ACOUSTICAL IMPACT ANALYSIS

ESPERANZA SPECIFIC PLAN

Ontario, California

Prepared For:

City of Ontario
303 East B Street
Ontario, CA

November 16, 2005

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SECTION 1 - EXECUTIVE SUMMARY

This acoustical analysis has been completed to determine the noise impacts associated with the increased traffic volumes related to the proposed Esperanza Specific Plan project as well as the exterior and interior noise exposure levels, and the necessary mitigation measures for the proposed project located in San Bernardino County. The Esperanza Specific Plan (the "Project") is located in the City of Ontario, San Bernardino County, California. The site is approximately 2 miles south of State Highway 60 and approximately ½ mile west of Interstate 15. The Project consists of approximately 223 acres located between Mill Creek Avenue and Hamner Avenue immediately north of Bellegrave Avenue (adjacent to the boundary between Riverside and San Bernardino counties). A summary of the findings and conclusions of the noise impact analysis are presented here.

Findings

The increase in noise levels along road segments in the project vicinity with the development of the project will exceed the 3 dB CNEL threshold; therefore, the area-wide noise impacts are significant.

Both exterior and interior noise impacts to first and second floor receivers are above the City's threshold levels along Hamner Avenue, Bellegrave Avenue, and Merrill Avenue. However, exterior and interior noise impacts to residences along Mill Creek Avenue are less than significant.

Mitigation Measures

To reduce impacts associated with construction noise, the following mitigation measures shall be implemented:

MM Noi 1: The construction activities of the proposed project shall comply with the City of Ontario noise ordinance that prohibits construction activities on Sundays, Federal holidays, and other days between the hours of 7:00 p.m. and 7:00 a.m.

MM Noi 2: Construction staging areas shall not be located within 150 feet of existing sensitive receptors and construction equipment shall be fitted with properly operating and maintained mufflers.

To reduce or eliminate impacts related to exterior and interior noise levels within the project exceeding City of Ontario standards, the following mitigation measures shall be implemented. However, the wall heights recommended in MM Noi 3 through 6 only apply to lots which have backyards directly adjacent to the roadways. For lots with front yards adjacent to the roadways, the windows and/or doors would need upgraded sound-rated glazing products in order to comply with the City of Ontario's interior noise standards.

MM Noi 3: A sound wall at least 7 feet high shall be constructed along perimeter lots adjacent to Hamner Avenue. If any residential structures are two stories high, then windows facing Hamner

Avenue would need upgraded sound-rated glazing products and the rooms would need supplemental ventilation.

MM Noi 4: A sound wall at least 6 feet high shall be constructed along perimeter lots adjacent to Bellegrave Avenue. If any residential structures are two stories high, then windows facing Bellegrave Avenue would need upgraded sound-rated glazing products and the rooms would need supplemental ventilation.

MM Noi 5: A sound wall at least 6 feet high shall be constructed along perimeter lots adjacent to Merrill Avenue. If any residential structures are two stories high, then windows facing Merrill Avenue would need upgraded sound-rated glazing products and the rooms would need supplemental ventilation.

MM Noi 6: Architectural plans shall be submitted to the City of Ontario for an acoustical plan check prior to the issuance of building permits to assure that second story windows are upgraded for sound reduction and proper ventilation systems are incorporated.

Conclusion

Temporary noise impacts from project construction will be reduced to a less-than-significant level by compliance with the noise ordinance in the City of Ontario. Construction will not occur on Sundays or any other days from 7:00 p.m. to 7:00 a.m.

Exterior and interior noise impacts to residences along Mill Creek Avenue are less than significant. With the incorporation of mitigation measures listed above, exterior and interior noise impacts to residences along Hamner Avenue, Bellegrave Avenue, and Merrill Avenue will be less than significant.

The area-wide noise impacts from project-generated traffic are significant and the Project will result in cumulative noise impacts in the Project vicinity.

SECTION 2 - SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally 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. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

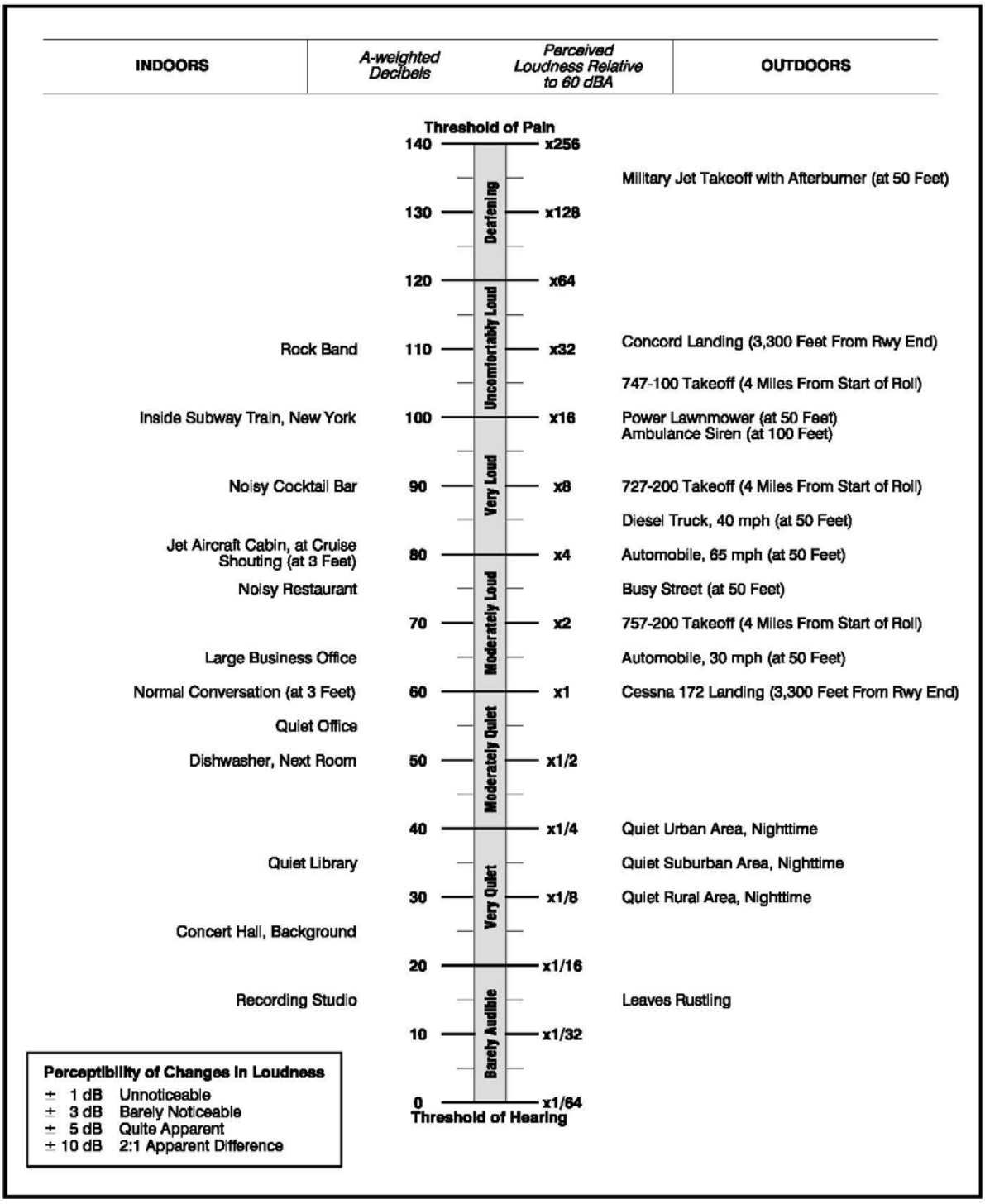
Background

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 dB. 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 dB; a halving of the energy would result in a 3 dB decrease. A 10 dB increase represents a 10-fold increase in sound intensity, a 20 dB change is a 100-fold difference, 30 dB is a 1000-fold increase, etc. Any further reference to decibels written as "dB" should be understood to be A-weighted. Figure 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 three hour average. When no period is specified, a one-hour average is assumed. Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (L_{dn}). CNEL is a 24-hour weighted average measure of community noise. The computation of CNEL adds 5 dB to the average hourly noise levels between 7 p.m. and 10 p.m. (evening hours), and 10 dB 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. L_{dn} is a very similar 24-hour weighted average, which weights only the nighttime hours and not the evening hours. CNEL is normally about 1 dB higher than L_{dn} for typical traffic and other community noise levels.

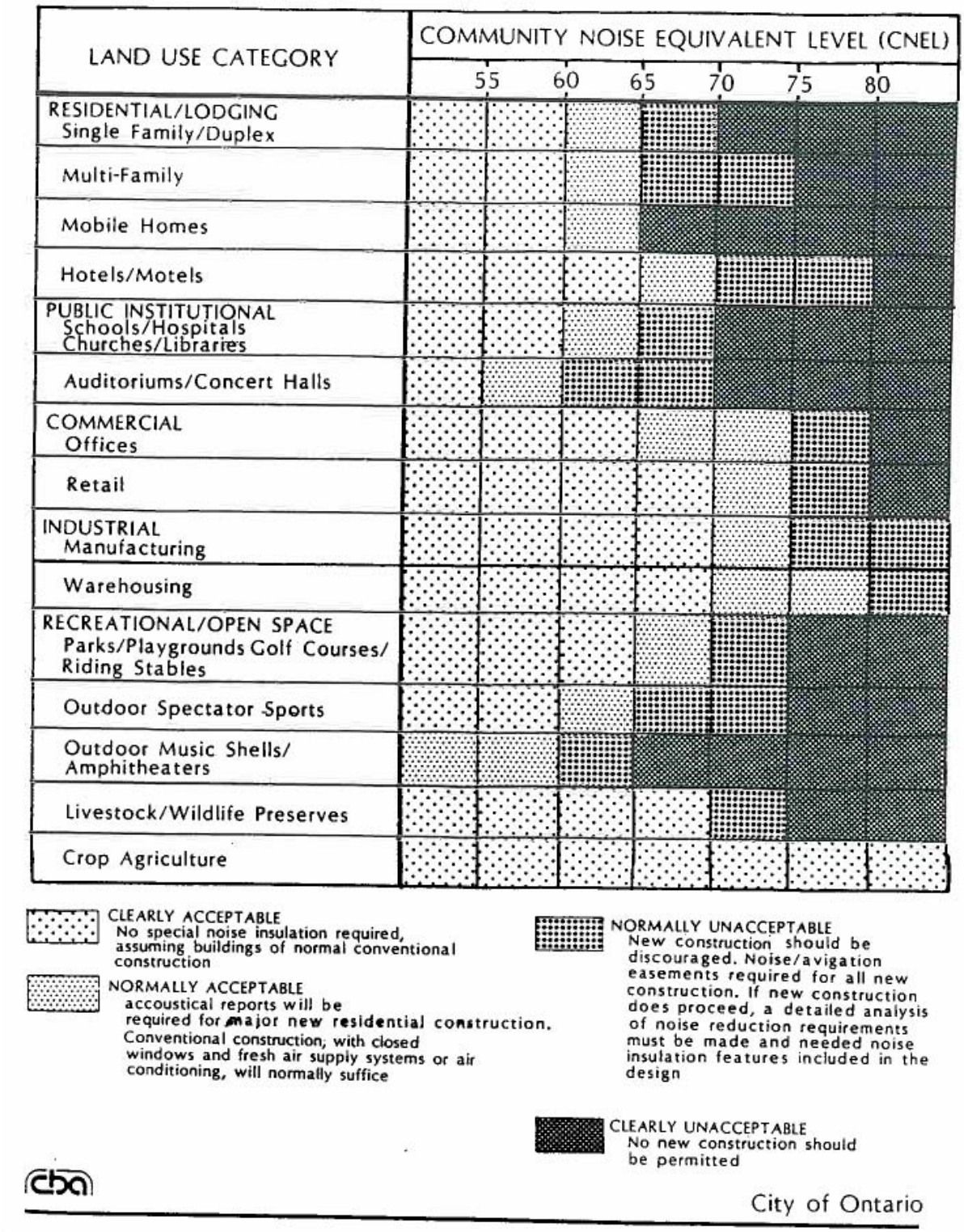
Noise exposure standards have been developed by the State of California and recommended for inclusion into the Noise Element of local general plans. The guidelines adopted by the City of Ontario are included in the City's General Plan (Figure 2).

Figure 1, Typical Decibel Level of Common Sounds



Source: California Airport Land Use Planning Handbook (January 2002), Page 6-5

Figure 2, Land Use Compatibility for Community Noise Exposure



Source: Ontario General Plan

An interior CNEL of 45 dB is mandated by the State of California Noise Insulation Standards (CCR, Title 24, Part 6, Section T25-28) for multiple family dwellings and hotel and motel rooms. A 45 dB CNEL is also typically considered a desirable noise exposure for single-family dwelling units. Since normal noise attenuation within residential structures with closed windows is about 20-25 dB, an exterior noise exposure of 65 dB CNEL is generally the noise land use compatibility guideline for noise sensitive receiver sites in California. Since commercial and industrial activities are generally conducted indoors, the exterior noise exposure standard for such less sensitive land uses is less stringent.

Project Description

The Esperanza Specific Plan is located within an approximately 8,200-acre portion of the City of Ontario that was annexed into the City in November of 1999. This area was referred to at that time as the City of Ontario Sphere of Influence. This large area, located south of the original City of Ontario, is now referred to as the New Model Colony ("NMC"). The NMC General Plan Amendment ("GPA") establishes land use designations for the entire 8,200 acres.

The existing uses within the proposed Specific Plan site include a variety of rural uses. The site is characterized as agricultural dairy lands with an active dairy operating in the north-central portion of the site and some cropland. Several dairy homes exist on site and some portions of the site remain vacant land. An earthen detention basin exists in the southwest corner of the Specific Plan area for drainage purposes. This basin must be retained until other basins and/or drainage facilities are constructed by the Project. Several above ground tanks, well heads, abandoned foundations and debris dumped on the site are noticeable upon site inspection.

The Project is located in the City of Ontario, San Bernardino County, California. The site is approximately 2 miles south of State Highway 60 and approximately ½ mile west of Interstate 15. The Project consists of approximately 223 acres located between Mill Creek Avenue and Hamner Avenue immediately north of Bellegrave Avenue (adjacent to the boundary between Riverside and San Bernardino counties). Existing noise levels near the proposed project site derive mainly from vehicular sources along Hamner Avenue, Bellegrave Avenue, Mill Creek Avenue (Cleveland), and Merrill Avenue.

Source: AirPhoto USA
February 2005

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Figure 3

Project Location

Esperanza Specific Plan

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

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SECTION 3 - NOISE IMPACTS

There are three noise concerns typically identified with land uses in this proposed project. Initially, construction activities, especially from the use of heavy equipment, may create substantial short-term noise increases near the Project site. Upon completion, project-related traffic will cause an incremental increase in the area-wide noise levels throughout the Project vicinity. Traffic noise impacts are generally analyzed both to ensure that the Project will not adversely impact the acoustic environment of the surrounding community, as well as to ensure that the Project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting on the Project.

Thresholds of Significance

Community noise problems typically occur at levels that are well below the threshold for hearing loss. Noise at less than hearing loss levels, however, may nevertheless create a variety of negative effects through loss of sleep, interference with communication, or lack of concentration. Noise-induced stress varies from one person to another and even varies within the same person from one day to the next. Therefore, there are no clear-cut limits that characterize a stress-free noise environment.

Noise impacts would be considered significant if they cause noise standards to be exceeded where they are currently met, or if they create a measurable increase in noise levels in an already noisy environment. Appendix G of the CEQA guidelines lists the following noise and/or vibration impacts as potentially significant if:

- Levels exceed standards in general plans or noise ordinances.
- A substantial permanent increase in the noise environment will occur.
- A substantial temporary or periodic increase in the noise environment will occur.
- Sensitive receptors living or working within two miles of a public airport will be exposed to excessive noise levels.

The noise standards for the City of Ontario are shown in Table 1.

Table 1, Noise Level Thresholds

Exterior (not to exceed)	65 dB CNEL
Interior (not to exceed)	45 dB CNEL

The terms “substantial” or “excessive” are not defined in most environmental compliance guidelines. Noise analysis methodology is accurate only to the nearest whole decibel and most people only notice a change in the noise environment when the difference in noise levels are

around 3 dB CNEL. Therefore, a clearly perceptible increase (+3 dB) in noise exposure of sensitive receptors would be considered significant.

Temporary noise generation will result during construction activities. However, the City of Ontario does not permit construction or repair work on Sunday or between the hours of 7:00 p.m. and 7:00 a.m. on any weekday. Construction is expected to occur only during daytime hours allowed by the City's Noise Ordinance.

The Ontario International Airport is located approximately 3.5 miles north of the Project site and the Chino Airport is located approximately 3.5 miles west of the Project site. Therefore, the Project site will not experience "excessive" noise levels due to airport proximity and no further aircraft noise analysis is necessary or provided in this report.

Construction Noise Impacts

Construction activities, especially from heavy equipment, may create substantial short-term noise increases near the Project site. Such impacts might be important for nearby noise-sensitive receptor such as the existing surrounding residential uses and the elementary schools located north and east of the Project site.

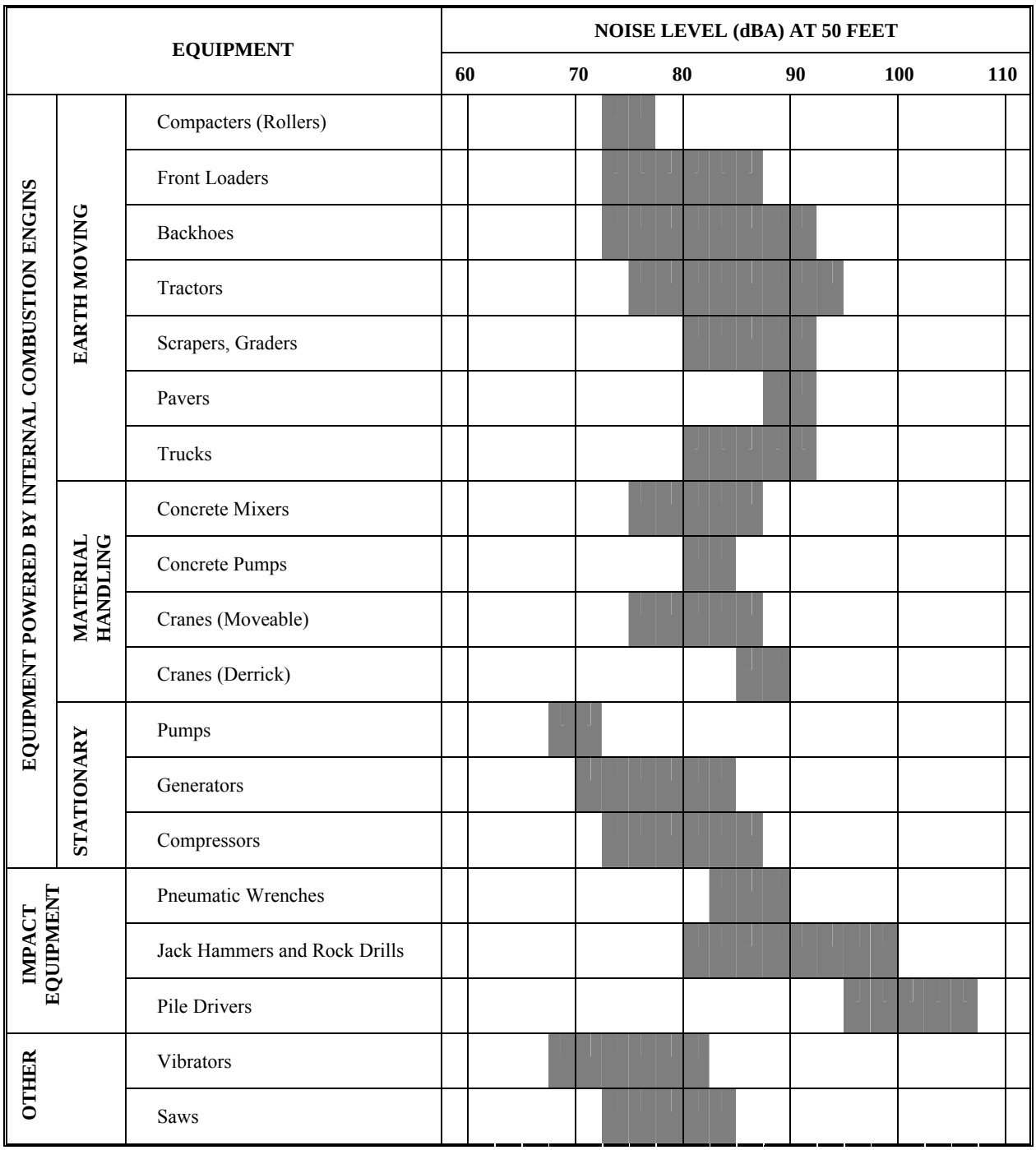
The most noise-intensive period will be during the grading of the site. Dozers and other heavy equipment will be used. Equipment noise will reach 90 dB at 50 feet from such equipment when it operates under a full load. Figure 4 shows the noise ranges for typical construction equipment measured at 50 feet. Under normal atmospheric spreading losses, peak levels up to 65 dB may be heard as far as 1,000 feet from the operating equipment. A level of 65 dB is considered intrusive in normal conversation. Construction activity impacts during the noisiest activities could thus extend as far as approximately 1,000 feet from the activity. Irregular terrain would, however, often block direct line-of-sight noise propagation. Due to the terrain variability, temporary construction noise impacts will typically be less than their theoretical maximum. Impacts from construction are considered short-term impacts since noise will cease upon completion of construction activity.

If grading were to occur during periods of heightened residential noise sensitivity, a temporary significant impact could occur.

However, the City of Ontario does not permit construction or repair work on Sunday or between the hours of 7:00 p.m. and 7:00 a.m. on any other day. Construction is expected to occur only during daytime hours allowed by the City's Noise Ordinance.

Compliance with the City's noise ordinance is predicted to create a less than significant temporary noise impact during project construction.

Figure 4, Typical Construction Equipment Noise Levels



Area-Wide Noise Impacts

Long-term noise concerns from the redevelopment of the project area center primarily on mobile source activities on streets surrounding the Project site. The daily average daily traffic ("ADT") volumes for each road segment analyzed are based upon the latest traffic data collected and calculated in the Traffic Study (Webb 2005) prepared for this Project.

Off-site noise levels were calculated along road segments in the Project vicinity for existing conditions (2005), Project opening year conditions (2015), which includes traffic generated by the project and 6 other known projects in the vicinity.

Future noise impacts resulting from vehicular traffic on roadways were modeled using the California specific vehicle noise curves ("CALVENO") in the LeqV2 computer program. LeqV2 is a mainframe computer implementation of the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and was developed by the California Department of Transportation (Caltrans) in the early 1980s. The program evaluates noise at one receptor from up to 8 straight roadway lanes and is very useful in predicting noise impacts in simple scenarios. Site-specific information is entered, such as traffic volumes, distances, and speeds; and adjustments can be made for the use of noise barriers. The average speed for all streets is assumed to be 40 mph, which compensates for any start/stop effects at lower speeds. The site is treated as a "hard" site, allowing a 3 dB reduction for each doubling of the distance. The standard vehicle mix used to calculate the vehicular noise impacts is shown in Table 2.

Table 2, Standard Vehicle Mix (Percent)

Vehicle	**Total**	(7am – 7pm) **Day**	(7pm – 10pm) **Evening**	(10pm – 7am) **Night**
Auto	97.42	75.51	12.57	9.34
Medium Truck	1.84	1.56	0.09	0.19
Heavy Truck	0.74	0.64	0.02	0.08

Analysis of area-wide noise impacts from project-related traffic was done by calculating the noise levels at an arbitrary distance of 50 feet from the centerline of each road.

Table 3, Area-Wide Noise Impacts – North/South Roadways

Road Segment	Noise Level (dBA CNEL) at 50 feet from Roadway Centerline				
	2005 [a]	2015 [b] (without Project)	Increase [c]	2015 [b] (with Project)	Project Increase [d]
Archibald Avenue					
South of Chino Ave	65.8	72.8	7.0	72.8	0.0
South of Schaefer Ave	67.1	72.0	4.9	72.0	0.0
South of Edison Ave	67.6	72.5	4.9	72.6	0.1
South of Eucalyptus Ave	66.6	72.7	6.1	72.8	0.1
Haven Avenue					
South of Chino Ave	60.7	69.6	8.9	69.6	0.0
South of Edison Ave	46.6	68.1	21.5	68.1	0.0
South of Eucalyptus Ave	-	68.6	-	68.8	0.2
Mill Creek Avenue					
South of Edison Ave	-	46.6	-	56.1	9.5
South of Eucalyptus Ave	-	61.6	-	62.8	1.2
South of Bellegrave Ave	-	66.0	-	66.0	0.0
Hamner Avenue					
North of SR-60	67.5	71.0	3.6	71.2	0.2
South of SR-60	67.8	73.9	6.1	74.1	0.2
South of Riverside Dr	68.3	71.2	2.9	71.5	0.3
South of Chino Ave	68.1	71.9	3.8	72.2	0.3
South of Edison Ave	66.9	72.1	5.2	72.6	0.6
South of Eucalyptus Ave	68.9	70.0	1.1	70.8	0.8
South of Bellegrave Ave	68.8	70.9	2.1	71.3	0.4
South of Limonite Ave	67.7	71.3	3.5	71.4	0.1

Note: [a] 2005 represents the existing conditions.
[b] 2015 represents the Project opening year.
[c] The increase in noise levels from existing conditions to opening year conditions without the Project. This increase is calculated as the noise level in 2015 (without project) minus noise levels in 2005.
[d] The increase in noise levels from project-generated traffic. This increase is calculated as the noise level in 2015 (without project) minus noise levels in 2015 (with project).

Table 4, Area-Wide Noise Impacts – East/West Roadways

Road Segment	Noise Level (dBA CNEL) at 50 feet from Roadway Centerline				
	2005 [a]	2015 [b] (without Project)	Increase [c]	2015 [b] (with Project)	Project Increase [d]
Riverside Drive					
West of I-15	64.1	71.2	7.1	71.2	0.0
West of Hamner Ave	64.8	71.4	6.6	71.4	0.0
Chino Avenue					
West of Hamner Ave	56.1	66.1	10.0	66.2	0.0
Schaefer Avenue					
West of Mill Creek Ave	-	65.0	-	65.0	0.0
West of Haven Ave	-	68.9	-	68.9	0.0
West of Turner Ave	-	64.3	-	64.3	0.0
West of Archibald Ave	-	61.9	-	61.9	0.0
Edison Avenue					
West of Haven Ave	64.0	68.2	4.2	68.2	0.0
West of Archibald Ave	65.0	72.1	7.1	72.7	0.1
Eucalyptus Avenue					
West of Hamner Ave	62.1	70.1	8.0	70.6	0.5
West of Mill Creek Ave	-	70.6	-	71.0	0.4
West of Haven Ave	-	69.7	-	70.0	0.3
West of Archibald Ave	-	63.5	-	63.6	0.1
Bellegrave Avenue					
West of I-15	66.0	71.4	5.4	71.7	0.2
West of Hamner Ave	55.6	68.8	13.2	69.3	0.4
West of Mill Creek Ave	-	67.3	-	67.3	0.0
Limonite Avenue					
East of I-15	69.9	74.6	4.7	74.7	0.1
West of I-15	69.8	73.2	3.3	73.4	0.2
West of Hamner Ave	68.3	72.7	4.4	72.7	0.0

Note: [a] 2005 represents the existing conditions.
[b] 2015 represents the project opening year.
[c] The increase in noise levels from existing conditions to opening year conditions without the project. This increase is calculated as the noise level in 2015 (without project) minus noise levels in 2005.
[d] The increase in noise levels from project-generated traffic. This increase is calculated as the noise level in 2015 (without project) minus noise levels in 2015 (with project).

Based on the results shown in Table 3 and Table 4, the maximum noise level increase due to project-generated traffic is 9.5 dB, which is greater than the threshold (increase of greater than 3 dB due to project-related traffic). Therefore, the increase in ambient noise levels in the project vicinity from this project is considered significant. Additionally, the maximum increase in noise levels from existing conditions is 21.5 dB. Therefore, the project will also result in cumulative noise impacts.

Exterior Noise Impacts and Compliance

The portion of Hamner Avenue adjacent to the project site is classified as Parkway 1 in the General Plan Amendment for the New Model Colony ("NMC GPA"), while the portions of Bellegrave Avenue and Merrill Avenue adjacent to the project site are classified as Standard Arterials in the NMC GPA, and the portion of Mill Creek Avenue adjacent to the project site is classified as a Collector in the NMC GPA. All other streets in the project site are internal streets. Based on the land use plan, residential land uses are proposed along Hamner Avenue, Bellegrave Avenue, Mill Creek Avenue, and Merrill Avenue; therefore, noise impacts to first and second floor receivers will be analyzed in this report.

Noise impacts to first floor receivers (at a height of 5 feet above the pad) and second floor receivers (at a height of 14 feet above the pad), a distance of 10 feet from the property line, were calculated. The site was treated as a "hard" site, allowing a 3 dB reduction for each doubling of the distance. The exterior noise impacts on both first and second floor receivers along perimeter lots adjacent to the major streets are shown in Table 5.

Table 5, Exterior Noise Impacts on Residential Receivers

Roadway	Classification	Wall Height	Noise Impact to 1st Floor Receiver	Noise Impact to 2nd Floor Receiver
Hamner Avenue	Parkway 1	0 feet	71.4 dB	71.8 dB
		7 feet	63.9 dB	71.7 dB
Bellegrave Avenue	Standard Arterial	0 feet	69.9 dB	69.9 dB
		6 feet	63.0 dB	69.7 dB
Merrill Avenue	Standard Arterial	0 feet	71.0 dB	71.0 dB
		6 feet	64.1 dB	70.9 dB
Mill Creek Avenue	Collector	0 feet	64.2 dB	64.2 dB

Detailed calculations are included in Appendix A.

Since the exterior noise impacts to first floor receivers are greater than 65 dB, sound walls will have to be constructed to mitigate exterior noise impacts. A 7-foot high wall is required along Hamner Avenue, while a 6-foot high wall is required along Bellegrave Avenue and Merrill Avenue in order to mitigate exterior noise impacts to a less than significant level. No wall is required along Mill Creek Avenue All wall heights are relative to the roadway elevation.

Interior Noise Impacts and Compliance

The City's exposure criteria for new residential construction requires that the interior noise environment, attributable to outside sources, be limited to 45 dB CNEL.

Each component of the building shell (e.g., exterior wall, windows, doors, etc.) provides a different amount of transmission loss for each "A" weighted octave band of community noise. The typical characteristics of the basic UBC compliant building shell are given in Table 6.

Table 6, Basic Building Shell Characteristics

Type	Construction
Exterior Wall	Siding or Stucco, 2" x 4" studs, R-13 fiberglass insulation, ½" drywall
Windows	Double pane
Sliding Glass Door	Double pane
Roof	Shingle over ½" plywood, fiberglass insulation, ⅝" drywall, vented
Floor	Carpet except kitchen and baths

The construction minimums listed in Table 6 will provide around 20 dB of interior noise reduction. Since the exterior noise levels for first floor receivers are less than 65 dB CNEL, with the incorporation of sound walls, 20 dB of noise reduction will result in interior noise levels of less than 45 dB CNEL, which is considered less than significant. However, exterior noise impacts to second floor receivers are as high as 71.7 dB along Hamner Avenue, 69.7 dB along Bellegrave Avenue, 70.9 dB along Merrill Avenue, and 64.2 dB along Mill Creek Avenue. In order to comply with the interior noise standard of 45 dB, additional noise mitigation beyond the noise reduction provided by the construction minimums is required for residential units along Hamner Avenue, Bellegrave Avenue, and Merrill Avenue. This level of interior noise reduction can be achieved by using upgraded sound-rated glazing products. The standard method of rating the noise reduction performance of any panel, including glazing products is the Sound Transmission Class ("STC"). In residential construction, the structural noise level reduction (in dB CNEL) is almost equal to the STC rating of any windows that can be opened. Supplemental ventilation (such as air conditioning) is required in any livable space where the window closure is required to meet interior noise standards. Building plans should be reviewed before actual sound ratings are specified. A supplemental acoustical report verifying compliance based upon the selected windows must be prepared at the building permit stage.

Project Disclosure

The acoustical code requirements are minimal acceptable standards. Compliance with the Building Department's acoustical criteria does not guarantee or even imply that local sound sources will be mitigated to inaudibility. Compliance with an exterior noise limit of 65 dB CNEL means that the exterior noise will remain clearly audible within the mitigated exterior space. Compliance with an interior noise limit of 45 dB CNEL means that exterior noise sources will remain audible on the interior of a structure.

Final site, grading, and architectural plans must be submitted for an acoustical plan check prior to the issuance of building permits in order to verify all of the required mitigation and specify any changes caused by plan revisions.

Mitigation Measures

To reduce impacts associated with construction noise, the following mitigation measures shall be implemented:

MM Noi 1: The construction activities of the proposed project shall comply with the City of Ontario noise ordinance that prohibits construction activities on Sundays, Federal holidays, and other days between the hours of 7:00 p.m. and 7:00 a.m.

MM Noi 2: Construction staging areas shall not be located within 150 feet of existing sensitive receptors and construction equipment shall be fitted with properly operating and maintained mufflers.

To reduce or eliminate impacts related to exterior and interior noise levels within the project exceeding City of Ontario standards, the following mitigation measure shall be implemented:

MM Noi 3: A sound wall at least 7 feet high shall be constructed along perimeter lots adjacent to Hamner Avenue. If any residential structures are two stories high, then windows facing Hamner Avenue would need upgraded sound-rated glazing products and the rooms would need supplemental ventilation.

MM Noi 4: A sound wall at least 6 feet high shall be constructed along perimeter lots adjacent to Bellegrave Avenue. If any residential structures are two stories high, then windows facing Bellegrave Avenue would need upgraded sound-rated glazing products and the rooms would need supplemental ventilation.

MM Noi 5: A sound wall at least 6 feet high shall be constructed along perimeter lots adjacent to Merrill Avenue. If any residential structures are two stories high, then windows facing Merrill Avenue would need upgraded sound-rated glazing products and the rooms would need supplemental ventilation.

MM Noi 6: Architectural plans shall be submitted to the City of Ontario for an acoustical plan check prior to the issuance of building permits to assure that second story windows are upgraded for sound reduction and proper ventilation systems are incorporated.

Impacts After Mitigation

Potential significant effects related to project construction noise and impacts from traffic along roadways to residents would be mitigated to a level below significance with implementation of the above mitigation measures. However, the increase in noise levels on roadways in the project vicinity due to project-generated traffic would remain significant.

SECTION 4 - CONCLUSION

Temporary noise impacts from project construction will be reduced to a less than significant level by compliance with the noise ordinance in the City of Ontario. Construction will not occur on Sundays or any other days from 7:00 p.m. to 7:00 a.m.

Exterior and interior noise impacts to residences along Mill Creek Avenue are less than significant. With the incorporation of mitigation measures listed above, exterior and interior noise impacts to residences along Hamner Avenue, Bellegrave Avenue, and Merrill Avenue will be less than significant.

The area-wide noise impacts from project-generated traffic are significant and the Project will result in cumulative noise impacts in the Project vicinity.

SECTION 5 - REFERENCES

References Cited

The following documents were referred to as general information sources during preparation of this document. They are available for public review at the locations abbreviated after each listing and spelled out at the end of this section. Some of these documents are also available at public libraries and at other public agency offices.

Caltrans	California Department of Transportation. Sound 32 and LeqV2 computer programs. (*Available on the internet at http://www.dot.ca.gov/hq/env/noise/index.htm*)
DOT	Transit Noise and Vibration Impact Assessment. Office of Planning, Federal Transit Administration, U.S. Department of Transportation. April 1995 (*Available on the internet at http://ntl.bts.gov/data/rail05/rail05.html*)
NMC GPA	City of Ontario Sphere of Influence. (Also known as New Model Colony) General Plan Amendment. (*Available at City of Ontario.*)
Webb 2005	Traffic Impact Study Report for the Esperanza Specific Plan. February 2005. (*Available at City of Ontario.*)
Location:	**Address:**
City of Ontario	303 East B Street Ontario, California 91764

Document Preparation Staff

ALBERT A. WEBB ASSOCIATES

Jillian Baker, Ph.D., Senior Environmental Analyst

Appendix A

Future Noise Level Calculations

NOISE CALCULATIONS (using LEQV2)

Standard Road **50' from CL** **40 mph** **ADT = 10,000**

VEHICLE MIX (NUMBER)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	7551	1257	934
Medium Truck	156	9	19
Heavy Truck	64	2	8

VEHICLE MIX (PERCENT)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

VEHICLE MIX (HOURLY)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	629	419	104
Medium Truck	13	3	2
Heavy Truck	5	1	1

Output L_{EQ}	Day	Evening	Night
Auto	63.95	62.19	56.13
Medium Truck	56.06	49.69	47.93
Heavy Truck	56.75	49.76	49.76
Total $L_{EQ(1)}$ (dB)	65.26	62.66	57.54

Total CNEL (dB)	66.57

Noise is a function of both speed and ADTs.
Since speed is assumed constant at 40 mph for this analysis, noise is a function of ADT only,
and can be calculated by the following equation:

CNEL (dB) = 66.57 + 10 x log (ADT/10,000)

Noise Levels 50 feet from Roadway Centerline

Road Segment	Existing		2015 Without Project			2015 With Project		
	ADT	dB CNEL	ADT	dB CNEL	Change	ADT	dB CNEL	Project
Archibald Avenue								
S/o Chino Avenue	8300	65.8	41600	72.8	7.0	41600	72.8	0.0
S/o Schaefer Avenue	11300	67.1	34600	72.0	4.9	34600	72.0	0.0
S/o Edison Avenue	12600	67.6	39000	72.5	4.9	39900	72.6	0.1
S/o Eucalyptus Avenue	10000	66.6	41000	72.7	6.1	41500	72.8	0.1
Haven Avenue								
S/o Chino Avenue	2600	60.7	20200	69.6	8.9	20200	69.6	0.0
S/o Edison Avenue	100	46.6	14200	68.1	21.5	14200	68.1	0.0
S/o Eucalyptus Avenue	-	-	16000	68.6	-	16600	68.8	0.2
Mill Creek Avenue								
S/o Edison Avenue	-	-	100	46.6	-	900	56.1	9.5
S/o Eucalyptus Avenue	-	-	3200	61.6	-	4200	62.8	1.2
S/o Bellgrave Avenue	-	-	8800	66.0	-	8800	66.0	0.0
Hamner Avenue								
N/o SR-60	12300	67.5	27900	71.0	3.6	29200	71.2	0.2
S/o SR-60	13400	67.8	54100	73.9	6.1	56300	74.1	0.2
S/o Riverside Drive	14800	68.3	29000	71.2	2.9	31200	71.5	0.3
S/o Chino Avenue	14100	68.1	33900	71.9	3.8	36300	72.2	0.3
S/o Edison Avenue	10700	66.9	35500	72.1	5.2	40300	72.6	0.6
S/o Eucalyptus Avenue	17000	68.9	22000	70.0	1.1	26400	70.8	0.8
S/o Bellegrave Avenue	16600	68.8	26900	70.9	2.1	29500	71.3	0.4
S/o Limonite Avenue	13000	67.7	29400	71.3	3.5	30100	71.4	0.1

Road Segment	Existing		2015 Without Project			2015 With Project		
	ADT	dB CNEL	ADT	dB CNEL	Change	ADT	dB CNEL	Change
Riverside Drive								
W/o I-15	5600	64.1	28900	71.2	7.1	28900	71.2	0.0
W/o Hamner Avenue	6600	64.8	30200	71.4	6.6	30200	71.4	0.0
Chino Avenue								
W/o Hamner Avenue	900	56.1	9000	66.1	10.0	9100	66.2	0.0
Schaefer Avenue								
W/o Mill Creek Avenue	-	-	7000	65.0	-	7000	65.0	0.0
W/o Haven Avenue	-	-	17000	68.9	-	17000	68.9	0.0
W/o Turner Avenue	-	-	5900	64.3	-	5900	64.3	0.0
W/o Archibald Avenue	-	-	3400	61.9	-	3400	61.9	0.0
Edison Avenue								
W/o Haven Avenue	5500	64.0	14400	68.2	4.2	14400	68.2	0.0
W/o Archibald Avenue	7000	65.0	35700	72.1	7.1	36600	72.2	0.1
Eucalyptus Avenue								
W/o Hamner Avenue	3600	62.1	22600	70.1	8.0	25100	70.6	0.5
W/o Mill Creek Avenue	-	-	25300	70.6	-	27600	71.0	0.4
W/o Haven Avenue	-	-	20600	69.7	-	22100	70.0	0.3
W/o Archibald Avenue	-	-	4900	63.5	-	5000	63.6	0.1
Bellegrave Avenue								
W/o I-15	8800	66.0	30600	71.4	5.4	32300	71.7	0.2
W/o Hamner Avenue	800	55.6	16800	68.8	13.2	18600	69.3	0.4
W/o Mill Creek Avenue	-	-	11900	67.3	-	11900	67.3	0.0
Limonite Avenue								
E/o I-15	21400	69.9	63800	74.6	4.7	64700	74.7	0.1
W/o I-15	21200	69.8	45800	73.2	3.3	47800	73.4	0.2
W/o Hamner Avenue	14800	68.3	40600	72.7	4.4	40600	72.7	0.0

Appendix B

Residential Exterior Noise Level Calculations

NOISE CALCULATIONS (using LEQV2)

Hamner Ave **60' from CL** **40 mph** **ADT = 40,300**

VEHICLE MIX (NUMBER)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	30431	5066	3764
Medium Truck	629	36	77
Heavy Truck	258	8	32

VEHICLE MIX (PERCENT)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

VEHICLE MIX (HOURLY)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	2536	1689	418
Medium Truck	52	12	9
Heavy Truck	21	3	4

5' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	70.12	67.39	62.42	Total CNEL (dB)	71.42

5' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	64.11	61.17	56.43	Total CNEL (dB)	65.38

5' Receiver **7' Wall**

Total $L_{EQ(1)}$ (dB)	62.62	59.62	54.96	Total CNEL (dB)	63.89

14' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	70.51	67.82	62.81	Total CNEL (dB)	71.81

14' Receiver **7' Wall**

Total $L_{EQ(1)}$ (dB)	70.43	67.74	62.72	Total CNEL (dB)	71.73

NOISE CALCULATIONS (using LEQV2)

Bellegrave Avenue **44' from CL** **40 mph** **ADT = 18,600**

VEHICLE MIX (NUMBER)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	14045	2338	1737
Medium Truck	290	17	35
Heavy Truck	119	4	15

VEHICLE MIX (PERCENT)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

VEHICLE MIX (HOURLY)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	1170	779	193
Medium Truck	24	6	4
Heavy Truck	10	1	2

5' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	68.56	65.81	60.87	**Total CNEL (dB)**	69.86

5' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	61.70	58.56	54.08	**Total CNEL (dB)**	62.97

14' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	68.56	65.81	60.87	**Total CNEL (dB)**	69.86

14' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	68.44	65.70	60.75	**Total CNEL (dB)**	69.74

NOISE CALCULATIONS (using LEQV2)

Mill Creek Avenue **33' from CL** **40 mph** **ADT = 4,200**

VEHICLE MIX (NUMBER)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	3171	528	392
Medium Truck	66	4	8
Heavy Truck	27	1	3

VEHICLE MIX (PERCENT)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

VEHICLE MIX (HOURLY)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	264	176	44
Medium Truck	5	1	1
Heavy Truck	2	0	0

5' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	63.22	60.41	54.92	**Total CNEL (dB)**	64.23

5' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	55.75	52.26	46.91	**Total CNEL (dB)**	56.42

14' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	63.22	60.41	54.92	**Total CNEL (dB)**	64.23

14' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	62.94	60.07	54.60	**Total CNEL (dB)**	63.92

NOISE CALCULATIONS (using LEQV2)

Merrill Avenue **44' from CL** **40 mph** **ADT = 25,100**

VEHICLE MIX (NUMBER)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	18953	3155	2344
Medium Truck	392	23	48
Heavy Truck	161	5	20

VEHICLE MIX (PERCENT)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

VEHICLE MIX (HOURLY)	(7AM-7PM) Day	(7PM-10PM) Evening	(10PM-7AM) Night
Auto	1579	1052	260
Medium Truck	33	8	5
Heavy Truck	13	2	2

5' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	69.84	67.17	61.92	**Total CNEL (dB)**	71.04

5' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	62.98	59.96	55.03	**Total CNEL (dB)**	64.11

14' Receiver **0' Wall**

Total $L_{EQ(1)}$ (dB)	69.84	67.17	61.92	**Total CNEL (dB)**	71.04

14' Receiver **6' Wall**

Total $L_{EQ(1)}$ (dB)	69.72	67.06	61.81	**Total CNEL (dB)**	70.93