific Plan. Properties to the south of the Project site are currently utilized as a San Bernardino County Landfill, the Milliken Avenue Landfill. The nearest residence is located approximately 0.84 mile to the south-southwest of the project.

The Ontario International Airport is approximately ½ mile northwest of the project site. The project site is within the 65 dBA CNEL contour for airport noise identified by Los Angeles World Airports (LAWA) the airport authority for Ontario International Airport. However, the landing/takeoff patterns for aircraft at the airport do not include flights over the site. This level of aircraft noise does not violate the City of Ontario Noise Standards for the proposed land uses in the project (see Section 3 for a discussion of noise standards) and aircraft noise is not evaluated further in this report.

An existing rail spur is located on the western and northwestern portions of the site. The rail spur is active with as many as one train traveling on the spur in a day and an average of two trains per week. The maximum speed allowed on the spur is 20 miles per hour. However trains typically travel at speeds less than the maximum allowed. Noise levels associated with trains traveling at this speed can be as high as 80 dBA at a distance of 25 feet from the engines. However, this level of noise will average to approximately 60 dBA CNEL at 25 feet. This level of noise is within acceptable limits for the proposed land uses and train noise is not evaluated further in this report.

Groundborne vibration levels from passing trains at a distance of 25 feet from the centerline of the tracks may be perceptible but are expected to be less than the applicable Federal Transit Authority impact significance criteria of 0.01 inches per second RMS vibration velocity and vibration from passing trains is not evaluated further in this report.

Dominant noise sources at the project site are vehicle traffic on Haven Avenue, Milliken Avenue and Mission Boulevard. Sound levels from these noise sources are shown in Section 4, Table 3.

SECTION 2:
DEFINITION OF TERMS

2.1 - Noise Terminology

Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA. Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling a traffic volume, would increase the noise level by 3 dBA; a halving of the energy would result in a 3 dBA decrease. Table 1 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dB L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3)}$ would represent a 3-hour average. When no period is specified, a one hour average is assumed. Noise standards for land use compatibility, which are addressed in the Riverside County General Plan Noise Element, are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (Ldn). CNEL is a 24-hour weighted average measure of community noise. The computation of CNEL adds 5 dBA to the average hourly noise levels between 7 p.m. and 10 p.m. (evening hours), and 10 dBA to the average hourly noise levels between 10 p.m. and 7:00 a.m. (nighttime hours). This weighting accounts for the increased human sensitivity to noise in the evening and nighttime hours. Ldn is a very similar 24-hour weighted average which weights only the nighttime hours and not the evening hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increases or decreases; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans 1998).

Table 1 – Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 ft) Civil Defense Siren (100 ft)	130	Carrier Flight Deck	
Commercial Jet Take-off (200 ft)	120	Airport Runway	Threshold of Pain *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Power Lawn Mower (3 ft) Motorcycle (25 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck, 40 mph (50 ft) Garbage Disposal (3 ft)	100 90 80	Boiler Room Printing Press Plant High Urban Ambient Sound	Very Loud *8 times as loud *4 times as loud *2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (3 ft) Electronic Typewriter (10 ft)	70	Busy Shopping Mall Indoor Sports Park	Moderately Loud *70 dB (Reference Loudness)
Normal Conversation (5 ft) Air Conditioning Unit (100 ft)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 ft)	30 20 10	Rural Residential Area Quiet Bedroom	 Just Audible Threshold of Hearing

SECTION 3:
ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

3.1 - Noise Standards

The City of Ontario has adopted a modified version of the State of California noise/land use compatibility standards shown in Exhibit 4. Pursuant to this table, for industrial uses such as the proposed warehouse, exterior noise levels ranging up to 70 dBA CNEL are classified as "clearly acceptable," based upon the assumption that the buildings are built with normal conventional construction. Noise levels ranging from 70 to 80 dBA CNEL are "normally acceptable." "Normally acceptable" means that noise levels are acceptable provided a noise analysis is conducted. Noise levels above 80 dBA CNEL for warehouses are normally unacceptable and development of these land uses in noise environments that exceed 80 dBA CNEL are discouraged.

Also of concern are project generated impacts to sensitive receptors in the project area. Sensitive receptors of noise include residences, schools, libraries, hospitals, churches, etc. As presented in Exhibit 5, the State of California's noise/land use compatibility standards categorize residential outdoor noise levels of up to 60 dBA CNEL as "clearly" acceptable. If outdoor noise levels are expected to exceed 60 dBA CNEL, a noise analysis may be required. The City of Ontario has established standards and guidelines to more specifically implement the State of California noise/land use compatibility guidelines. In relation to the development of new homes and potential traffic noise impacts, the City requires that residential outdoor noise levels not exceed 65 dBA CNEL and indoor noise levels in residential dwellings not exceed 45 dBA CNEL. The City does not include noise standards for outdoor noise levels at industrial land uses, but requires that indoor noise levels for industrial warehouses do not exceed 65 dBA CNEL.

3.2 - Noise Model and Noise Model Input

Future peak hour traffic noise levels were modeled using the Federal Highway Administration Noise Prediction Model (FHWA-RD-77-108). The model can calculate noise levels for varying traffic volumes, mix and speeds. Output sheets from this model are included as Appendix A.

Exhibit 4 –Land Use Compatibility Guidelines for Noise Impacts

LAND USES	Community Noise Exposure (CNEL or LdN (dBA) 55	60	65	70	75	80
RESIDENTIAL/LODGING Single Family/Duplex	A	B	C		D	
Multi-Family	A	B	C		D	
Mobile Homes	A	B	D			
Hotels, Motels	A		B	C		D
PUBLIC INSTITUTIONAL Schools/Hospitals Churches/Libraries	A	B		C		D
Auditoriums/Concert Halls	A	B	C		D	
COMMERCIAL Offices	A		B		C	D
Retail	A			B	C	D
INDUSTRIAL Manufacturing	A			B		C
Warehousing	A			C		D
RECREATIONAL/OPEN SPACE Parks/Playgrounds Golf Courses/Riding Stables	A		B	C		D
Outdoor Spectator Sports	A	B	C			D
Outdoor Music Shells/ Amphitheaters	B	C	D			
Livestock/Wildlife Preserves	A			C		D
Crop Agriculture	A					

Source: City of Ontario General Plan Noise Element (1992).

A Clearly Acceptable No special noise insulation required, assuming buildings of normal construction
B Normally Acceptable. Acoustical Reports will be required for new residential construction
C Normally Unacceptable. New construction is discouraged. A detailed analysis is required with noise insulation features.
D Clearly Unacceptable. No new construction or development should be permitted.

3.2.1 - Affected Roadways

Existing and proposed residential units may be affected by traffic noise generated on adjacent roadways. Traffic volumes were entered into the model for each of the above roadways. The affected roadways include:

- Jurupa Street between Haven Avenue and Milliken Avenue;
- Jurupa Street between Milliken Avenue and Interstate 15;
- Frances Street between Haven Avenue and Milliken Avenue;
- Mission Boulevard between Haven Avenue and Milliken Avenue;
- Haven Avenue between Mission Avenue and Jurupa Street;
- DuPont Avenue between Francis Street and Jurupa Street;
- Milliken Avenue between Mission Boulevard and Francis Street; and
- Milliken Avenue between Francis Street and Jurupa Street;

3.2.2 - Speed and Traffic Mix

The model used a speed of 45 miles per hour (mph) and a traffic mix of 92 percent automobiles, 4 percent medium trucks and 1 percent heavy trucks was utilized for all of the roadways except Mission Boulevard and Francis Street. For Mission Boulevard, the speed was set at 50 mph with the traffic mix identified above. For Francis Street, the speed was set at 35 mph with a traffic mix of 61.34 percent automobiles, 3.18 percent medium trucks, and 35.48 percent heavy-duty trucks to match the project traffic mix.

3.2.3 - Site Parameters/Terrain

The area was modeled as an all pavement “hard” site to predict worst-case impacts.

3.2.4 - Sensitive Receptors

Sensitive receptors are activities or land uses that may be subject to the stress of significant interference from noise. Land uses associated with sensitive receptors often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries. Existing residential units and the Mt. View Elementary School approximately 0.86 mile south and 1.27 miles southwest of the project respectively are the closest sensitive receptors in the project area.

SECTION 4:
FINDINGS AND RECOMMENDATIONS

4.1 - Construction Noise Impacts

Development of the project would require site preparation (i.e., land clearing, grading, excavation and trenching) and construction of the buildings and infrastructure. These activities typically involve the use of heavy equipment, such as graders, backhoes, and cranes. Trucks would be used to deliver equipment and building materials, and to haul away waste materials. Smaller equipment, such as air compressors, pneumatic tools, plate compactors, and concrete vibrators would also be used throughout the site during its development. This equipment would generate noise that would be heard both on and off the Project site. Table 2 lists typical construction equipment noise levels for equipment that would be used during construction of the proposed project. Construction activities are carried out in discrete steps, each of which has its own mix of equipment, and consequently its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction site as work progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow noise ranges to be categorized by work phase.

Table 2 – Noise Associated with Typical Construction Equipment

Type of Equipment	Maximum Noise Levels Measured (dBA at 50 feet)
Grader	89
Backhoe	90
Pneumatic Tools	88
Air Compressor	86
Crane	83
Plate Compactor	89
Concrete Vibrator	85
Trucks	87
Source: Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, BBN 1971.	

The grading and site preparation phase tends to create the highest noise levels, because the noisiest construction equipment is found in the earthmoving equipment category. This category includes excavating machinery (backhoes) and earthmoving and compacting equipment (graders compactors

etc.). Typical operating cycles may involve 1 or 2 minutes of full power operation producing noise levels similar to those shown in Table 3, followed by 3 or 4 minutes of lower power settings. Combined instantaneous noise levels at 50 feet from earthmoving equipment range from 73 to 96 dBA while combined Leq noise levels range up to about 89 dBA.

The most proximate residential area that is subject to potential construction noise impacts is a rural home associated with existing agricultural activities approximately 0.84 mile south of the project site. Maximum 1-minute construction noise is estimated to reach 68 dBA Leq at the fence line of the nearest sensitive noise receptor when grading equipment is closest to this sensitive receptor. Noise levels would be 30 to 40 dBA lower during the majority of the construction period due to lower power settings. Maximum 1-hour construction noise is estimated to reach 61 dBA Leq. Attenuation due to distance will occur as construction activities move away from the perimeters closest to the residential land use. Therefore, noise during construction is less than significant.

Another potential noise impact resulting from construction of the proposed project is groundborne vibrations. Perceptible groundborne vibrations are typically associated with blasting operations and potentially the use of pile drivers, neither of which will be used during construction of the proposed project. As such, no excessive groundborne vibration would be created by the proposed project, and therefore, impacts due to project generated groundborne vibrations are less than significant.

4.2 - Long-Term Vehicular Noise Impacts

Outdoor Noise Levels. In reviewing project impacts, future noise levels will be compared with the City standards for residential uses since these are the sensitive receptors in the project area and have the most restrictive noise standards. The City of Ontario new home residential outdoor noise levels must not exceed 65 dB Ldn/CNEL. Future evening peak hour traffic noise levels were modeled and converted to CNEL to address potential exceedances of the 65 dB CNEL standard using a day/evening/night traffic split of 75/10/15. Table 3 summarizes the results of this analysis. Project related impacts are greatest on Francis Street immediately adjacent to the project site (0.40 dBA differential between with and without project), but this roadway segment is surrounded by industrial land uses which do not have outdoor noise standards. The City's 65 dBA CNEL standard for residential uses is exceeded in, future with and without the project adjacent to or exposed to and near all the road segments modeled except Du Pont Avenue. However, no residential land uses are on these roadway segments. Because of the truck routes and traffic distribution patterns assigned to the project, no impacts to residential properties are expected and the project's contribution to the cumulative noise levels on all roadways is estimated to be extremely low (between 0.40 to less than 0.01 dBA) and would not be perceptible.

Table 3 – Existing and Future Year 2030 Noise Impacts

Street-Segment	Existing	Future-No Project	Future-With Project	Change from Existing	Change from Future with No Project
Jurupa Avenue: from Haven to Milliken.[1]	62.2	66.1	66.2	3.9	0.1
Jurupa Avenue: from Milliken to I-15. [1]	63.8	66.7	66.8	3.0	0.1
Francis Street: [2] from Haven to DuPont	63.2	72.3	72.7	9.5	0.4
Mission Blvd. [1]	62.0	66.2	66.2	4.3	>0.01
Haven Avenue: from Mission to Jurupa. [1]	65.7	67.4	675	1.8	0.1
DuPont Avenue: from Francis to Jurupa. [2]	55.9	64.7	64.9	9.1	0.2
Milliken Avenue: from Mission to Francis. [1]	64.0	67.4	67.5	3.5	0.1
Milliken Avenue: from Francis to Jurupa. [1]	62.9	65.8	65.8	3.0	0.03

Source: MBA 2006
[1] Measured at 228 feet from roadway centerline (approximate location of the closest edge of property lines)
[2] Measured at 114 feet from roadway centerline (approximate location of the closest edge of property lines)

Indoor Noise Levels. Predicted future outdoor noise levels at the project site are predicted to be 72.7 dBA CNEL. Standard construction, as required by the Uniform Building Code will reduce noise levels within the proposed warehouse to approximately 52.7 dBA CNEL. Therefore, indoor noise levels at the warehouse are anticipated to be within the City's interior noise standard of 65 dBA Ldn/CNEL for industrial uses.

4.3 - Recommendations

Predicted exterior and interior noise levels onsite are predicted to be within the City's noise standards and no mitigation is necessary. Project impacts to existing sensitive land uses in the surrounding project area are below the level of significance and mitigation is not required.

SECTION 5:
REFERENCES

Federal Highway Administration (FHWA)

1979 FHWA Highway Noise Prediction Model. Report No. FHWA-RD-77-108.

California Department of Transportation (Caltrans)

1983 California Vehicle Emission Noise Levels (Calveno). Report No. FHWA/CA/TI-84/13. August 1983.

California Department of Transportation (Caltrans)

1998 Traffic Noise Analysis Protocol for New Highway and Reconstruction Projects, including Technical Noise Supplement. October 1998.

City of Ontario Planning Department

1992 City of Ontario General Plan, Noise Element. Adopted August, 2005.

Myer, Mohaddes Associates

2006 Ontario Distribution Center Draft Traffic Study. Revised December 2006.

Appendix A:
FHWA-RD-77-108 Noise Model Worksheets

Table 1
TRAFFIC NOISE IMPACT
YEAR 2008

FILE: NOISE-JurupaWest

Location: Jurupa St: between Haven and Milliken

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) (meters) 57 17	114 35	228 69	456 139	912 278	1824 556	3648 1112
EXISTING										
Autos	19114	1872	69.3	68.4	63.9	59.4	54.8	50.3	45.8	41.3
Med Trucks	805	79	66.6	65.6	61.1	56.6	52.1	47.6	43.0	38.5
Hvy Trucks	201	20	65.4	64.4	59.9	55.4	50.9	46.3	41.8	37.3
TOTAL	20120	1970	72.2	71.2	66.7	62.2	57.7	53.2	48.7	44.1
FUTURE NO PROJECT										
Autos	47054	4607	73.3	72.3	67.8	63.3	58.8	54.2	49.7	45.2
Med Trucks	1981	194	70.5	69.5	65.0	60.5	56.0	51.5	47.0	42.4
Hvy Trucks	495	48	69.3	68.3	63.8	59.3	54.8	50.3	45.7	41.2
TOTAL	49530	4850	76.1	75.2	70.6	66.1	61.6	57.1	52.6	48.1
FUTURE WITH PROJECT										
Autos	47443	4645	73.3	72.3	67.8	63.3	58.8	54.3	49.8	45.2
Med Trucks	1998	196	70.5	69.6	65.1	60.5	56.0	51.5	47.0	42.5
Hvy Trucks	499	49	69.3	68.4	63.8	59.3	54.8	50.3	45.8	41.3
TOTAL	49940	4890	76.1	75.2	70.7	66.2	61.6	57.1	52.6	48.1
CHANGE FROM EXISTING										
Autos	28329	2774	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Med Trucks	1193	117	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Hvy Trucks	298	29	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
TOTAL	29820	2920	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
CHANGE FROM FUTURE NO PROJECT										
Autos	390	38	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Med Trucks	16	2	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Hvy Trucks	4	0	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
TOTAL	410	40	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04

Average speed: 72.4 km/hr= 45.0 mi/hr

Time of day			Fleet Mix	
	70.0%	Day	95.0%	Autos
	15.0%	Evening	4.0%	Medium Trucks
	15.0%	Night	1.0%	Heavy Trucks
	100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-JurupaEast YEAR 2030

Location: Jurupa St: between Milliken and I-15

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) (meters) 57 17	114 35	228 69	456 139	912 278	1824 556	3648 1112
EXISTING										
Autos	27455	2688	70.9	70.0	65.4	60.9	56.4	51.9	47.4	42.9
Med Trucks	1156	113	68.1	67.2	62.7	58.2	53.6	49.1	44.6	40.1
Hvy Trucks	289	28	66.9	66.0	61.5	56.9	52.4	47.9	43.4	38.9
TOTAL	28900	2830	73.8	72.8	68.3	63.8	59.3	54.8	50.2	45.7
FUTURE NO PROJECT										
Autos	54369	5324	73.9	72.9	68.4	63.9	59.4	54.9	50.4	45.8
Med Trucks	2289	224	71.1	70.2	65.6	61.1	56.6	52.1	47.6	43.1
Hvy Trucks	572	56	69.9	68.9	64.4	59.9	55.4	50.9	46.4	41.9
TOTAL	57230	5604	76.7	75.8	71.3	66.7	62.2	57.7	53.2	48.7
FUTURE WITH PROJECT										
Autos	54910	5377	73.9	73.0	68.5	63.9	59.4	54.9	50.4	45.9
Med Trucks	2312	226	71.2	70.2	65.7	61.2	56.7	52.1	47.6	43.1
Hvy Trucks	578	57	69.9	69.0	64.5	60.0	55.4	50.9	46.4	41.9
TOTAL	57800	5660	76.8	75.8	71.3	66.8	62.3	57.8	53.2	48.7
CHANGE FROM EXISTING										
Autos	27455	2688	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Med Trucks	1156	113	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Hvy Trucks	289	28	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
TOTAL	28900	2830	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CHANGE FROM FUTURE NO PROJECT										
Autos	542	53	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Med Trucks	23	2	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Hvy Trucks	6	1	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
TOTAL	570	56	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04

Average speed: 72.4 km/hr= 45.0 mi/hr

Time of day		Fleet Mix	
70.0%	Day	95.0%	Autos
15.0%	Evening	4.0%	Medium Trucks
15.0%	Night	1.0%	Heavy Trucks
100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-Francis Street YEAR 2030

Location: Francis Street

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) 57	114	228	456	912	1824	3648
				(meters) 17	35	69	139	278	556	1112
EXISTING										
Autos	1012	99	53.5	52.6	48.0	43.5	39.0	34.5	30.0	25.5
Med Trucks	52	5	52.1	51.2	46.6	42.1	37.6	33.1	28.6	24.1
Hvy Trucks	585	57	68.4	67.4	62.9	58.4	53.9	49.4	44.9	40.4
TOTAL	1650	162	68.6	67.7	63.2	58.7	54.1	49.6	45.1	40.6
FUTURE NO PROJECT										
Autos	8238	807	62.6	61.7	57.2	52.6	48.1	43.6	39.1	34.6
Med Trucks	427	42	61.2	60.3	55.7	51.2	46.7	42.2	37.7	33.2
Hvy Trucks	4765	467	77.5	76.6	72.0	67.5	63.0	58.5	54.0	49.5
TOTAL	13430	1315	77.7	76.8	72.3	67.8	63.2	58.7	54.2	49.7
FUTURE WITH PROJECT										
Autos	9084	890	63.0	62.1	57.6	53.1	48.5	44.0	39.5	35.0
Med Trucks	471	46	61.6	60.7	56.2	51.7	47.1	42.6	38.1	33.6
Hvy Trucks	5255	515	77.9	77.0	72.5	67.9	63.4	58.9	54.4	49.9
TOTAL	14810	1450	78.2	77.2	72.7	68.2	63.7	59.2	54.6	50.1
CHANGE FROM EXISTING										
Autos	8072	790	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Med Trucks	418	41	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Hvy Trucks	4669	457	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
TOTAL	13160	1289	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
CHANGE FROM FUTURE NO PROJECT										
Autos	846	83	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Med Trucks	44	4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Hvy Trucks	490	48	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
TOTAL	1380	135	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Average speed: 56.3 km/hr= 35.0 mi/hr

Time of day:		Fleet Mix	
70.0%	Day	61.3%	Autos
15.0%	Evening	3.2%	Medium Trucks
15.0%	Night	35.5%	Heavy Trucks
100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-Mission YEAR 2030

Location: Mission Blvd

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) 57	114	228	456	912	1824	3648
				17	35	69	139	278	556	1112
EXISTING										
Autos	16264	1593	69.9	69.0	64.5	59.9	55.4	50.9	46.4	41.9
Med Trucks	685	67	67.0	66.0	61.5	57.0	52.5	48.0	43.4	38.9
Hvy Trucks	171	17	65.3	64.4	59.9	55.3	50.8	46.3	41.8	37.3
TOTAL	17120	1676	72.6	71.6	67.1	62.6	58.1	53.6	49.1	44.6
FUTURE NO PROJECT										
Autos	42940	4205	74.1	73.2	68.7	64.2	59.6	55.1	50.6	46.1
Med Trucks	1808	177	71.2	70.2	65.7	61.2	56.7	52.2	47.7	43.1
Hvy Trucks	452	44	69.5	68.6	64.1	59.6	55.0	50.5	46.0	41.5
TOTAL	45200	4426	76.8	75.9	71.4	66.8	62.3	57.8	53.3	48.8
FUTURE WITH PROJECT										
Autos	42940	4205	74.1	73.2	68.7	64.2	59.6	55.1	50.6	46.1
Med Trucks	1808	177	71.2	70.2	65.7	61.2	56.7	52.2	47.7	43.1
Hvy Trucks	452	44	69.5	68.6	64.1	59.6	55.0	50.5	46.0	41.5
TOTAL	45200	4426	76.8	75.9	71.4	66.8	62.3	57.8	53.3	48.8
CHANGE FROM EXISTING										
Autos	26676	2612	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Med Trucks	1123	110	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Hvy Trucks	281	27	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
TOTAL	28080	2750	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
CHANGE FROM FUTURE NO PROJECT										
Autos	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Med Trucks	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hvy Trucks	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Average speed: 80.5 km/hr= 50.0 mi/hr

Time of day			Fleet Mix	
	70.0%	Day	95.0%	Autos
	15.0%	Evening	4.0%	Medium Trucks
	15.0%	Night	1.0%	Heavy Trucks
	100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-Haven YEAR 2030

Location: Haven Avenue

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) 57	114	228	456	912	1824	3648
				(meters) 17	35	69	139	278	556	1112
EXISTING										
Autos	42684	4179	72.8	71.9	67.4	62.8	58.3	53.8	49.3	44.8
Med Trucks	1797	176	70.1	69.1	64.6	60.1	55.6	51.0	46.5	42.0
Hvy Trucks	449	44	68.8	67.9	63.4	58.9	54.3	49.8	45.3	40.8
TOTAL	44930	4399	75.7	74.7	70.2	65.7	61.2	56.7	52.2	47.6
FUTURE NO PROJECT										
Autos	63783	6245	74.6	73.6	69.1	64.6	60.1	55.6	51.0	46.5
Med Trucks	2686	263	71.8	70.9	66.3	61.8	57.3	52.8	48.3	43.8
Hvy Trucks	671	66	70.6	69.6	65.1	60.6	56.1	51.6	47.1	42.5
TOTAL	67140	6574	77.4	76.5	72.0	67.4	62.9	58.4	53.9	49.4
FUTURE WITH PROJECT										
Autos	64372	6303	74.6	73.7	69.1	64.6	60.1	55.6	51.1	46.6
Med Trucks	2710	265	71.9	70.9	66.4	61.9	57.3	52.8	48.3	43.8
Hvy Trucks	678	66	70.6	69.7	65.2	60.6	56.1	51.6	47.1	42.6
TOTAL	67760	6635	77.5	76.5	72.0	67.5	63.0	58.5	53.9	49.4
CHANGE FROM EXISTING										
Autos	21689	2124	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Med Trucks	913	89	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Hvy Trucks	228	22	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
TOTAL	22830	2235	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
CHANGE FROM FUTURE NO PROJECT										
Autos	589	58	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Med Trucks	25	2	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Hvy Trucks	6	1	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
TOTAL	620	61	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04

Average speed: 72.4 km/hr= 45.0 mi/hr

Time of day			Fleet Mix	
	70.0%	Day	95.0%	Autos
	15.0%	Evening	4.0%	Medium Trucks
	15.0%	Night	1.0%	Heavy Trucks
	100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-DuPont YEAR 2030

Location: DuPont Avenue

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) 57	114	228	456	912	1824	3648
				(meters) 17	35	69	139	278	556	1112
EXISTING										
Autos	1568	153	58.5	57.5	53.0	48.5	44.0	39.5	34.9	30.4
Med Trucks	66	6	55.7	54.8	50.2	45.7	41.2	36.7	32.2	27.7
Hvy Trucks	17	2	54.5	53.5	49.0	44.5	40.0	35.5	31.0	26.4
TOTAL	1650	162	61.3	60.4	55.9	51.3	46.8	42.3	37.8	33.3
FUTURE NO PROJECT										
Autos	11932	1168	67.3	66.3	61.8	57.3	52.8	48.3	43.8	39.2
Med Trucks	502	49	64.5	63.6	59.1	54.5	50.0	45.5	41.0	36.5
Hvy Trucks	126	12	63.3	62.4	57.8	53.3	48.8	44.3	39.8	35.3
TOTAL	12560	1230	70.2	69.2	64.7	60.2	55.6	51.1	46.6	42.1
FUTURE WITH PROJECT										
Autos	12635	1237	67.5	66.6	62.1	57.6	53.0	48.5	44.0	39.5
Med Trucks	532	52	64.8	63.8	59.3	54.8	50.3	45.8	41.2	36.7
Hvy Trucks	133	13	63.6	62.6	58.1	53.6	49.1	44.5	40.0	35.5
TOTAL	13300	1302	70.4	69.4	64.9	60.4	55.9	51.4	46.9	42.3
CHANGE FROM EXISTING										
Autos	11068	1084	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
Med Trucks	466	46	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
Hvy Trucks	117	11	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
TOTAL	11650	1141	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
CHANGE FROM FUTURE NO PROJECT										
Autos	703	69	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Med Trucks	30	3	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Hvy Trucks	7	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
TOTAL	740	72	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25

Average speed: 72.4 km/hr= 45.0 mi/hr

Time of day:		Fleet Mix	
70.0%	Day	95.0%	Autos
15.0%	Evening	4.0%	Medium Trucks
15.0%	Night	1.0%	Heavy Trucks
100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-MillikenNorth YEAR 2030

Location: Milliken Avenue: between Francis and Jurupa

Vehicle Type	Traffic Volume 24-hr volume	Traffic Volume Equiv 1-hr	Noise Reference Level (15 meters	Noise Level (dB Ldn) Centerline Distance (feet) 57	114	228	456	912	1824	3648
				17	35	69 (meters)	139	278	556	1112
EXISTING										
Autos	22297	2183	70.0	69.1	64.5	60.0	55.5	51.0	46.5	42.0
Med Trucks	939	92	67.2	66.3	61.8	57.3	52.7	48.2	43.7	39.2
Hvy Trucks	235	23	66.0	65.1	60.6	56.0	51.5	47.0	42.5	38.0
TOTAL	23470	2298	72.9	71.9	67.4	62.9	58.4	53.8	49.3	44.8
FUTURE NO PROJECT										
Autos	43548	4264	72.9	72.0	67.4	62.9	58.4	53.9	49.4	44.9
Med Trucks	1834	180	70.2	69.2	64.7	60.2	55.6	51.1	46.6	42.1
Hvy Trucks	458	45	68.9	68.0	63.5	58.9	54.4	49.9	45.4	40.9
TOTAL	45840	4489	75.8	74.8	70.3	65.8	61.3	56.8	52.2	47.7
FUTURE WITH PROJECT										
Autos	43862	4295	73.0	72.0	67.5	63.0	58.4	53.9	49.4	44.9
Med Trucks	1847	181	70.2	69.2	64.7	60.2	55.7	51.2	46.7	42.1
Hvy Trucks	462	45	69.0	68.0	63.5	59.0	54.5	49.9	45.4	40.9
TOTAL	46170	4521	75.8	74.8	70.3	65.8	61.3	56.8	52.3	47.8
CHANGE FROM EXISTING										
Autos	21565	2112	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Med Trucks	908	89	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Hvy Trucks	227	22	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
TOTAL	22700	2223	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
CHANGE FROM FUTURE NO PROJECT										
Autos	314	31	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Med Trucks	13	1	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hvy Trucks	3	0	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
TOTAL	330	32	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

Average speed: 72.4 km/hr= 45.0 mi/hr

Time of day:		Fleet Mix	
70.0%	Day	95.0%	Autos
15.0%	Evening	4.0%	Medium Trucks
15.0%	Night	1.0%	Heavy Trucks
100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G

Table 1
TRAFFIC NOISE IMPACT
FILE: NOISE-MillikenSouth YEAR 2030

Location: Milliken Avenue: between Mission and Francis

	Traffic Volume		Noise Reference	Noise Level (dB Ldn) Centerline Distance (feet)						
				57	114	228	456	912	1824	3648
Vehicle Type	24-hr volume	Equiv 1-hr	Level (15 meters	17	35	(meters) 69	139	278	556	1112
EXISTING										
Autos	28814	2821	71.1	70.2	65.7	61.1	56.6	52.1	47.6	43.1
Med Trucks	1213	119	68.4	67.4	62.9	58.4	53.9	49.3	44.8	40.3
Hvy Trucks	303	30	67.1	66.2	61.7	57.2	52.6	48.1	43.6	39.1
TOTAL	30330	2970	74.0	73.0	68.5	64.0	59.5	55.0	50.4	45.9
FUTURE NO PROJECT										
Autos	62786	6148	74.5	73.6	69.0	64.5	60.0	55.5	51.0	46.5
Med Trucks	2644	259	71.7	70.8	66.3	61.8	57.2	52.7	48.2	43.7
Hvy Trucks	661	65	70.5	69.6	65.1	60.5	56.0	51.5	47.0	42.5
TOTAL	66090	6471	77.4	76.4	71.9	67.4	62.9	58.3	53.8	49.3
FUTURE WITH PROJECT										
Autos	64220	6288	74.6	73.7	69.1	64.6	60.1	55.6	51.1	46.6
Med Trucks	2704	265	71.8	70.9	66.4	61.9	57.3	52.8	48.3	43.8
Hvy Trucks	676	66	70.6	69.7	65.2	60.6	56.1	51.6	47.1	42.6
TOTAL	67600	6619	77.5	76.5	72.0	67.5	63.0	58.4	53.9	49.4
CHANGE FROM EXISTING										
Autos	35407	3467	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Med Trucks	1491	146	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Hvy Trucks	373	36	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
TOTAL	37270	3649	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
CHANGE FROM FUTURE NO PROJECT										
Autos	1435	140	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Med Trucks	60	6	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Hvy Trucks	15	1	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
TOTAL	1510	148	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Average speed: 72.4 km/hr= 45.0 mi/hr

Time of day:		Fleet Mix	
70.0%	Day	95.0%	Autos
15.0%	Evening	4.0%	Medium Trucks
15.0%	Night	1.0%	Heavy Trucks
100.0%		100.0%	

Notes: Based on methods of Federal Highway Administration "Highway Traffic Noise Model", FHWA-RD-77-108, December, 1978.
Traffic data obtained from LL&G