11.0
NOISE

11.0 NOISE

This section of the Draft Environmental Impact Report ("Draft EIR"; "DEIR") includes a description of ambient noise conditions, a summary of applicable regulations, and an analysis of potential noise impacts associated with the proposed Project. Mitigation measures are recommended, as necessary, to reduce significant noise impacts. This section is based on an environmental noise assessment prepared by J. C. Brennan & Associates, Inc. (Brennan) on August 31, 2007, as well as a supplemental letter dated July 7, 2011, which are included as **Appendices 11.0-1** and **11.0-2** in this DEIR.

11.1 ENVIRONMENTAL SETTING

11.1.1 Characteristics of Environmental Noise

Acoustic Fundamentals

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave because of a disturbance or vibration.

Amplitude

Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person (USEPA, 1971).

Frequency

Frequency is the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all, and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, environmental sound is usually measured in A-weighted decibels (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA (USEPA, 1971).

Characteristics of Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates at a rate between 3.0 and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Mobile transportation sources, such as highways or hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance from the source. Noise generated by

stationary sources typically attenuates at a rate of approximately 6.0 to 7.5 dBA per doubling of distance from the source (USEPA, 1971).

Sound levels can be reduced by placing barriers between the noise source and the receiver. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise but are less effective than solid barriers.

Noise Descriptors

The selection of a proper noise descriptor for a specific source is dependent upon the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise are defined below (Lipscomb and Taylor, 1978).

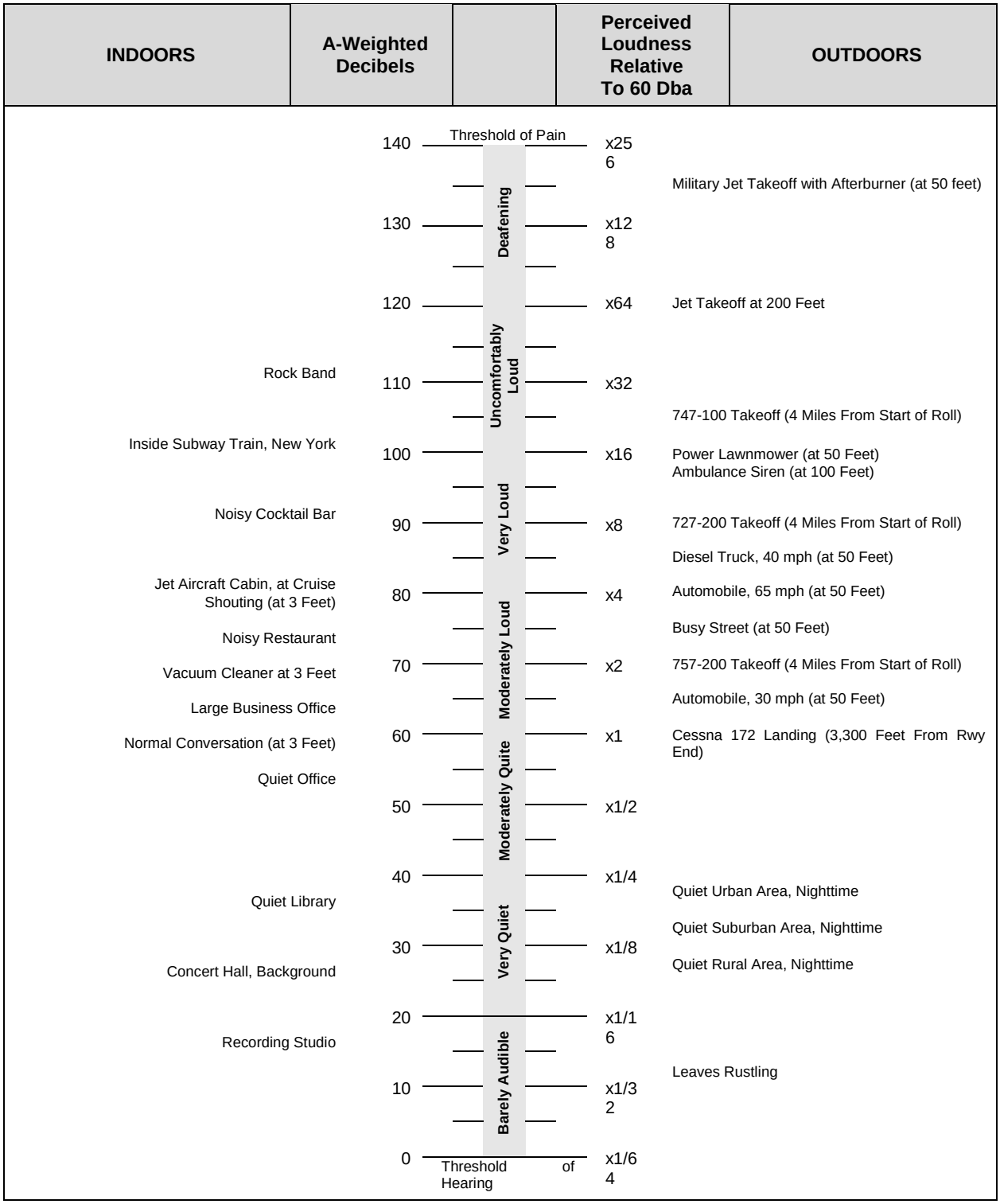
- Maximum Noise Level (L_{max}): The maximum instantaneous noise level during a specific period of time.
- Minimum Noise Level (L_{min}): The minimum instantaneous noise level during a specific period of time.
- Energy Equivalent Noise Level (L_{eq}): The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
- Day-Night Noise Level (L_{dn}): The 24-hour L_{eq} with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increases sensitivity to noise during these hours.
- Community Noise Equivalent Level (CNEL): The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. and 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn}.
- Single Event Noise Level (SEL): The SEL describes a receiver's cumulative noise exposure from a single noise event, which is defined as an acoustical event of short duration and involves a change in sound pressure above a reference value.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to

public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels. Typical community noise levels are depicted in **Figure 11-1**.

FIGURE 11-1
TYPICAL COMMUNITY NOISE LEVELS



Sources: Caltrans, 2002; Egan, 1972; HUD, 2004

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
- Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial.
- A 10 dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

When evaluating noise impacts, increases in ambient noise levels need to also take into account the existing noise environment. Consequently, increases in cumulative noise exposure (in CNEL/L_{dn}) of 5 dBA are generally considered significant in areas where the ambient noise environment is less than 60 dBA. In areas where the ambient noise environment is between 60 and 65 dBA, increases of 3.0 dBA, or greater, would be considered significant. In areas where the ambient noise environment exceeds 65 dBA, a predicted increase of 1.5 dBA, or greater, would be considered significant. These thresholds were initially recommended by the Federal Interagency Committee on Noise (FICON) in 1972, based on noise levels at which people typically become increasingly annoyed (FAA, 2000). These recommendations have since been recognized by various federal, state, and local agencies for the analysis of transportation noise impacts.

11.1.2 Local Setting

11.1.2.1 Noise-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses which would result in noise exposure that could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings, including senior housing, are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are also considered sensitive to increases in exterior noise levels. Schools, houses of worship (churches), hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

Major noise sources in south Placer County are primarily transportation-related. Traffic from local roadways and railroads contribute significantly to noise environments in their immediate vicinity.

11.1.2.2 Ambient Noise Environment

The proposed Amazing Facts Ministry Project site is located at the southeast intersection of Nightwatch Drive and Sierra College Boulevard in Placer County, California. **Figure 3-3** shows the Project site plan. The existing noise environment at the Project site is defined primarily by traffic on Sierra College Boulevard. No major non-transportation noise sources were noted in the immediate vicinity of the proposed Project site.

This analysis specifically focuses on noise generated by delivery truck passages, loading dock activity, parking lot circulation, and traffic on Sierra College Boulevard. Where noise levels are predicted to exceed the Placer County General Plan Noise Element or Noise Ordinance standards, noise mitigation measures are evaluated. Additionally, traffic noise from Sierra College Boulevard may generate exterior and interior noise levels exceeding the applicable Placer County noise level standards. The purpose of this noise analysis is to evaluate noise impacts to the Project — a house of worship, which is a noise-sensitive land use — and the noise impacts of the proposed Project to the surrounding land uses. The Project site is bordered by medium-density residential and office uses to the north, and low-density residential uses to the west. Noise-sensitive residential uses are also located approximately 900 and 1,600 feet east and south of the proposed Project, respectively. This analysis focuses on noise-sensitive uses in close proximity to the Project site, which includes the residential uses located adjacent to the site on the north and west. No outdoor activities are anticipated in association with the proposed Project.

11.1.2.3 Ambient Noise Survey

To generally quantify existing ambient noise levels at the Project site, J. C. Brennan & Associates staff conducted short-term and continuous noise level measurements on the Project site on July 23 and July 28, 2007.

The noise level measurements were conducted to determine typical average and maximum noise levels in the immediate Project vicinity. **Table 11-1** shows a summary of the results of the ambient noise level measurements. **Figure 11-2** shows the noise measurement locations. **Figure 11-3** shows the location of the continuous noise measurement site.

TABLE 11-1
SUMMARY OF AMBIENT NOISE MEASUREMENT RESULTS

	Location	L_{dn}	Daytime (7 am – 10 pm)		Nighttime (10 pm – 7 am)		Noise Sources
			Average (L_{eq})	Maximum (L_{max})	Average (L_{eq})	Maximum (L_{max})	
1	SW Edge of Proposed Parking Lot	NA	39 dB	47 dB	NA	NA	Traffic, planes, birds, construction
2	NW Corner of Nightwatch & Sierra College Blvd.	NA	73 dB	87 dB	NA	NA	Traffic
3	NE of Project Site, Across Sierra College Blvd. Near Residential	NA	73 dB	86 dB	NA	NA	Traffic
A	West Boundary	51 dB	44-51 dB	55–68 dB	39–46 dB	53–70 dB	Traffic

Source: Brennan, 2007

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used for the noise level measurement survey. The meters were calibrated before and after use with an LDL Model CAL2OO acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

Based upon the results of the noise survey, ambient noise levels in the Sierra College Boulevard corridor are typical of a busy traffic corridor. However, measurements of noise levels along the western boundary of the Project site showed that noise levels drop off rapidly with increasing distance from Sierra College Boulevard.

11.2 REGULATORY FRAMEWORK

11.2.1 Federal

There are no federal noise standards or regulations applicable to the Project site.

11.2.2 State

State of California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The *State of California General Plan Guidelines* (State of California, 2003), published by the Governor's Office of Planning and Research (OPR), also provide guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. **Table 11-2** summarizes the guidelines for acceptable and unacceptable community noise exposure limits for various land use categories, as currently defined by the State of California.

TABLE 11-2
STATE OF CALIFORNIA
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Use	Noise Levels (dBA CNEL/L_{dn})			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential Uses – Low-Density Single-Family, Duplex, Mobile Homes	< 60	55 to 70	70 to 75	> 75
Residential – Multi-Family	< 65	60 to 70	70 to 75	> 75
Transient Lodging, Hotels, Motels	< 65	60 to 70	70 to 80	> 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	< 70	60 to 70	70 to 80	> 80
Auditoriums, Concert Halls, Amphitheaters		< 70		>65
Sports Arena, Outdoor Spectator Sports		< 75		>70
Playgrounds, Neighborhood Parks	< 70		67.5 to 75	> 72.5
Golf Courses, Riding Stables, Water Recreation, Cemeteries	< 75		70 to 80	> 80
Office Buildings, Business, Commercial, Professional	< 70	67.5 to 77.5	> 75	
Industrial, Manufacturing, Utilities, Agricultural	< 75	70 to 80	> 75	

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: State of California, 2003

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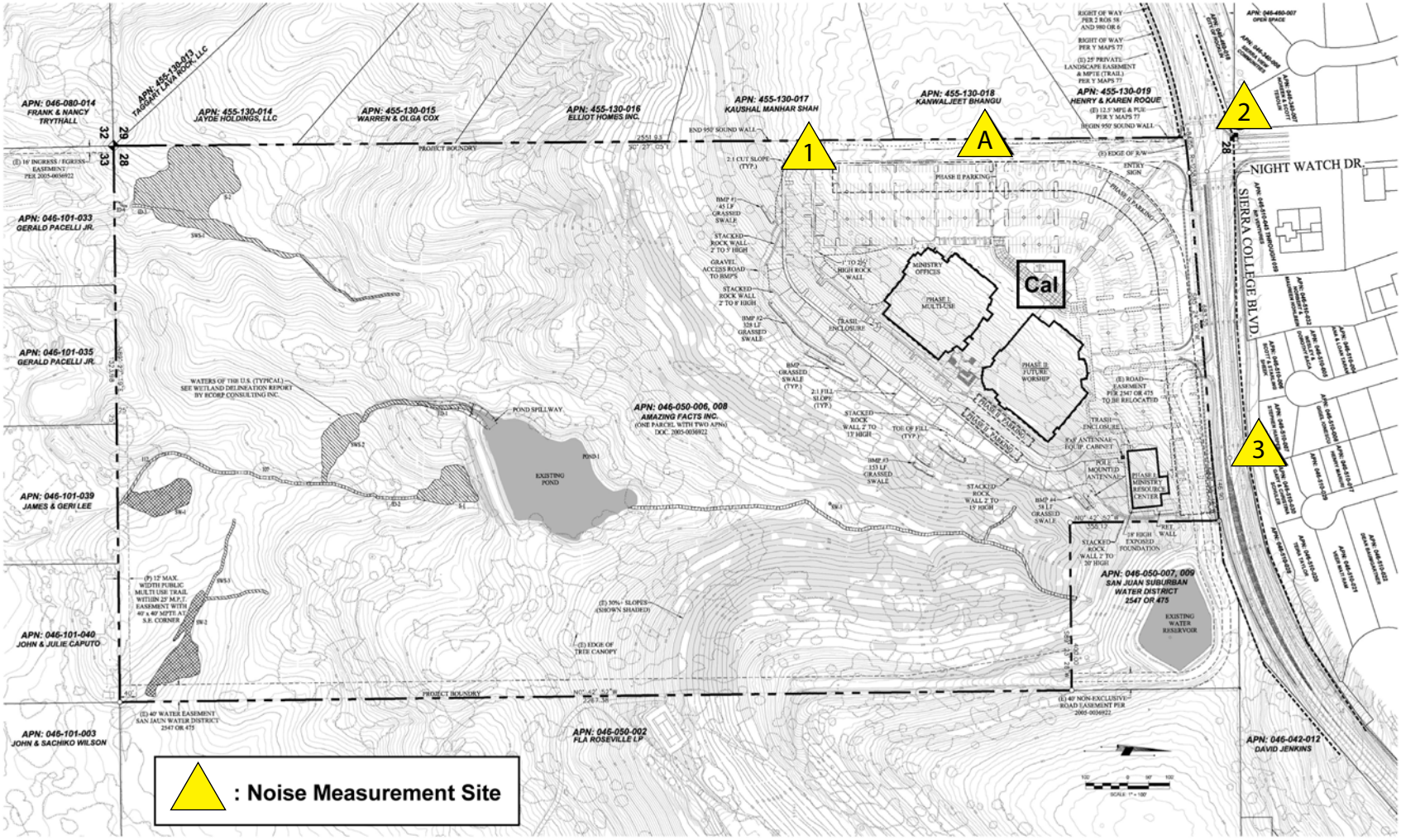


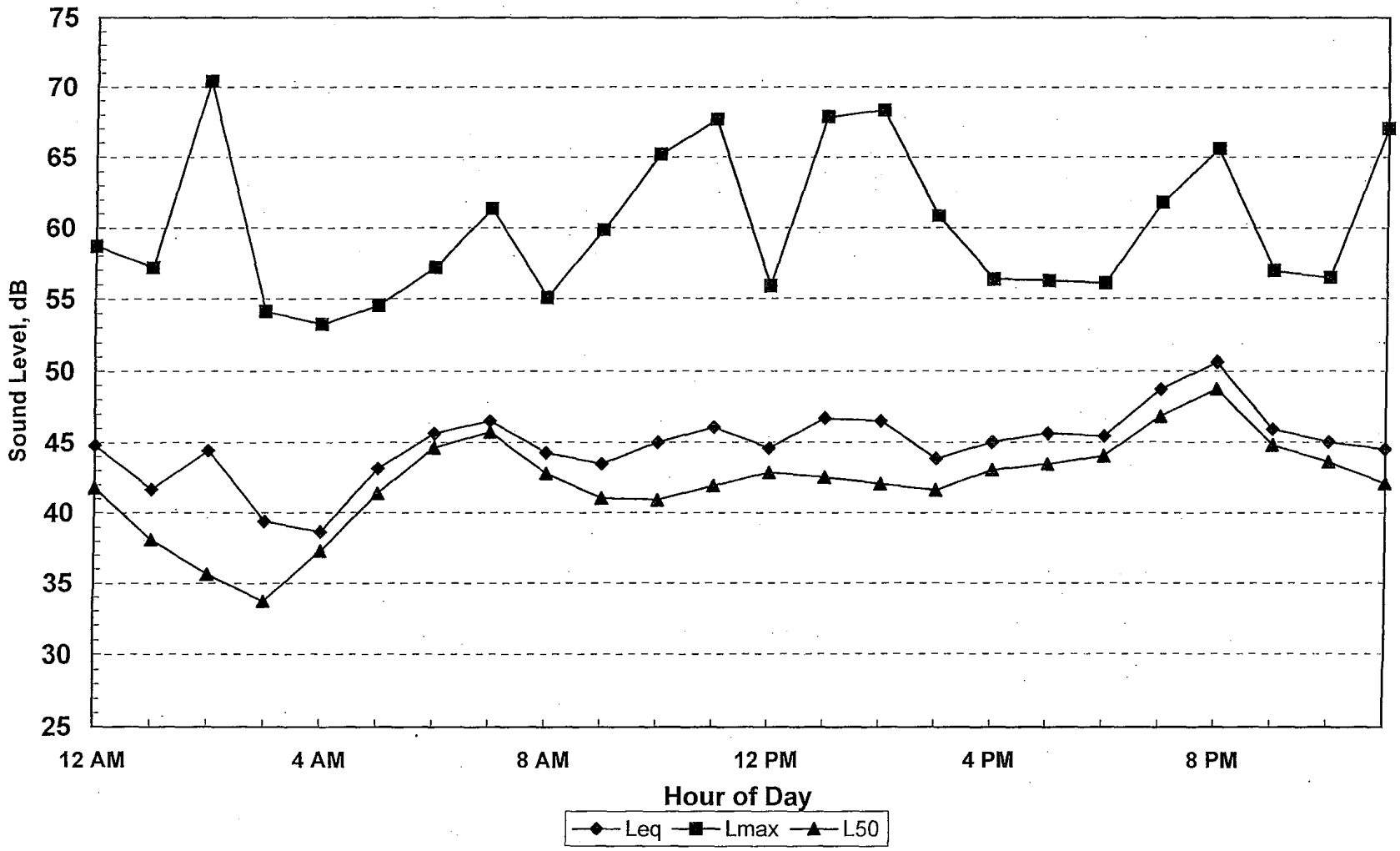
Source: King Engineering Inc.

Figure 11-2

Project Site Plan and Noise Measurement Site Locations

PMC®

T:_CS\Work\Placer, County of\Amzing Facts Ministry 28-0120\figures\ADEIR



Ldn = 50.5 dB

Source: JC Brennan & Associates, 2007

Figure 11-3

24-Hour Continuous Monitoring - Site A

PMC®

11.2.3 Local

Placer County General Plan

The Noise Element of the Placer County General Plan provides goals, objectives, and policies designed to ensure that county residents are not subjected to noise beyond acceptable levels. The General Plan includes noise criteria for the evaluation of proposed land uses with regard to land use compatibility, in accordance with those recommended by the State of California (**Table 11-2**). General Plan noise policies applicable to the proposed Project are summarized in **Table 11-3**. While this DEIR analyzes the Project's consistency with the Placer County General Plan pursuant to CEQA Section 15125(d), the Placer County Board of Supervisors will ultimately make the determination of the Project's consistency with the General Plan. Environmental impacts associated with any inconsistency with General Plan policies are addressed under the impact discussions of this EIR.

TABLE 11-3
GENERAL PLAN CONSISTENCY ANALYSIS – NOISE

General Plan Policies	Consistency Determination	Analysis
Policy 9.A.1: The County shall not allow development of new noise-sensitive uses where the noise level due to non-transportation noise sources will exceed the noise level standards of Table 9-1 as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 9-1.	Consistent	The proposed Project is bordered primarily by a range of residential uses, with some commercial/professional uses to the north in the City of Rocklin. These land uses are not considered to be noise-producing uses and would not be expected to expose the Project site to non-transportation noise levels exceeding County standards.
Policy 9.A.2: The County shall require that noise created by new non-transportation noise sources be mitigated so as not to exceed the noise level standards of Table 9-1 as measured immediately within the property line of lands designated for noise-sensitive uses.	Consistent	As discussed under the impact analysis below, the proposed Project would not result in non-transportation noise sources that would exceed County noise level standards.
Policy 9.A.4: Impulsive noise produced by blasting should not be subject to the criteria listed in Table 9-1. Single event impulsive noise levels produced by gunshots or blasting shall not exceed a peak linear overpressure of 122 db, or a C weighted Sound Exposure Level (SEL) of 98 dBC. The cumulative noise level from impulsive sounds such as gunshots and blasting shall not exceed 60 dB LCdn or CNELC on any given day. These standards shall be applied at the property line of a receiving land use.	Consistent	The proposed Project consists of a house of worship and is not expected to result in any impulsive noise levels produced by gunshots or blasting that exceed a peak linear overpressure of 122 db.
Policy 9.A.5: Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 9-1 at existing or planned noise-sensitive uses, the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design. The requirements for the content of an acoustical analysis are listed in Table 9-2.	Consistent, with Mitigation	The applicant has submitted an acoustical analysis that was used in preparation of the analysis for this EIR. Mitigation measures recommended by the acoustical analysis have been included within this EIR.

General Plan Policies	Consistency Determination	Analysis
Policy 9.A.6: The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 9-1.	Consistent	The noise level standards of Table 9-1 of the Placer County General Plan were used to evaluate existing and future transportation noise levels in the vicinity of the Project site.
Policy 9.A.8: New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources, including airports, which exceed the levels specified in Table 9-3, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 9-3.	Consistent	As discussed under Impact 11.2 below, the predicted exterior traffic noise level at the proposed outdoor plaza area would comply with the County's 60 dB Ldn exterior noise level standard for house of worship (church) uses and interior noise levels are also predicted to comply with the County's 40 dB Leq interior noise levels standard applied to interior spaces of house of worship uses. Therefore, the proposed Project would not be exposed to transportation noise sources exceeding the levels specified in General Plan Table 9-3.
Policy 9.A.10: Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 9-3 or the performance standards of Table 9-1, the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design. At the discretion of the County, the requirement for an acoustical analysis may be waived provided that all of the following conditions are satisfied: a. The development is for less than five single-family dwellings or less than 10,000 square feet of total gross floor area for office buildings, churches, or meeting halls; b. The noise source in question consists of a single roadway or railroad for which up-to-date noise exposure information is available. An acoustical analysis will be required when the noise source in question is a stationary noise source or airport, or when the noise source consists of multiple transportation noise sources; c. The existing or projected future noise exposure at the exterior of buildings which will contain noise-sensitive uses or within proposed outdoor activity areas (other than outdoor sports and recreation areas) does not exceed 65 dB Ldn (or CNEL) prior to mitigation. For outdoor sports and recreation areas, the existing or projected future noise exposure may not exceed 75 dB Ldn (or CNEL) prior to mitigation; d. The topography in the project area is essentially flat; that is, noise source and receiving land use are at the same grade; and e. Effective noise mitigation, as determined by the County, is incorporated into the project design to reduce noise exposure to the levels specified in Table 9-1 or 9-3. Such measures may include the use of building setbacks, building orientation, noise barriers, and the	Consistent, with Mitigation	As discussed above, the applicant has submitted an acoustical analysis that was used in preparation of the analysis for this EIR.

General Plan Policies	Consistency Determination	Analysis
standard noise mitigations contained in the Placer County Acoustical Design Manual. If closed windows are required for compliance with interior noise level standards, air conditioning or a mechanical ventilation system will be required.		
Policy 9.A.11: The County shall implement one or more of the following mitigation measures where existing noise levels significantly impact existing noise-sensitive land uses, or where the cumulative increase in noise levels resulting from new development significantly impacts noise-sensitive land uses: a. Rerouting traffic onto streets that have available traffic capacity and that do not adjoin noise sensitive land uses; b. Lowering speed limits, if feasible and practical; c. Programs to pay for noise mitigation such as low cost loans to owners of noise-impacted property or establishment of developer fees; d. Acoustical treatment of buildings; or e. Construction of noise barriers.	Consistent, with Mitigation	Mitigation measure **11-1a** requires that a sound wall be built along the western property line of the proposed Project consistent with part e. of this policy.
Policy 9.A.12: Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered as a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.	Consistent, with Mitigation	A noise barrier is required by mitigation measure **11-1a**. Redesigning the site plan to include design-related noise mitigation measures was considered impractical due to development constraints on the site, including steep slopes. Therefore, the proposed Project is consistent with this policy.

The Placer County General Plan Noise Element specifies allowable L_{dn} noise levels within specified zone districts for new projects (**Table 11-4**), requirements for an acoustical analysis (**Table 11-5**), and maximum allowable noise exposure for transportation noise sources (**Table 11-6**).

TABLE 11-4
ALLOWABLE LDN NOISE LEVELS WITHIN SPECIFIED ZONE DISTRICTS APPLICABLE TO NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION NOISE SOURCES

Zone District of Receptor	Property Line of Receiving Use (L_{dn})	Interior Spaces[1] (L_{dn})
Residential Adjacent to Industrial[2]	60	45
Other Residential[3]	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood Commercial	70	45
General Commercial	70	45
Heavy Commercial	75	45
Limited Industrial	75	45
Highway Service	75	45
Farm	(see footnote 4)	–
Agriculture Exclusive	(see footnote 4)	–

1 Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences and areas where communication and speech intelligibility are essential, such as classrooms and offices.

2 Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses.

For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

3 Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards.

Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described above, in these standards.

4 Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones are a concern, an Ldn of 70 dBA will be considered acceptable outdoor exposure at a residence.

Source: Placer County, 1994

TABLE 11-5
PLACER COUNTY REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS

An acoustical analysis prepared pursuant to Policy 9.A.5 shall:	
1.	Be the financial responsibility of the applicant.
2.	Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
3.	Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
4.	Estimate existing and projected cumulative (20 years) noise levels in terms of L_{dn} or CNEL and/or the standards of Table 9-1, and compare those levels to the policies in this section. Noise prediction methodology must be consistent with the Placer County Acoustical Design Manual.
5.	Recommend appropriate mitigation to achieve compliance with the policies and standards of this section, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance.
6.	Estimate noise exposure after the prescribed mitigation measures have been implemented.
7.	Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

Source: Placer County, 1994

TABLE 11-6
PLACER COUNTY MAXIMUM ALLOWABLE NOISE EXPOSURE, TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	60[3]	45	–
Transient Lodging	60[3]	45	–
Hospitals, Nursing Homes	60[3]	45	–
Theaters, Auditoriums, Music Halls	–	–	35
Churches, Meeting Halls	60[3]	–	40
Office Buildings	–	–	45
Schools, Libraries, Museums	–	–	45
Playgrounds, Neighborhood Parks	70	–	–

Source: Placer County, 1994

Notes:

1 – Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

2 – As determined for a typical worst-case hour during periods of use.

3 – Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Granite Bay Community Plan

Table 11-7 analyzes the Project's consistency with the GBCP policies pertaining to noise. While this Draft EIR analyzes the Project's consistency with the Granite Bay Community Plan pursuant to State CEQA Guidelines Section 15125(d), the determination of the Project's consistency with this Community Plan rests with the Placer County Board of Supervisors. Environmental impacts associated with inconsistency with Community Plan policies are addressed under the impact discussions of this DEIR.

TABLE 11-7
COMMUNITY PLAN CONSISTENCY ANALYSIS – NOISE

Community Plan Policies	Consistency Determination	Analysis
Noise Policy 1: Locate noise-sensitive land uses within areas of acceptable community noise equivalent levels.	Consistent, with Mitigation	As discussed under Impact 11.2 below, the proposed Project would not be exposed to interior or exterior noise sources exceeding the County's standards.
Noise Policy 2: Encourage the use of greenbelts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.	Consistent, with Mitigation	Structures included in the proposed Project will be set back from the roadway (approximately 295 feet from Sierra College Boulevard) with a parking lot and landscaping area serving as a buffer. Therefore, although the proposed Project does not include the encouraged greenbelt or natural area, the landscaped area and setback distance would reduce noise impacts consistent with the Placer County General Plan and the Granite Bay Community Plan.
Noise Policy 4: Avoid the interface of noise-producing and noise-sensitive land uses.	Consistent, with Mitigation	Neither the proposed Project (a house of worship) nor the surrounding residential land uses are considered to be noise-producing uses. Therefore, the proposed Project would not result in the interface of noise-producing and noise-sensitive land uses.
Noise Policy 5: Require implementation of noise abatement techniques within new projects where warranted.	Consistent, with Mitigation	Mitigation measure **11-1a** requires that a sound wall be built along the western property line of the proposed Project. Mitigation measure **11-3** requires construction hours to be limited, and mitigation measure **11-1c** requires truck delivery hours to be limited. These measures would be considered noise abatement techniques consistent with this policy.
Noise Policy 7: Require project specific noise studies for most commercial, office, public, institutional and residential projects.	Consistent	As discussed above, the applicant has submitted an acoustical analysis that was used in preparation of the analysis for this EIR.
Noise Policy 8: Limit construction activities to daytime hours (7 a.m., to 7p.m., Monday through Friday).	Consistent, with Mitigation	Mitigation measure **11-1d** requires construction activities to be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, consistent with this policy.

Table 11-8 and **Table 11-9** (which are Tables 5 and 6 from the Granite Bay Community Plan) explain acceptable noise exposure levels based upon the standards adopted in the countywide Noise Element.

TABLE 11-8
ALLOWABLE LDN NOISE LEVELS WITHIN SPECIFIED ZONE DISTRICTS APPLICABLE TO NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION NOISE SOURCES

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

[1] Interior spaces are defined as any locations where some degree of noise sensitivity exists. Examples include all habitable rooms of residences and areas where communication and speech intelligibility are essential, such as classrooms and offices.

Source: Placer County, 1989

TABLE 11-9
MAXIMUM ALLOWABLE NOISE EXPOSURE (LDN) TRANSPORTATION NOISE SOURCES

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

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2] As determined for a typical worst-case hour during periods of use.

[3] Where it is not possible to reduce noise in outdoor activity areas to 60 Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Placer County, 1989

Placer County Noise Ordinance

The Placer County Noise Ordinance also establishes criteria for noise-sensitive receptors, outlined below in **Table 11-10**. According to the Noise Ordinance, development of the proposed Project would result in significant noise impacts if it:

1) Causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by 5 dBA; or

2) Exceeds the sound level standards as set forth in Table 3 [**Table 11-7** in this document], whichever is greater.

According to the Noise Ordinance, each of the sound level standards specified in **Table 11-10** shall be reduced by 5 dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus 5 dB.

It should be noted that the Noise Ordinance standards shown in **Table 11-10** are based upon hourly average (L_{eq}) and maximum (L_{max}) criteria and are therefore more restrictive than the day/night average (L_{dn}) standards shown above. Therefore, application of the **Table 11-10** criteria to noise generated from on-site activities is the more conservative approach and would result in compliance with both the Placer County General Plan Noise Element and the Noise Ordinance standards.

TABLE 11-10
PLACER COUNTY NOISE ORDINANCE CRITERIA FOR NOISE-SENSITIVE RECEPTORS

Sound Level Descriptor	Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
Hourly L_{eq}	55 dB	45 dB
Hourly L_{max}	70 dB	65 dB

Source: Brennan, 2007

11.3 IMPACTS

This section identifies and discusses the environmental noise impacts resulting from the proposed Project and suggests mitigation measures to reduce the level of impact. A detailed discussion of mitigation measures is included below.

11.3.1 Standards of Significance

State of California

Following Appendix G of the State CEQA Guidelines, noise impacts are considered to be significant if implementation of the Project considered would result in any of the following:

1) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or of applicable standards of other agencies.

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

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

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

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

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

11.3.2 Methodology

Traffic Noise Methodology

J.C. Brennan employed the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) for the prediction of traffic noise levels. The model is based on the CALVENO noise emission factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site (Brennan, 2007).

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn}, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Inputs to the FHWA model included Average Daily Traffic (ADT) daily traffic volumes and peak hour turning movement volumes which were provided by the Project traffic consultant (KD Anderson Associates), truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for baseline and future conditions which would result from the Project are provided in terms of L_{dn}.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each Project-area roadway segment. A conservative adjustment of -5 dB is assumed where noise barriers are located adjacent to sensitive receptors. In some locations, sensitive receptors may not receive full shielding from noise barriers or may be located at distances which vary from the assumed calculation distance. However, the traffic noise analysis is believed to be representative of the majority of sensitive receptors located closest to the Project area roadway segments analyzed in this report (Brennan, 2011a).

On July 23, 2007, Brennan conducted onsite noise level measurements and concurrent traffic counts of Sierra College Boulevard traffic noise on the Project site. It should be noted that since 2007, traffic on Sierra College Boulevard has not increased significantly and, in fact, may have declined slightly due to the recent economic decline and resulting lower development activity in the region.

The purpose of the short-term traffic noise level measurements was to determine the accuracy of the FHWA model in describing the existing noise environment on the Project site, accounting for shielding from local topography, actual travel speeds, and roadway grade. Noise measurement results were compared to the FHWA model results by entering the observed traffic volume, speed, and distance as inputs to the FHWA model. See **Figure 11-2** for the traffic noise calibration site labeled "Cal."

Instrumentation used for the measurements were Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters which were calibrated in the field before use with an LDL CAL200 acoustical calibrator. Based upon the calibration results, the FHWA model was found to over-predict traffic noise levels by approximately 12 dB at the proposed location of the outdoor plaza. However, this over-prediction was due to shielding from topography and atmospheric conditions which may not exist when the Project is constructed. Therefore, a

conservative offset of -3 dB was applied to the FHWA traffic noise model to account for the fact that Sierra College Boulevard will remain depressed relative to the Project site. This offset was not applied to the Project's resource center building due to its proximity to Sierra College Boulevard. A complete listing of the FHWA calibration inputs and results is provided in **Appendix 11.0-1**.

Table 11-11 is based upon recommendations made in August 1992 by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these criteria have been applied to other sources of noise similarly described in terms of cumulative noise exposure metrics such as the L_{dn}. This metric is generally applied to transportation noise sources and defines noise exposure in terms of average noise exposure during a 24-hour period with a penalty added to noise that occurs during the nighttime. According to **Table 11-11**, an increase in the traffic noise level of 1.5 dB or more would be significant where the ambient noise level exceeds 65 dB L_{dn} (Brennan, 2007).

TABLE 11-11
SIGNIFICANCE OF CHANGES IN CUMULATIVE NOISE EXPOSURE

Ambient Noise Level Without Project, L_{dn}	Significant Impact
<60 dB	+5.0 dB or more
60–65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: FICON, 1992

Truck Circulation Noise Methodology

Based on Brennan's data for heavy truck passages, the sound exposure level (SEL) at a reference distance of 50 feet is approximately 88 dB and a maximum (L_{max}) noise level of 75 dB. Typical medium truck arrivals and departures are approximately 84 dB SEL and 72 dB L_{max} at 50 feet. Based upon the data described above, the following formula can be utilized to determine the hourly noise level due to the truck traffic passbys:

$$L_{eq} = 88 + 10 * (\log Neq) - 35.6, \text{ dB where:}$$

88 is the mean sound exposure level (SEL) for a heavy truck arrival and departure (84 for medium trucks), and 10 * (log Neq) is 10 times the logarithm of the number of truck arrivals and departures during an hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Parking Lot Noise Methodology

Ingress/Egress Along West Property Line

As a means of determining the noise levels of vehicles traveling along the west Project boundary, Brennan utilized noise level data collected for passenger vehicles in parking lots. A typical SEL due to an automobile passby was found to be 68 dB SEL and 63 dB L_{max}, at a distance of 50 feet. Based upon the peak hour trips provided by the Project traffic study and the reference SEL

measurements, the vehicle circulation L_{eq} noise level can be determined using the following formula:

$$\text{Peak Hour } L_{eq} = 68 + 10 * \log (572) - 35.6, \text{ dB where:}$$

68 is the mean sound exposure level (SEL) for a vehicle passby, and 10 * (log Neq) is 10 times the logarithm of the number of vehicle passbys during an hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Parking Lot Area

As a means of determining the noise levels due to parking lot activities, Brennan utilized noise level data collected for parking lots. A typical SEL due to automobile arrivals and departures, including car doors slamming and people conversing, is approximately 71 dB, with a maximum level of 63 dB L_{max}, at a distance of 50 feet. Based upon the peak hour trips provided by the Project traffic study and the reference SEL measurements, the parking lot L_{eq} noise level can be determined using the following formula:

$$\text{Peak Hour } L_{eq} = 71 + 10 * \log (572) - 35.6, \text{ dB where:}$$

71 is the mean sound exposure levels (SEL) for an automobile arrival and departure, and 10 * log (572) is 10 times the logarithm of the number of automobile or motorcycle arrivals and departures per hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.

Mechanical Equipment Noise Methodology

Based on discussions with the Project applicant, the Project heating, ventilating, and air conditioning (HVAC) will be provided by packaged rooftop HVAC units. At the time of the noise analysis, mechanical plans were not available. In order to provide a preliminary assessment of potential HVAC mechanical noise levels, Brennan performed an assessment of HVAC noise levels based upon the following methodology.

For the purpose of the analysis it was assumed that cooling capacity would be based upon approximately one ton of cooling per 500 square feet (s.f.) of finished floor space. Once the raw cooling capacity tonnage was calculated for each of the proposed buildings, Brennan selected actual mechanical units which can supply the required nominal tonnage requirements. The sound level data for these units were input along with the Project site plan data into the Environmental Noise Model (ENM) to generate HVAC noise contours for the proposed Project.

The following HVAC assumptions had been used in the August 31, 2007, noise study:

- Phase I: Main Building: 60,000 s.f. = 120 tons = 6 units @ 20 tons each
- Resource Center: 11,000 s.f. = 22 tons = 2 units @ 10 tons each
- Phase II: Main Building: 85,500 s.f. = 171 tons = 9 units @ 20 tons each
- Phase III: Addition Building: 20,000 s.f. = 40 tons = 4 units @ 10 tons each

The resulting packaged rooftop units were assumed to be Lennox L Series Units, model numbers LGC120S2 and LGC240S2. The 10-ton unit had an Air-Conditioning and Refrigeration Institute (ARI) sound rating number of 88 and the 20-ton unit had a rating of 92.

However, it should be noted that the original noise analysis, conducted by Brennan, was undertaken in 2007. At the time of distribution of the Notice of Preparation (NOP), the Project proposed three phases and slightly modified building sizes. Based on the revised Project description which now proposes only two phases, it is now assumed that the following number of HVAC units would be required for the Project:

- Phase I: Main Building: 106,800 s.f. = 214 tons = 11 units @ 20 tons each
- Resource Center: 11,220 s.f. = 22 tons = 2 units @ 10 tons each
- Phase II: Main Building: 90,000 s.f. = 180 tons = 9 units @ 20 tons each

The resulting packaged rooftop units would also be Lennox L Series Units, model numbers LGC120S2 and LGC240S2. The 10-ton unit had an ARI sound rating number of 88 and the 20-ton unit had a rating of 92.

It was also assumed that the HVAC units would be evenly distributed across the rooftops of the buildings and that building parapets would completely shield the units from view to the nearest residential areas.

As the number of rooftop HVAC units would decrease, this change would not create new noise impacts. Rather, elimination of Phase III and the associated four HVAC units would likely result in noise impacts being less than previously calculated in the 2007 noise study. Therefore, the noise analysis summarized below and contain in **Appendix 11.0-1** is considered to be conservative (Brennan, 2011b) (see **Appendix 11.0-3**).

11.3.3 Project-Level Impacts and Mitigation Measures

IMPACT 11.1: Traffic Noise Impacts to Surrounding Land Uses

Development of the proposed Project could result in significant traffic noise impacts as follows:

Truck Circulation Noise

Along West Property Line

The proposed Project would include approximately seven trucks per day, six carrier delivery/pickup-type trucks, and one or two semi trucks per week. It is anticipated that peak hour deliveries could include up to four delivery/pickup trucks and one semi truck. Based on the formula described under the Methodology subsection above, the hourly L_{eq} generated during the hour of truck activity with one heavy truck arrival/departure and four medium truck arrival/departures would be approximately 56 dB L_{eq} and 75 dB L_{max} at a distance of 50 feet. **Table 11-12** below provides a complete summary of the predicted Project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

Loading Dock Operations

Loading dock operations typically generate noise levels of approximately 60 dB L_{eq} and 83 dB L_{max} at a distance of 50 feet from the loading dock. The primary noise source associated with loading dock areas is typically heavy trucks stopping (air brakes), backing into the loading areas as necessary, and pulling out of the loading docks (revving engines) and forklifts. **Table 11-12** below provides a complete summary of the predicted Project-related noise levels at the nearest residential property lines and a comparison to the Placer County exterior noise standards.

Parking Lot Noise Generation

Ingress/Egress Along West Property Line

The Project traffic analysis predicts 572 peak hour trips utilizing the west Project access at Nightwatch Drive. Based on the formula described under the Methodology subsection above, the hourly L_{eq} generated during the peak hour of vehicle circulation would be approximately 60 dB L_{eq} and 63 dB L_{max} at a distance of 50 feet (see **Table 11-12** below).

West Parking Lot Area

The Project traffic study predicts that the Project would generate 572 peak hour trips through the Nightwatch Project access. This analysis assumes that all of these vehicles could park within approximately 150 feet of the nearest property lines (see **Figure 3-3**, Preliminary Site Plan). Based on the formula described under the Methodology subsection above, the parking lot would result in a daytime peak hour L_{eq} of approximately 63 dB L_{eq} at a distance of 50 feet (see **Table 11-12** below).

North Parking Area

The Project traffic study predicts that the Project would generate 323 peak hour trips through the east Project access. This analysis assumes that all of these trips could park within approximately 280 feet of the nearest property lines. Based on the formula described under the Methodology subsection above, the parking lot would result in a daytime peak hour L_{eq} of approximately 61 dB L_{eq} at a distance of 50 feet (see **Table 11-12** below).

TABLE 11-12
PREDICTED TRANSPORTATION NOISE LEVELS AT NEAREST RESIDENTIAL PROPERTY LINES

Noise Source	Direction of Nearest Residential Property Line	Distance	Predicted Peak Hour Noise Levels1		Placer County Noise Standards	
			L_{eq}	L_{max}	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Truck Circulation	West (RA-B-X Zoning)	35’	56 dB	75 dB – Heavy Truck 72 dB – Med Truck	55 dB L_{eq}/ 70 dB L_{max}	45 dB L_{eq}/ 65 dB L_{max}
Loading Dock Operations		765’	36 dB	59 dB		
Parking Lot Ingress/Egress		35’	60 dB	63 dB		
Parking Lot Activity		150’	54 dB	61 dB		
Truck Circulation	North (Existing Single-Family Residential – City of Rocklin) [1]	150’	43 dB	65 dB		
Loading Dock Operations		285’	39 dB	62 dB		
Parking Lot Activity		280’	40 dB	47 dB		

[1] *Predicted noise levels at this location include a -6 dB offset to account for existing sound wall.*

Source: Brennan, 2007.

Based upon the **Table 11-12** data, truck circulation and parking lot ingress/egress along the western boundary of the Project site is predicted to generate noise levels to the surrounding single-family residences exceeding the Placer County Noise Ordinance criteria. Therefore, consideration of noise reduction measures is appropriate.

In order to achieve compliance with the County’s exterior noise level standards, a barrier noise reduction analysis was performed. **Table 11-13** shows the results of this analysis. **Appendix 11.0-1** provides the complete inputs and results for each barrier calculation.

TABLE 11-13
PREDICTED PROJECT-RELATED NOISE LEVELS WITH VARYING NOISE BARRIER HEIGHTS

Noise Source	Direction of Nearest Residential Property Line	Predicted Peak Hour Noise Levels		Placer County Noise Standards	
		Unmitigated Noise Level	Wall Height – Noise Level	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Truck Circulation	West (RA-B-X Zoning)	56 dB L_{eq}	6' – 51 dB L_{eq} 7' – 51 dB L_{eq}	55 dB L_{eq} / 75 dB L_{max}	45 dB L_{eq}/ 65 dB L_{max}
Truck Circulation		75 dB L_{max}	6' – 71 dB L_{max} 7' – 70 dB L_{max}		
Parking Lot Ingress/Egress		60 dB L_{eq}	6' – 55 dB 7' – 54 dB		

[1] *Barrier calculations are based upon existing site grading and should be re-evaluated when a site grading plan is available.*

Source: Brennan, 2007.

Based upon the data presented in **Table 11-13**, construction of a 7-foot-tall sound wall along the western property line of the proposed Project is predicted to achieve compliance with the Placer County Noise Ordinance 55 dB L_{eq} and 70 dB L_{max} daytime exterior noise level standards at the nearest residential property lines. However, peak hours of parking lot activity would still exceed the Placer County nighttime noise ordinance 45 dB L_{eq} noise level standard at the west property line. Therefore, this impact is considered **potentially significant**.

Mitigation Measure 11-1a Construct Sound Wall of 7 Feet Elevation Along the Western Property Line as Indicated on the Project's Improvement Plans

As part of Project construction, a sound wall shall be built along the western property line of the proposed Project as indicated on the Project's Improvement Plans. The exact height and location of the sound wall shall be calculated based on proposed site grading. Noise barriers shall be constructed of concrete masonry units, solid concrete panels, earthen berms, or any combination of these materials as approved by the Development Review Committee. Wood is not recommended due to eventual warping and degradation of acoustical performance. Other types of materials shall be reviewed by an acoustical consultant.

Mitigation Measure 11-1b Parking Lots Shall Be Closed at 10 p.m.

Except for special services (e.g., midnight Christmas services), special events shall be scheduled to end so that parking lots shall be empty no later than 10:00 p.m.

Mitigation Measure 11-1c Limit Hours of Truck Deliveries

Truck deliveries and loading/unloading activities shall be restricted to the hours of 6 a.m. to 8 p.m. Monday through Friday and 8 a.m. to 8 p.m. on Saturdays and Sundays.

Mitigation Measure 11-1d Develop and Implement a Construction Noise Abatement Program

Construction activities shall adhere to the following noise control measures as required by the Placer County General Plan Noise Element and Granite Bay Community Plan Noise Element:

- In coordination with the Placer County Department of Public Works, truck traffic shall be required to lower speed limits to 25 miles per hour on the Project site;
- Construction noise emanating from any construction activities is prohibited on Sundays and federal holidays, and shall only occur Monday through Friday 6 a.m. to 8 p.m. (during daylight savings time) and 7 a.m. to 8 p.m. (during standard time), and Saturdays 8 a.m. to 6 p.m.
- Implement mitigation measure **11-1c.**

SIGNIFICANCE AFTER MITIGATION

With implementation of mitigation measures **11-1a** through **11-1d**, the Project's noise would be reduced to levels that comply with the Placer County General Plan Noise Element and Noise Ordinance noise standards. Therefore, this impact would be reduced to **less than significant** after mitigation is implemented.

IMPACT 11.2: Traffic Noise Impacts to the Proposed Project

Operation of the proposed Project would result in an increase in ADT volumes on the local roadway network and, consequently, an increase in noise levels from traffic sources along affected segments.

To determine the future traffic noise levels on the Project site, Brennan utilized traffic data obtained from KD Anderson Transportation Engineers (2010 and 2011) and the FHWA Highway Noise Prediction Model (FHWA-RD-77-108). **Table 11-14** summarizes the predicted future traffic noise levels at the Project site, while **Table 11-15** summarizes the predicted traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area. **Appendix 11.0-1** provides the inputs to the FHWA Traffic Noise Prediction Model.

TABLE 11-14
PREDICTED FUTURE TRAFFIC NOISE LEVELS AT PROJECT SITE

Roadway	Location	Distance	Offset	Exterior Noise Level (L_{dn})	Exterior Traffic Noise Level (L_{eq})	Interior Traffic Noise Level (L_{eq})[1]
Sierra College Blvd.	Outdoor Plaza	330'	-3 dB	58 dB	NA	NA
	Resource Center	165'	0 dB	NA	65 dB	40 dB
	Main Building	330'	-3 dB	NA	61 dB	33 dB

[1] Assumes a 25 dB exterior-to-interior minimum noise level reduction (NLR) typically provided by modern construction practices.

Note: A complete listing of FHWA Model inputs and results is provided in Appendix 11.0-1.

Source: Brennan, 2007.

Based upon the results shown in **Table 11-14**, the predicted exterior traffic noise level at the proposed outdoor plaza area would comply with the County's 60 dB L_{dn} exterior noise level standard for house of worship uses. Additionally, interior noise levels are also predicted to comply with the County's 40 dB L_{eq} interior noise levels standard applied to interior spaces of house of worship uses.

TABLE 11-15
PREDICTED FUTURE TRAFFIC NOISE LEVELS AT NEAREST SENSITIVE RECEPTORS

Roadway	Segment	Predicted L_{dn} @ Closest Sensitive Receptors – First Floor Outdoor Activity Areas		
		Existing No Project	Existing + Project	Change[1]
Rocklin Road	West of Sierra College Blvd	57.7 dB	59.3 dB	1.6dB
Scarborough Drive	West of Sierra College Blvd	50.2 dB	51.5 dB	1.3dB
Secret Ravine Pkwy	West of Sierra College Blvd	54.5 dB	55.9 dB	1.4 dB
Olympus Drive	West of Sierra College Blvd	54.2 dB	54.5 dB	0.3 dB
Douglas Blvd	West of Sierra College Blvd	68.6 dB	68.8 dB	0.2 dB
Douglas Blvd	East of Sierra College Blvd	65.5 dB	65.6 dB	0.1 dB
Sierra College Blvd	West of Project site	59.2 dB	59.8 dB	0.5 dB

Roadway	Segment	Predicted L_{dn} @ Closest Sensitive Receptors – First Floor Outdoor Activity Areas		
		Existing No Project	Existing + Project	Change[1]
Sierra College Blvd.	East of Project site	62.3 dB	62.8 dB	0.5 dB

[1] ***Bold*** *indicates a significant increase in traffic noise levels based upon the FICON criteria shown in Table 11-11*

Source: Brennan, 2011a.

Based upon the data shown in **Table 11-15**, traffic noise level increases resulting from implementation of the proposed Project would range from 0.1 dB to 1.6 dB relative to existing conditions. The largest increase of 1.6 dB is predicted on Rocklin Road, west of Sierra College Boulevard. The increase from 57.7 dB to 59.3 dB on Rocklin Road would be less than the significance criteria (see **Table 11-11**) of 5 dB where noise levels are less than 60 dB. No increases would exceed the significance criteria.

Therefore, this impact is considered **less than significant** and no further mitigation is required**.**

IMPACT 11.3: Construction-Related Noise Impacts

Activities associated with construction will result in elevated noise levels within the immediate area. Because construction activities could result in periods of elevated noise levels at existing residences, this impact is considered **potentially significant**.

During the construction phases of the Project, noise from construction activities would add to the noise environment in the immediate Project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in **Table 11-15**, ranging from 85 to 90 dB at a distance of 50 feet. Construction activities would be temporary in nature and normally occur during normal daytime working hours.

Noise would also be generated during the construction phases by increased construction-related traffic on local roadways. The intensity of this traffic will depend on construction at any given time. A potentially significant Project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the Project site during construction. This noise increase would be of short duration and would likely occur primarily during daytime hours. This impact is considered **potentially significant**.

TABLE 11-15
CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dB at 50 feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Cunniff, 1977

Mitigation Measure 11-3 Limit Hours of Construction

Construction noise emanating from any construction activities is prohibited on Sundays and federal holidays, and shall only occur Monday through Friday 6 a.m. to 8 p.m. (during daylight savings time) and 7 a.m. to 8 p.m. (during standard time), and Saturdays 8 a.m. to 6 p.m.

With implementation of mitigation measure **11-3**, construction activities would be limited to the daytime hours and would be consistent with the Placer County General Plan and Granite Bay Community Plan Noise Elements. Truck speeds would be slowed on the Project site, and deliveries would be limited to the daytime hours. Implementation of the proposed mitigation measure would reduce construction-generated noise levels. With mitigation, construction noise would not be anticipated to result in substantial increases in sleep disruption and levels of annoyance to occupants of nearby residential dwellings.

SIGNIFICANCE AFTER MITIGATION

Since Project construction activities would be short term, and construction noise would not be anticipated to result in substantial increases in sleep disruption and levels of annoyance to occupants of nearby residential dwellings after mitigation, this impact would be considered **less than significant** after mitigation.

IMPACT 11.4: Impacts of On-Site Noise Sources on Nearby Residential Uses

The Project site is anticipated to accommodate the HVAC units on the building rooftops. Based on the HVAC noise modeling process discussed under the Methodology subsection above and shown in **Figure 11-4**, the Project's 45 dB HVAC noise contour is predicted to be confined to the Project site and no additional noise reduction measures would be required.

Since the Project's 45 dB HVAC noise contour is predicted to be confined to the Project site, this impact is considered to be **less than significant** and no additional noise reduction measures are likely to be required for the HVAC units.

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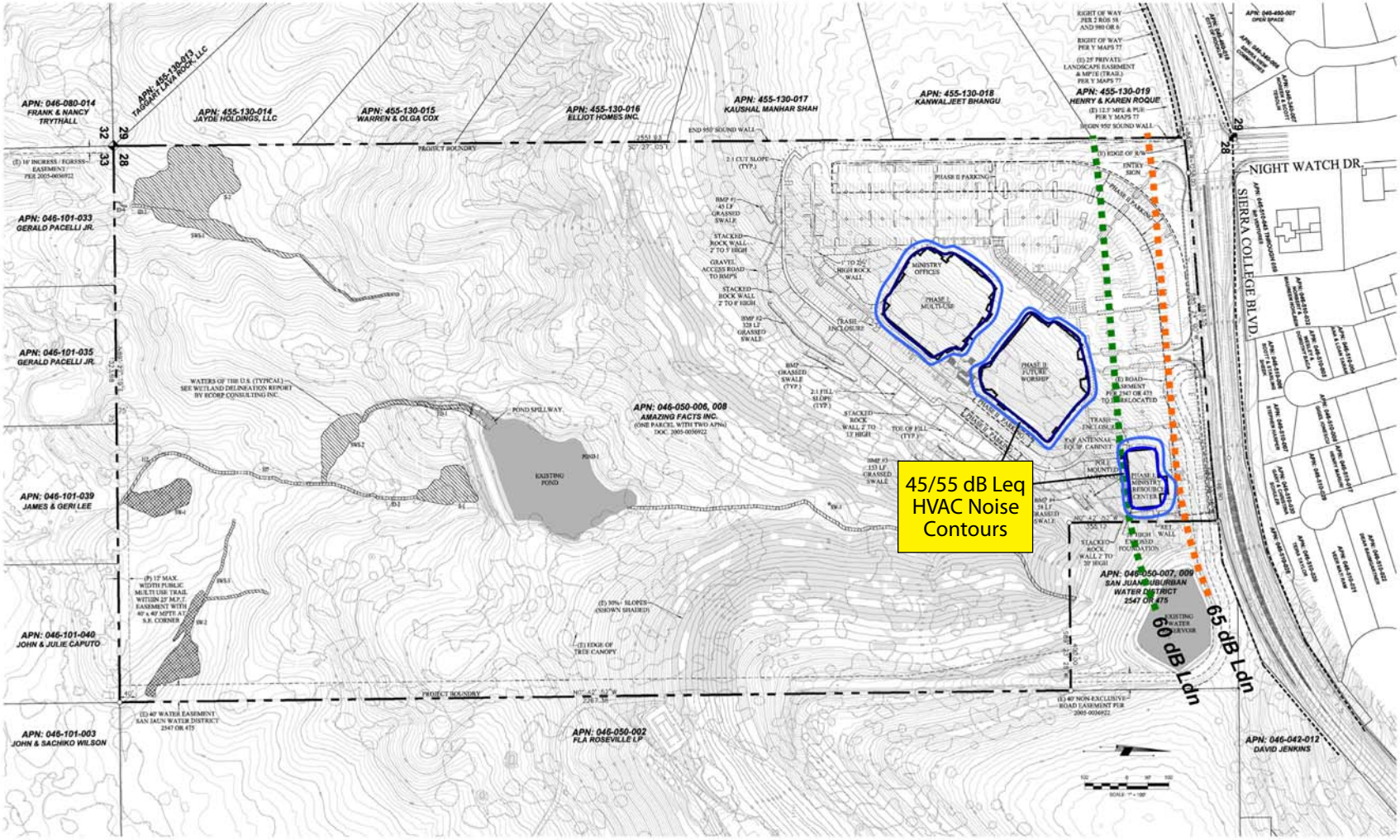

Source: King Engineering Inc.

Figure 11-4

Predicted Noise Contours

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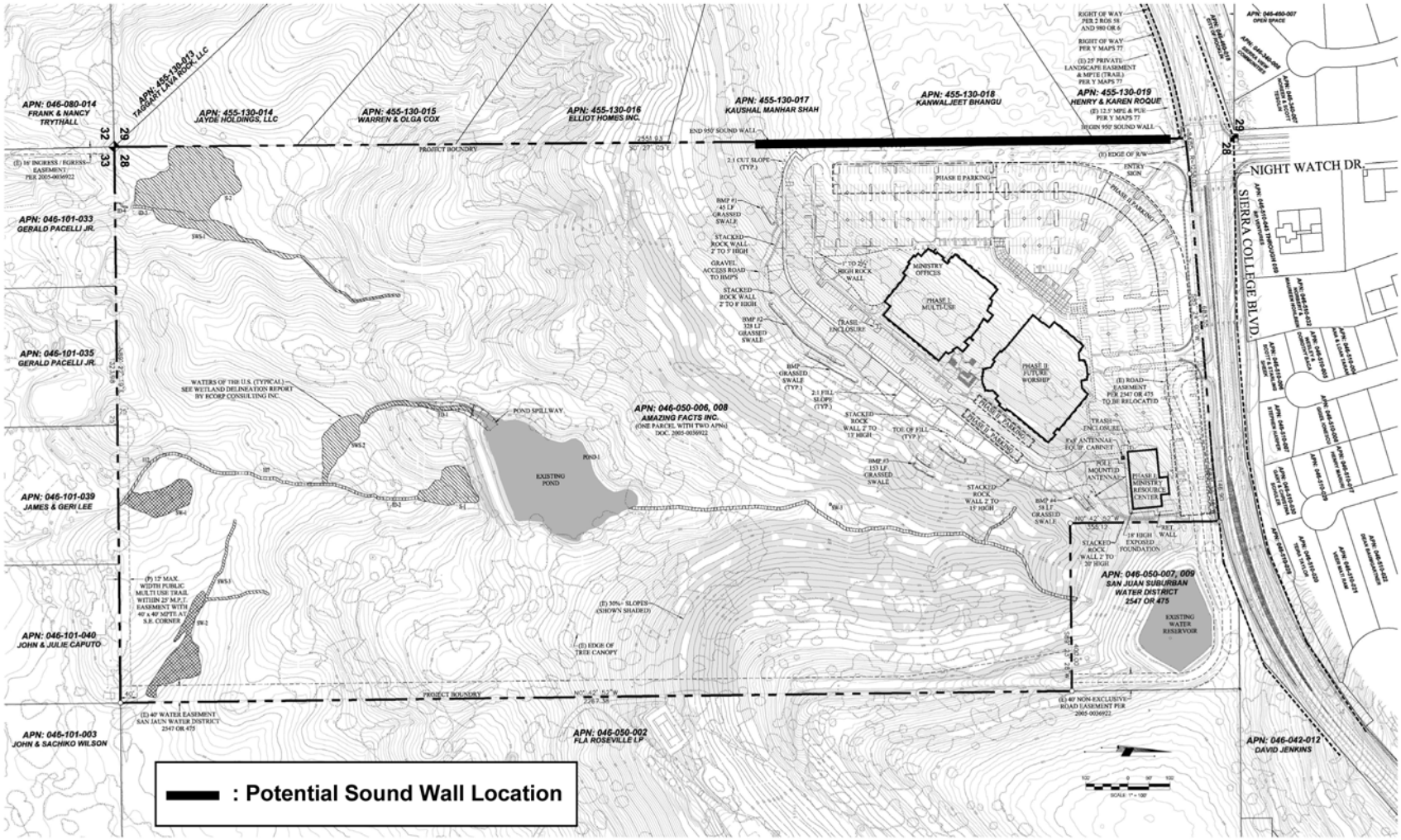

Source: King Engineering Inc.

Figure 11-5

Potential Sound Wall Location

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