

<b>4</b>	<b>NOISE</b>
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#### **4.1 INTRODUCTION**

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The Noise chapter of the EIR describes the existing noise environment in the project vicinity and identifies potential impacts and mitigation measures, if necessary, related to noise associated with the construction and operation of the proposed project. The method by which the potential impacts are analyzed is discussed, followed by the identification of potential impacts and recommended mitigation measures to reduce impacts as necessary. The Noise chapter is based on the Environmental Noise and Vibration Analysis prepared for the proposed project by Bollard Acoustical Consultants, Inc. (see Appendix D),<sup>1</sup> the Placer County General Plan,<sup>2</sup> the Placer County General Plan EIR,<sup>3</sup> the Granite Bay Community Plan,<sup>4</sup> and the Placer County Noise Ordinance.<sup>5</sup>

#### **4.2 EXISTING ENVIRONMENTAL SETTING**

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The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing noise sources and noise levels in the project vicinity, and vibration.

##### **Fundamentals of Noise and Vibration**

Noise, or sound, is typically described in terms of the decibel (dB) scale. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are compared to the reference pressure and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. A strong correlation exists between the way humans perceive sound and A-weighted sound levels. As such, the A-weighted sound level has become the standard tool of environmental noise assessment for community exposures. All sound levels expressed as dB in this chapter are A-weighted sound levels, unless noted otherwise.

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<sup>1</sup> Bollard Acoustical Consultants, Inc. *Environmental Noise and Vibration Analysis, Quarry Ridge Professional Office Park*. October 1, 2018.

<sup>2</sup> Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).

<sup>3</sup> Placer County. *Countywide General Plan EIR*. July 1994.

<sup>4</sup> Placer County. *Granite Bay Community Plan*. Adopted February 28, 2012.

<sup>5</sup> Placer County. *Placer County Noise Ordinance*. 2004.

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ), over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptors, day-night average level ( $L_{dn}$ ) and the community noise equivalent level (CNEL), and exhibits strong correlation with community response to noise for the average person. The median noise level descriptor, denoted  $L_{50}$ , represents the noise level which is exceeded 50 percent of the hour.

The  $L_{dn}$  is based upon the average noise level over a 24-hour day, with a +10 dB weighting applied to noise occurring during the nighttime hours of 10:00 PM to 7:00 AM. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because  $L_{dn}$  represents a 24-hour average, the metric tends to disguise short-term variations in the noise environment.

Table 4-1 provides a list of several examples of the noise levels associated with common activities. An increase of at least 3 dB of similar sources is usually required before most people perceive a change in noise levels in the community, and an increase of 5 dB is required before the change is clearly noticeable. A common practice is to assume that a minimally perceptible increase of 3 dB represents a significant increase in ambient noise levels. Such an approach is very conservative, however, when applied to noise conditions substantially below levels deemed acceptable in general plan noise elements or in noise ordinances.

<b>Table 4-1 Typical Sound Levels of Common Noise Sources</b>		
<b>Common Outdoor Activities</b>	<b>Noise Level (dBA)</b>	<b>Common Indoor Activities</b>
	--110--	Rock Band
Jet Fly-over at 300 meters (1,000 feet)	--100--	
Gas Lawn Mower at 1 meter (3 feet)	--90--	
Diesel Truck at 15 meters (50 feet), at 80 kilometers/hour (50 miles/hour)	--80--	Food Blender at 1 meter (3 feet) Garbage Disposal at 1 meter (3 feet)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 meters (100 feet)	--70--	Vacuum Cleaner at 3 meters (10 feet)
Commercial Area Heavy Traffic at 90 meters (300 feet)	--60--	Normal Speech at 1 meter (3 feet)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

*Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol, November 2009.*

**Existing Noise Sensitive Receptors**

Certain land uses are more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and shielding from noise sources) and the type of activities typically involved. Residences, schools, libraries, churches, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Accordingly, such land uses are referred to as sensitive receptors. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. Currently, the nearest noise-sensitive receptors in the immediate project vicinity are the single-family residences to the north of the site and the church to the east of the site.

**Existing Ambient Noise Levels**

The ambient noise environment in the immediate project vicinity is primarily defined by traffic on Douglas Boulevard and to a lesser extent, traffic on Berg Street. To quantify the existing ambient noise environment in the immediate project vicinity, long-term (24-hour) noise level measurements were conducted at the project site on March 16 and 17, 2016. The noise level measurements were performed with the use of precision integrating sound level meters meeting all pertinent specifications of the American National Standards Institute for Type 1 sound level (ANSI S1.4) meters. The noise measurement locations are shown in Figure 4-1 below. The noise level measurement survey results are summarized in Table 4-2.

<b>Table 4-2</b>							
<b>Summary of 24-Hour Ambient Noise Monitoring Results</b>							
<b>Location</b>	<b>Daytime (7 AM to 10 PM)</b>			<b>Nighttime (7 AM to 10 PM)</b>			<b>L<sub>dn</sub></b>
	<b>L<sub>eq</sub></b>	<b>L<sub>50</sub></b>	<b>L<sub>max</sub></b>	<b>L<sub>eq</sub></b>	<b>L<sub>50</sub></b>	<b>L<sub>max</sub></b>	
Site A	58	57	66-82	51	47	62-74	60
Site B	56	55	61-82	52	49	60-70	61

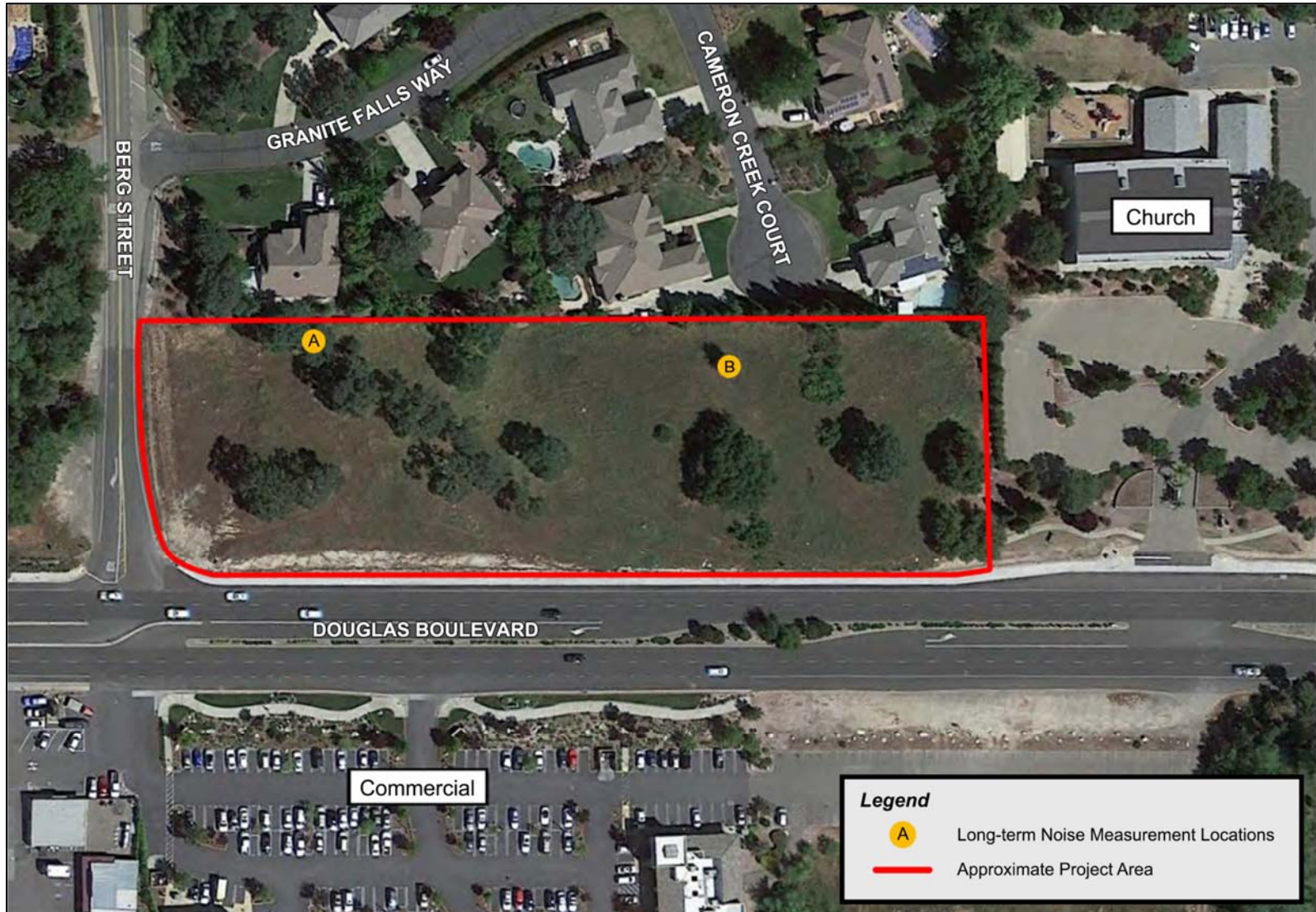
*Source: Bollard Acoustical Consultants, Inc., 2018.*

As shown in the table, existing noise levels at the 24-hour measurement sites were 60 and 61 dB L<sub>dn</sub>, respectively.

**Existing Roadway Noise Levels**

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used with existing traffic data obtained from the Traffic Impact Analysis prepared for the proposed project by KD Anderson & Associates, Inc. to model existing traffic noise levels on the local roadway network. Detailed model inputs are included in Appendix D. The results of the modeling are presented in Table 4-3 below. Traffic noise levels are predicted at 100 feet from the centerline along each project-area roadway segment.

**Figure 4-1**  
**Noise Measurement Locations**



Source: Bollard Acoustical Consultants, Inc., 2018.

**Table 4-3  
 Existing Traffic Noise Levels**

Roadway Name	Segment Description	Daily Volume	Noise Level (dB, L <sub>dn</sub> ) at 100 feet
Douglas Boulevard	Sierra College Boulevard to Cavitt Stallman Road	47,564	70
	Cavitt Stallman Road to Woodgrove Way	46,825	70
	Woodgrove Way to Seeno Avenue	45,232	69
	Seeno Avenue to Berg Street	44,795	69
	Berg Street to Barton Road	42,803	69
	Barton Road to Auburn Folsom Road	42,623	69
	Joe Rodgers Road to Auburn Folsom Road	40,789	69
Berg Street	Olive Ranch Road to Project Site	1,200	54
	Olive Ranch Road to Douglas Boulevard	1,200	54

*Source: Bollard Acoustical Consultants, Inc., 2018.*

Sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the noise level at 100 feet is considered to be representative of the majority of sensitive receptors located along roadways in the project vicinity.

### **Vibration**

While vibration is similar to noise, both involving a source, a transmission path, and a receiver, vibration differs from noise because noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

Operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. In addition, ground vibration can be a source of annoyance to individuals who live or work close to vibration-generating activities. Traffic rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

### **4.3 REGULATORY CONTEXT**

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. The following provides a general overview of the existing State and local regulations that are relevant to the proposed project. Federal plans, policies, regulations, or laws related to noise are not directly applicable to the proposed project.

## State Regulations

The following are the State environmental laws and policies relevant to noise.

### California State Building Codes

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations, establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L<sub>dn</sub> or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L<sub>dn</sub> or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

## Local Regulations

The following are the local environmental goals and policies relevant to noise.

### Placer County General Plan

The relevant goals and policies from the Placer County General Plan related to noise are presented below.

- Goal 9.A To protect County residents from the harmful and annoying effects of exposure to excessive noise.
- 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 (see Table 4-4) 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 (see Table 4-4).
- Policy 9.A.2 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 9-1 (see Table 4-4) as measured immediately within the property line of lands designated for noise-sensitive uses: provided, however, the noise

**Table 4-4**  
**Allowable L<sub>dn</sub> Noise Levels within Specified Zone Districts**  
**Applicable to New Projects Affected by or Including Non-Transportation Noise Sources<sup>1</sup>**

Zone District of Receptor	Property Line of Receiving Use (L <sub>dn</sub> , dB)	Interior Spaces <sup>2</sup>
Residential Adjacent to Industrial <sup>3</sup>	60	45
Other Residential <sup>4</sup>	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
Shopping Center	70	45
Industrial	---	45
Industrial Park	75	45
Industrial Reserve	---	---
Airport	---	45
Unclassified	---	---
Farm	--- <sup>6</sup>	---
Agriculture Exclusive	--- <sup>6</sup>	---
Forestry	---	---
Timberland Preserve	---	---
Recreation & Forestry	70	---
Open Space	---	---
Mineral Reserve	---	---

Notes:

- Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
- Where existing transportation noise levels exceed the standards of this table, the allowable L<sub>dn</sub> shall be raised to the same level as that of the ambient level.
- If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in Table 9-1 and Table 9-3 (see Table 4-4 and Table 4-5). Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in Tables 9-1 and 9-3 (see Table 4-4 and Table 4-5), said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.
- Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art<sup>5</sup> at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increased emissions above those normally allowable should be limited to a one-time 5 dB increase at the discretion of the decision-making body.
- The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
- Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

(Continued on next page)

<sup>1</sup> Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of the County, and are irreplaceable. Industries which provide primary wage-earner jobs in the County, if forced to relocate, will likely be forced to leave the County. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them by their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.

Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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 under "NOTES," above, in these standards.

<sup>5</sup> State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate offsite noise impacts, and similar methodology.

<sup>6</sup> 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 is a concern, an  $L_{dn}$  of 70 dBA will be considered acceptable outdoor exposure at a residence.

*Source: Placer County General Plan, 2013.*



created by occasional events occurring within a stadium on land zoned for university purposes may temporarily exceed these standards as provided in an approved Specific Plan.

**Policy 9.A.4** Impulsive noise produced by blasting should not be subject to the criteria listed in Table 9-1 (see Table 4-4). 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.

**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 9-3 (see Table 4-5).

<b>Table 4-5 Maximum Allowable Noise Exposure Transportation Noise Sources</b>			
<b>Noise Sensitive Land Uses</b>	<b>Outdoor Activity Area<sup>1</sup></b>	<b>Interior Spaces</b>	
	<b>L<sub>dn</sub>, dB</b>	<b>L<sub>dn</sub>/CNEL, dB</b>	<b>L<sub>eq</sub>, dB<sup>2</sup></b>
Residential	60 <sup>3</sup>	45	--
Transient Lodging <sup>4</sup>	60 <sup>3</sup>	45	--
Hospitals, Nursing Homes	60 <sup>3</sup>	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60 <sup>3</sup>	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

<sup>1</sup> 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.

<sup>2</sup> As determined for a typical worst-case hour during periods of use.

<sup>3</sup> Where it is not possible to reduce noise in outdoor activity areas to 60 dB L<sub>dn</sub>/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L<sub>dn</sub>/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 General Plan, 2013.*

**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 (see Table 4-5), 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 (see Table 4-5).

- Policy 9.A.9 Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 9-3 (see Table 4-5) or the performance standards in Table 9-3 (see Table 4-5) at outdoor activity areas or interior spaces of existing noise sensitive land uses.
- Policy 9.A.11 The County shall require 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.
- Policy 9.A.12 Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3 (see Table 4-4 and Table 4-5), the emphasis of such measure 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.
- Policy 9.B.1 The County shall require that new noise-sensitive land uses established next to existing industrial areas be responsible for self-mitigating noise impacts from industrial activities.

### Granite Bay Community Plan

The relevant goals and policies from the Granite Bay Community Plan related to noise are presented below.

- Goal 8.1.1.1 Provide for the health, safety and welfare of the Granite Bay area residents by providing a livable environment free from excessive noise.
- Policy 8.1.1.1 Encourage the use of greenbelts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.
- Policy 8.1.1.2 Ensure compliance with noise standards adopted in the General Plan Noise Element.
- Policy 8.1.1.3 Avoid the interface of noise-producing and noise-sensitive land uses.
- Policy 8.1.1.4 Noise emanating from construction activity that requires a grading or building permit is prohibited on Sundays and federal holidays, and shall only occur:
- Monday through Friday, 6 AM to 8 PM (during daylight savings)
  - Monday through Friday, 7 AM to 8 PM (during standard time)
  - Saturdays, 8 AM to 6 PM
- Policy 8.1.1.5 Where proposed non-residential land uses are likely to produce noise levels exceeding County performance standards of Table 8.1.2 (see Table 4-4) at existing or planned noise-sensitive uses, an acoustical analysis shall be required 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 contained in the General Plan.
- Policy 8.1.1.7 Where noise mitigation measures are required to achieve the standards of Tables 8.1.2 and 8.1.3 (see Table 4-4 and Table 4-5), 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.
- Policy 8.1.1.8 The County shall employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the project review process and,

as may be determined necessary, through the building permit process.

Policy 8.1.1.9 Noise created by new proposed non-transportation noise sources shall be mitigated as not to exceed the noise level standards of Table 8.1.3 (see Table 4-5) as measured immediately within the property line of lands designated for noise-sensitive uses such as residential.

Placer County Noise Ordinance

Section 9.36.060 of the Placer County Code establishes non-transportation noise level standards for noise-sensitive receptors. The purpose of the Noise Ordinance is to implement the noise level standards identified in the Placer County General Plan. The specific language of Section 9.36.060 is provided below:

- A. It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person that:
  - 1. Causes the exterior sound levels when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five (5) dBA; or
  - 2. Exceeds the sound level standards as set forth in Table 1 (see Table 4-6), whichever is the greater.

<b>Table 4-6</b>		
<b>Noise Level Standards for Non-Transportation Noise Sources</b>		
<b>Sound Level Descriptor</b>	<b>Daytime (7 AM to 10 PM)</b>	<b>Nighttime (10 PM to 7 AM)</b>
Hourly $L_{eq}$ , dB	55	45
$L_{max}$ , dB	70	65

*Source: Placer County Noise Ordinance.*

- B. Each of the sound level standards specified in Table 1 (see Table 4-6) shall be reduced by five (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 five (5) dB.
- C. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table 1 (see Table 4-6).

Per Section 9.36.030 of the Placer County Code (Exemptions), sound or noise emanating from construction activities between the hours of 6:00 AM and 8:00 PM Monday through Friday, and

between the hours of 8:00 AM and 8:00 PM Saturday and Sunday, is exempt from Section 9.36.060 of the Placer County Code Noise Ordinance, provided that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order. However, Planning Commission revisions to the Placer County Board of Supervisors Minute Order 90-08 indicate the following:

Construction noise emanating from any construction activities for which a Grading or Building Permit is required is prohibited on Sundays and Federal Holidays, and shall only occur: a) Monday through Friday, 6:00 a.m. to 8:00 p.m. (during daylight savings) b) Monday through Friday, 7:00 a.m. to 8:00 p.m. (during standard time) c) Saturdays, 8:00 a.m. to 6:00 p.m.

In addition, temporary signs shall be located throughout the project, as determined by the Development Review Committee, at key intersections depicting the above construction hour limitations.

#### **4.4 IMPACTS AND MITIGATION MEASURES**

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The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to noise. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

##### **Standards of Significance**

According to CEQA Guidelines and the County's Initial Study Checklist, a significant impact would occur related to noise and vibration if the proposed project would result in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

## Summary of Placer County Noise Standards

Applicable Placer County noise level standards from the Placer County General Plan and the Placer County Noise Ordinance are summarized below.

### *Transportation Noise*

The Placer County General Plan Noise Element applies 60 dB  $L_{dn}$ /CNEL exterior and 45 dB  $L_{dn}$ /CNEL interior noise level standards at the property lines of residential uses affected by transportation noise sources. The County may conditionally allow exterior noise levels between 60 and 65 dB  $L_{dn}$  for residential uses, provided that practical noise reduction measures have been implemented and interior noise levels remain in compliance with the 45 dB  $L_{dn}$  interior standard.

### *Non-Transportation Noise*

For non-transportation noise sources, the County's General Plan Noise Element applies a 50 dB  $L_{dn}$  noise level standard at the property lines of residential uses such as those located north of the project site. In addition, as shown in Table 4-6, the Placer County Noise Ordinance includes daytime and nighttime standards for non-transportation noise sources which are generally more restrictive than those contained in the Placer County General Plan. Because the project would not include nighttime operations, non-transportation noise levels at the property lines of the nearest sensitive receptors were compared to the County's daytime noise level standard of 55 dB  $L_{eq}$ .

### *Substantial Increase Criteria*

Generally, a project may have a significant effect on the environment if the project would substantially increase the ambient noise levels for adjoining areas or expose people to measurably severe noise levels. In practice, a noise impact may be considered significant if the project would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in transportation noise associated with the proposed project is a factor in determining significance.

Placer County, like many jurisdictions, does not have an adopted policy regarding significant increases in ambient noise. However, per Bollard Acoustical Consultants, Inc., a 3 dB  $L_{dn}$ /CNEL or greater increase in noise levels due to a project is typically considered significant where exterior noise levels would exceed 60 dB  $L_{dn}$  (for residential uses). Where pre-project ambient conditions are at or below 60 dB  $L_{dn}$ /CNEL, a 5 dB increase is applied as the standard of significance. Such noise level increase standards are consistent with the recommendations made by the Federal Interagency Committee on Noise (FICON).

It should be noted that audibility is not a test of significance according to CEQA. If such were the case, any project that added any audible amount of noise to the environment would be considered unacceptable according to CEQA. Because every physical process creates noise, whether by the addition of a single vehicle on a roadway or a tractor in an agricultural field, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

*Blasting Noise*

Per Policy 9.A.4 of the Placer County General Plan, single-event, impulsive noise levels produced by gunshots or blasting must not exceed a peak linear overpressure of 122 dB, or a C-weighted SEL of 98 dBC. In addition, the cumulative noise level from multiple impulsive sounds such as gunshots and blasting must not exceed 60 dB LCdn or CNELC on any given day. Such standards are applied to the property lines of receiving land uses.

*Vibration*

Placer County does not have specific policies or standards pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 4-7 provides a summary of Caltrans standards for transient and continuous or frequent vibration in terms of peak particle velocity in inches per second (in/sec PPV).

<b>Table 4-7 Vibration Criteria for Structures</b>		
<b>Structure and Condition</b>	<b>Maximum PPV (in/sec)</b>	
	<b>Transient Sources</b>	<b>Continuous or Frequent Intermittent Sources</b>
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial building	2.00	0.50
Notes: <sup>1</sup> Transient sources create a single isolated vibration event. <sup>2</sup> Continuous/frequent intermittent sources include repetitive single events.		
<i>Source: Bollard Acoustical Consultants, Inc., 2018.</i>		

Caltrans research illustrates that thresholds of perception vary for different types of vibration sources. Per Section XI(b) of Appendix G of the CEQA Guidelines, a project would result in a significant impact if the project would result in exposure of persons to, or generation of, excessive groundborne vibration levels or groundborne noise levels. The CEQA Guidelines specifically mention “excessive” vibration, rather than just perceptible vibration. Because the general range at which vibration becomes distinctly to strongly perceptible ranges from 0.1 to 0.50 in/sec PPV, project-generated vibration levels exceeding 0.1 in/sec PPV at the nearest residences are considered significant for the purpose of this analysis.

### Issues Not Discussed Further

Given that the proposed project site is not located within an airport land use plan or within two miles of a public or private airstrip, the Initial Study prepared for the proposed project (see Appendix C) determined that the project would result in no impact related to the following:

- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; and
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

Accordingly, impacts related to the above are not further analyzed or discussed in this EIR.

### **Method of Analysis**

Below are descriptions of the methodologies used to measure ambient noise and estimate future traffic noise, parking lot noise, heating, ventilating, and air conditioning (HVAC) equipment noise, construction noise, and vibration. Further modeling details and calculations are provided in Appendix D to this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

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

To predict existing and future noise levels due to traffic, Bollard Acoustical Consultants, Inc. used the FHWA RD-77-108 Model. The model is based upon 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. The FHWA Model was developed to predict hourly  $L_{eq}$  values for free-flowing traffic conditions and is considered to be accurate within 1.5 dB in most situations. To predict  $L_{dn}/CNEL$  values, determination of the day/night distribution of traffic and adjustment of the traffic volume input data is necessary to yield an equivalent hourly traffic volume. Direct inputs to the model included traffic volumes provided by KD Anderson & Associates, Inc. Volumes were provided for Existing, Existing Plus Project, Existing Plus Approved Projects (EPAP), EPAP Plus Project, Cumulative No Project, and Cumulative Plus Project Conditions.

As a means of determining potential noise exposure due to project parking lot activities, Bollard Acoustical Consultants, Inc. relied on specific parking lot noise level measurements conducted at other existing parking areas that were similar to the proposed parking lot design. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of the measurements



revealed that individual parking lot movements generated mean noise levels of 70 dB sound exposure level (SEL) and 65 dB  $L_{max}$  at a reference distance of 50 feet.

Parking for the proposed development would be provided by a surface parking lot that would span the northern portion of the proposed project site, and extend southward between Buildings 3 and 4. Based on preliminary site plans, the proposed on-site parking lot would accommodate a total of 92 vehicles. In order to provide a conservative assessment of parking lot noise generation relative to Placer County's  $L_{eq}$  noise level standard, all 92 parking stalls were assumed to be used within a worst-case hour, rather than spread out over a longer time period as would likely occur. In order to calculate parking area noise exposure relative to Placer County's  $L_{dn}$  noise level standard, worst-case hour parking movements were assumed to occur during daytime hours (7:00 AM to 10:00 PM). Parking lot noise exposure was determined using the following equation:

$$\text{Peak Hour } L_{eq} = 70 + 10 \cdot \log(N) - 35.6$$

In the formula above, 70 represents the SEL for a single automobile operation, N is the number of parking lot operations in a peak hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. Using Bollard Acoustical Consultants, Inc. parking lot noise measurement data, the equation provided above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), data were projected from the effective noise center of the nearest proposed parking areas to the adjacent property lines to the north and east.

With regard to HVAC noise, Bollard Acoustical Consultants, Inc. assumed that HVAC requirements for the proposed office complex would be met using either packaged roof-mounted systems or ground-level condensers. Per the Environmental Noise Analysis, a 12.5-ton packaged unit can be expected to generate a sound power level of 85 dBA. Noise levels associated with on-site HVAC equipment were estimated at the property line of the nearest sensitive receptors to the north and east of the site assuming standard spherical spreading loss.

Construction noise and vibration was analyzed using data compiled for various pieces of construction equipment at a representative distance of 50 feet.

### **Project-Specific Impacts and Mitigation Measures**

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

- 4-1 Exposure of persons to or generation of traffic noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies, or result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Based on the analysis below, the impact is *less than significant*.**

The primary source of noise associated with the proposed office development would be traffic noise associated with traffic on local roadways. As discussed above, CEQA does

not require an analysis of the environment’s impact on the project; however, impacts to future tenants at the proposed project due to traffic noise along local roadways is evaluated for the purposes of considering the project’s consistency with policies in the County’s General Plan. Traffic noise levels associated with Existing Plus Project and EPAP Plus Project Conditions are described in the following sections.

Existing Plus Project

Table 4-8 summarizes the Existing and predicted Existing Plus Project traffic noise levels at a distance of 100 feet from the centerlines of roadway segments in the project area. As shown in the table, for all Douglas Boulevard roadway segments, the project’s contribution to traffic noise increases would be below the 3 dB L<sub>dn</sub>/CNEL substantial increase threshold for areas where exterior noise levels currently exceed 60 dB L<sub>dn</sub>. For both roadway segments on Berg Street, the project’s contribution to traffic noise increases would be below the 5 dB L<sub>dn</sub>/CNEL substantial increase threshold for areas where exterior noise levels are at or below 60 dB L<sub>dn</sub>. Furthermore, the project would not cause new exceedances of the County’s 60 dB L<sub>dn</sub> threshold at any of the study roadway segments. Therefore, traffic generated by the proposed project would not result in a significant increase in traffic noise levels under the Existing Plus Project Condition.

<b>Table 4-8 Existing and Existing Plus Project Traffic Noise Levels</b>				
<b>Roadway Name</b>	<b>Segment Description</b>	<b>Noise Level at 100 feet from Centerline (dB, L<sub>dn</sub>)</b>		
		<b>Existing</b>	<b>Existing Plus Project</b>	<b>Change</b>
Douglas Boulevard	Sierra College Boulevard to Cavitt Stallman Road	69.7	69.7	0.0
	Cavitt Stallman Road to Woodgrove Way	69.6	69.6	0.0
	Woodgrove Way to Seeno Avenue	69.4	69.5	0.1
	Seeno Avenue to Berg Street	69.4	69.4	0.0
	Berg Street to Barton Road	69.2	69.2	0.0
	Barton Road to Auburn Folsom Road	69.2	69.2	0.0
	Joe Rodgers Road to Auburn Folsom Road	69.0	69.0	0.0
Berg Street	Olive Ranch Road to Project Site	53.7	53.8	0.1
	Olive Ranch Road to Douglas Boulevard	53.7	55.3	1.6
Note: Traffic noise levels do not account for shielding from existing noise barriers or intervening structures.				
Source: Bollard Acoustical Consultants, Inc., 2018.				

EPAP Plus Project

Table 4-9 summarizes the EPAP and EPAP Plus Project traffic noise levels at a distance of 100 feet from the centerlines of roadway segments in the project area. As shown in the table, for all Douglas Boulevard roadway segments, the project’s contribution to traffic

noise increases would be below the 3 dB  $L_{dn}$ /CNEL substantial increase threshold for areas where exterior noise levels currently exceed 60 dB  $L_{dn}$ . For both roadway segments on Berg Street, the project’s contribution to traffic noise increases would be below the 5 dB  $L_{dn}$ /CNEL substantial increase threshold for areas where exterior noise levels are at or below 60 dB  $L_{dn}$ . Furthermore, the project would not cause new exceedances of the County’s 60 dB  $L_{dn}$  threshold at any of the study roadway segments. Therefore, traffic generated by the proposed project would not result in a significant increase in traffic noise levels under the EPAP Plus Project Condition.

Interior Noise Levels

The Placer County General Plan applies a transportation-related interior noise level standard of 45 dB  $L_{eq}$  within office building uses. The interior noise level standard is applied to a worst-case hour when office buildings could potentially be in use. For the proposed project, the highest hourly traffic noise levels on the project site would occur during peak hour traffic conditions. In order to determine the worst-case future traffic noise at the proposed project site, Bollard Acoustical Consultants, Inc. relied on the noise level increases modeled for the Cumulative Plus Project Condition. Because the PM peak hour traffic volumes (3,785) were slightly greater than AM peak hour volumes (3,460), the PM peak hour traffic volumes were used in order to provide a worst-case analysis.

<b>Table 4-9 EPAP and EPAP Plus Project Traffic Noise Levels</b>				
<b>Roadway Name</b>	<b>Segment Description</b>	<b>Noise Level at 100 feet from Centerline (dB, <math>L_{dn}</math>)</b>		
		<b>EPAP</b>	<b>EPAP Plus Project</b>	<b>Change</b>
Douglas Boulevard	Sierra College Boulevard to Cavitt Stallman Road	70.0	70.0	0.0
	Cavitt Stallman Road to Woodgrove Way	69.9	69.9	0.0
	Woodgrove Way to Seeno Avenue	69.8	69.8	0.0
	Seeno Avenue to Berg Street	69.7	69.7	0.0
	Berg Street to Barton Road	69.5	69.5	0.0
	Barton Road to Auburn Folsom Road	69.4	69.4	0.0
	Joe Rodgers Road to Auburn Folsom Road	69.2	69.2	0.0
Berg Street	Olive Ranch Road to Project Site	54.5	54.6	0.1
	Olive Ranch Road to Douglas Boulevard	55.9	56.9	1.0
Note: Traffic noise levels do not account for shielding from existing noise barriers or intervening structures.				
Source: Bollard Acoustical Consultants, Inc., 2018.				

The proposed office buildings maintain a setback of approximately 90 feet from the centerline of Douglas Boulevard. According to the Environmental Noise and Vibration Analysis, the FHWA Model predicts a roadway noise level of 69 dB  $L_{eq}$  at a distance of 90 feet from the centerline of Douglas Boulevard. Typical construction (stucco or wood siding, STC-27 windows, exterior wall insulation, composition plywood roof) results in a

transmission loss value of approximately 25 to 30 dB. Therefore, assuming a transmission loss value of 25 dB, predicted interior noise levels within the proposed office buildings would be approximately 44 dB  $L_{eq}$ , which would comply the Placer County interior noise level standard of 45 dB  $L_{eq}$ . Thus, impacts related to interior noise levels at the proposed office buildings would be less than significant.

### Conclusion

Based on the above, traffic noise associated with the proposed project would not result in the exposure of persons to or generation of traffic noise levels in excess of standards established in the County's General Plan, the Granite Bay Community Plan, the County's Noise Ordinance, or applicable standards of other agencies. In addition, because traffic noise level increases occurring under the Existing Plus Project and EPAP Plus Project conditions would be below the applicable substantial increase thresholds, the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Therefore, a *less-than-significant* impact would occur.

### Mitigation Measure(s)

*None required.*

## **4-2 Exposure of persons to or generation of non-transportation noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.**

The primary non-transportation noise sources associated with operation of the proposed project would include HVAC equipment and parking lot noise.

### HVAC Equipment

HVAC requirements for the proposed office complex would be met using either packaged roof-mounted systems or ground-level condensers. At this time, the specific type of HVAC systems to be used for the project are not yet known.

#### *Rooftop-Mounted Equipment*

Per the Environmental Noise Analysis, a 12.5-ton packaged HVAC unit is expected to generate a sound power level of 85 dB. Assuming standard spherical spreading loss (-6 dB per doubling of distance), HVAC noise exposure was projected from an estimated equipment location (15 feet into the proposed buildings) to the property lines of the nearest sensitive receptors to the north and east of the project site. The results of such projections are presented in Table 4-10. As shown in the table, rooftop-mounted HVAC equipment noise exposure would be below the County's applicable 55  $L_{eq}$  and 50  $L_{dn}$  thresholds. It should be noted that the predicted noise levels shown in the table account for shielding provided by building parapets. If building parapets are not included in the

final project design, HVAC noise levels at the existing sensitive receptors in the project area would be greater than the levels presented in Table 4-10. Thus, in the absence of building parapets, noise exposure at existing sensitive receptors in the project area due to rooftop-mounted HVAC equipment may exceed the County’s applicable thresholds.

<b>Table 4-10                      Predicted Rooftop HVAC Equipment Noise Exposure at Nearest Sensitive                      Receptor Property Lines</b>			
<b>Description</b>	<b>Distance from HVAC                      Equipment to Property                      Line (feet)<sup>1</sup></b>	<b>Predicted Noise Levels (dBA)<sup>2</sup></b>	
		<b>L<sub>eq</sub></b>	<b>L<sub>dn</sub></b>
Building 1 to APN 048-640-012	95	40	38
Building 2 to APN 048-640-011	105	40	38
Building 3 to APN 048-640-009	105	40	38
Building 4 to APN 048-084-031	30	50	48
<b>Placer County Stationary Noise Source Standard:</b>		<b>55</b>	<b>50</b>
Notes:			
<sup>1</sup> Distances measured from a point 15 feet into proposed buildings to nearest property lines. <sup>2</sup> Predicted levels take into consideration the screening provided by building parapets and have been conservatively adjusted by -5 dB.			
Source: Bollard Acoustical Consultants, Inc., 2018.			

### *Ground-Mounted Equipment*

The proposed project would include the construction of a six-foot-tall masonry wall along the northern project site boundary. Accounting for the shielding provided by the proposed masonry wall, ground-mounted condenser HVAC units for Buildings 1, 2, and 3 would comply with the applicable Placer County noise level standards at the nearest residential property lines to the north provided that the units include a minimum 100-foot setback from the north site boundary. However, due to the proximity of Building 4 to the existing church to the east of the site, as well as the lack of a noise barrier at the eastern site boundary, ground-mounted condenser HVAC units to the east of Building 4 could exceed the 55 L<sub>eq</sub> and 50 L<sub>dn</sub> thresholds specified in the County’s Noise Ordinance for non-transportation noise sources.

### Parking Lot Noise

Parking for the proposed development would be provided by a surface parking lot that would span the northern portion of the proposed project site, and extend southward between Buildings 3 and 4. The parking lot would include a total of 92 parking spaces, including six ADA-compliant spaces, and would incorporate an EV charging station.

The predicted parking lot noise levels were estimated at the adjacent residential property lines to the north of the project site (APNs 048-640-012, 011, and 008), as well as the property line of the church located east of the site (APN 048-084-031) (see Table 4-11). Such estimates account for screening that would be provided by the proposed six-foot tall

masonry wall at the northern site boundary. As shown in the table, predicted parking area noise exposure would not conflict with the applicable Placer County Noise Ordinance noise level standards for non-transportation noise sources. As such, operation of the proposed parking lot would not conflict with the County’s Noise Ordinance.

Conclusion

Based on the above, noise associated with rooftop-mounted HVAC equipment and parking lot operations would comply with the County’s exterior noise level standards for non-transportation sources, provided that building parapets are included in the project design. However, in the event that ground-mounted HVAC equipment is included in the final project design, ground-mounted HVAC units to the east of Building 4 could exceed the 55  $L_{eq}$  and 50  $L_{dn}$  thresholds specified in the County’s Noise Ordinance for non-transportation noise sources. In addition, ground-mounted HVAC units for Buildings 1, 2, and 3 would require a 100-foot setback from the property lines to the north of the site. Therefore, the proposed project could result in a *significant* impact related to exposure of persons to or generation of non-transportation noise levels in excess of standards established in the Placer County General Plan, the Granite Bay Community Plan, the Placer County Noise Ordinance, or applicable standards of other agencies.

<b>Table 4-11</b>					
<b>Predicted Parking Lot Noise Exposure at Nearest Sensitive Receptor Property Lines</b>					
Sensitive Receptor Property APN <sup>1</sup>	# of Nearest Parking Stalls	Distance to Nearest Parking Area Focal Point (feet) <sup>2</sup>	Predicted Noise Level (Hourly $L_{eq}$ dB) <sup>3</sup>		
			$L_{eq}$	$L_{max}$	$L_{dn}$
048-640-012	11	40	42	62	40
048-640-011	23	40	45	62	43
048-640-009	26	40	46	62	44
048-640-008	28	40	46	62	44
048-084-031	28	80	45	61	43
<b>Placer County Stationary Noise Source Standard:</b>			<b>55</b>	<b>70</b>	<b>50</b>
Notes:					
<sup>1</sup> Nearest property lines of sensitive receptors are shown on Figure 4-1.					
<sup>2</sup> Distances measured from parking area focal points to the nearest property lines to the north and east.					
<sup>3</sup> Predicted levels based on reference noise level of 70 dB SEL and 65 dB $L_{max}$ at a distance of 50 feet and a sound attenuation rate of 6 dB per doubling of distance. Predicted levels at the residential properties north of the site (APNs 048-640-012, -011, -009, and -008) take into consideration the screening provided by the proposed six-foot tall masonry wall at the northern site boundary and have been conservatively adjusted by -5 dB.					
<i>Source: Bollard Acoustical Consultants, Inc., 2018.</i>					

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4-2(a) *Prior to issuance of building permits for the proposed project, if rooftop condenser HVAC units are proposed on-site, building plans shall show that rooftop mechanical equipment will be shielded to the north by parapets.*

4-2(b) *Prior to issuance of building permits for the proposed project, if ground-mounted HVAC equipment is proposed on-site, the building plans shall demonstrate that all ground-mounted HVAC equipment will be located 100 feet or further from the northern site boundary. In addition, the building plans shall show that ground-mounted HVAC equipment associated with Building 4 will be located on the west side of the building, breaking the line of sight relative to the eastern project site boundary. In addition, ground-mounted HVAC equipment associated with each of the four proposed buildings shall be located 100 feet or greater from the nearest property lines to the north of the project site.*

**4-3 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.**

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as site preparation, grading, and utilities placement occur. Table 4-12 below shows the typical vibration levels produced by construction equipment at a distance of 25 feet. Because vibration levels generated by the type of construction equipment that would be required for the proposed project dissipate very rapidly with distance, and because the proposed construction activities would occur at a distance of approximately 30 feet from the nearest residential structure to the north of the site, vibration levels at the nearest residences would be below 0.1 in/sec PPV during project construction due to typical construction equipment.

The use of typical construction equipment, such as the pieces of equipment presented in Table 4-12, is anticipated to be sufficient for the majority of project-related construction activity. As noted in the *Foundation Investigation: Quarry Ridge Professional Offices*, prepared by Raney Geotechnical, Inc. for the proposed project, the proposed project site is underlain by granitic rock that has experienced varying degrees of weathering, and such weathered rock material can likely be removed through the use of typical construction equipment. However, if areas of the site have experienced limited rock weathering, limited blasting may be required to achieve the necessary excavation depths.<sup>6</sup>

Blasting in hard rock areas could generate vibration or groundborne noise levels at nearby sensitive receptors. If blasting is necessary, blasting activities would be conducted at specific locations within the project site to break up the rock for hauling and processing, and would typically occur once per day. Typically, blasting is controlled

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<sup>6</sup> Raney Geotechnical, Inc. *Foundation Investigation Quarry Ridge Professional Offices*. March 15, 2016.

using micro delays between holes and by limiting charge size in order to minimize dispersal of the rock fragments, ensure worker safety, and prevent vibration damage to nearby structures. Nonetheless, given the proximity of the project site to the nearest existing receptors, a significant impact could occur related to blasting vibration.

Therefore, while groundborne construction vibration related to typical construction equipment would not cause damage to existing buildings or cause annoyance to sensitive receptors, the potential exists that blasting may be required during project construction. As such, project-related blasting used during implementation of the proposed project could expose persons to or generate excessive groundborne vibration or groundborne noise levels, and a *significant* impact could occur.

<b>Table 4-12 Typical Vibration Levels for Construction Equipment</b>		
Type of Equipment	PPV at 25 feet (in/sec)	Approximate RMS L <sub>v</sub> at 25 feet
Hoe ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.00.	58
Note: RMS L <sub>v</sub> = root-mean-square velocity in decibels (VdB) relative to 1 micro-inch/second		
Source: Bollard Acoustical Consultants, Inc., 2018.		

**Mitigation Measure(s)**

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4-3(a) *A Blasting Plan for construction shall be prepared and submitted to the County Planning Services Division prior to initiation of construction activities. The plan shall include the following:*

1. *The Blasting Plan shall be consistent with the County General Plan Noise Element’s Policy 9.A.4.*
2. *Primary components of the Blasting Plan shall include:*
  - a. *Identification of blast officer;*
  - b. *Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited;*
  - c. *Blasting notification procedures, lead times, and lists of those notified. Public notification to potentially affected vibration receptors describing the expected extent and duration of the blasting;*



- d. *Description of means for transportation and on-site storage and security of explosives in accordance with local, State and federal regulations;*
  - e. *Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation);*
  - f. *Traffic control standards and traffic safety measures (if applicable);*
  - g. *Requirements for personal protective equipment;*
  - h. *Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger;*
  - i. *Procedures for handling, setting, wiring, and firing explosives, as well as procedures for handling misfires per federal code;*
  - j. *Type and quantity of explosives and description of detonation device. Sequence and schedule of blasting rounds, including general method of excavation, lift heights, etc.;*
  - k. *Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure;*
  - l. *Description of blast vibration and air blast monitoring programs;*
  - m. *Dust control measures in compliance with applicable air pollution control regulations (to interface with general construction dust control plan);*
  - n. *Emergency Action Plan to provide emergency telephone numbers and directions to medical facilities. Procedures for action in the event of injury;*
  - o. *Material Safety Data Sheets for each explosive or other hazardous materials to be used;*
  - p. *Evidence of licensing, experience, and qualifications of blasters; and*
  - q. *Description of insurance for the blasting work.*
3. *A Blast Survey Workplan shall be prepared by the blaster. The Plan shall establish vibration limits in order to protect structures from blasting activities and identify specific monitoring points. At a minimum, a pre-blast survey shall be conducted of any potentially affected structures and underground utilities within 500 feet of a blast area, as well as the nearest residential structure, prior to blasting. The survey shall include visual inspection of the structures, documentation of structures by means of photographs, video, and a level survey of the ground floor of structures or the crown of major and critical utility lines, and these shall be submitted to the County. This documentation shall be reviewed with the individual owners prior to any blasting operations. The*

*County and impacted property owners shall be notified at least 48 hours prior to the visual inspections.*

- 4. Vibration and settlement threshold criteria (for example peak particle velocity of 0.5 inches per second) shall be submitted by the blaster to the County for review and approval during the design process. If the settlement or vibration criteria are exceeded at any time or if damage is observed at any of the structures or utilities, then blasting shall immediately cease and the County immediately notified. The stability of segmental retaining walls, existing slopes, creek canals, etc. shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting. The blaster shall modify the blasting procedures or use alternative means of excavating in order to reduce the vibrations to below the threshold values, prevent further settlement, slope instability, and prevent further damage.*
- 5. Air blast overpressure limits shall be set and monitoring shall be conducted at the property line closest to the blast and at other above ground structures identified in the Plan for vibration monitoring. Air blast overpressure limits shall be in accordance with applicable law and shall be established to prevent damage to adjacent properties, new construction, and to prevent injuries to persons on-site and off-site.*
- 6. Prior to full-scale production blasting, the blaster shall conduct a series of test blasts at the sites where blasting is to occur. The tests shall start with reduced charge weights and shall increase incrementally to that of a full-scale production round. Monitoring shall be conducted as described in the Plan.*
- 7. Post-construction monitoring of structures to identify (and repair if necessary) all damage, if any, from blasting vibrations. Any damage shall be documented by photograph, video, etc. This documentation shall be reviewed with the individual property owners.*
- 8. Reports of the results of the blast monitoring shall be provided to the County, the local fire department, and owners of any buried utilities on or adjacent to the site within 24 hours following blasting. Reports documenting damage, excessive vibrations, etc. shall be provided to the County and impacted property owners.*

4-3(b)

*Include the following standard note on the Improvement Plans: In the event of blasting, three copies of an approved plan and permit shall be submitted to the County not less than 10 days prior to the scheduled blasting. A blasting permit must be obtained from the Placer County Sheriff's Office for all blasting to be done in Placer County. Additionally, the County must be notified and give approval for all blasting done within County right-of-way. If utility companies are in the vicinity where blasting is to occur, the appropriate utility companies must be notified to determine*

*possible damage prevention measures. If blasting is required, the blasting schedule shall be approved by the County and any other utility companies with facilities in the area prior to the commencement of work.*

**4-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Based on the analysis below and with implementation of mitigation, the impact is less than significant.**

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how the equipment is operated, and how well the equipment is maintained. In addition, noise exposure at any single point outside the project site would vary depending on the proximity of construction activities to that point. Standard construction equipment, such as backhoes, loaders, and trucks, would likely be used on the project site.

Table 4-13 below provides a summary of the range of maximum noise levels for various types of construction equipment at a distance of 50 feet. The noise values represent maximum noise generation, or full power operation, of the equipment. As one increases the distance between equipment, or increases separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of combining separate noise sources.

<b>Table 4-13 Construction Equipment Noise Levels</b>	
<b>Type of Equipment</b>	<b>Typical Sound Level at 50 feet (L<sub>max</sub>, dB)</b>
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, mobile	83
Dozer	85
Generator	81
Impact wrench	85
Jackhammer	88
Loader	85
Paver	89
Pneumatic tool	85
Pump	76
Roller	74
Saw	76
<i>Source: Bollard Acoustical Consultants, Inc., 2018.</i>	

The proposed construction activities would occur at a distance of approximately 15 feet from the property lines of the existing residential uses to the north of the project site. As

shown in Table 4-13, construction activities typically generate noise levels ranging from approximately 75 to 90 dB L<sub>max</sub> at a reference distance of 50 feet from the construction activities. The noise levels from construction operations decrease at a rate of approximately 6 dB per doubling of distance from the source. As a result, maximum construction noise levels would range from 85 to 100 dB L<sub>max</sub> at the property lines of the nearest receptors.

In addition to the use of typical construction equipment, as discussed in Impact 4-3 above, controlled blasting may be required during site preparation to excavate hard rock within the project site. The audible sound associated with blasting is reported to be the result of escaping gases and falling (slumping) rock. Subjectively, audible blasting sound has been described as similar to the closing of a car trunk, or to rolling thunder. While such terms are subjective rather than quantitative, the described sounds are relatively benign. Audible noise due to blasting is not commonly considered to be a significant source of annoyance if blasting is controlled to meet safety standards on a project site. Nonetheless, construction blasting noise is expected to be audible, and the sudden occurrence of such noise could startle people nearby under certain circumstances.

Per Section 9.36.030 of the Placer County Code, sound or noise emanating from construction activities occurring during the following time periods is exempt from the noise level standards included in the County's Noise Ordinance, provided that all construction equipment is fitted with factory-installed muffling devices and that all construction equipment is maintained in good working order: a) Monday through Friday, 6:00 AM to 8:00 PM (during daylight savings); b) Monday through Friday, 7:00 AM to 8:00 PM (during standard time); and c) Saturdays, 8:00 AM to 6:00 PM. However, if such requirements are not met, construction of the proposed project could conflict with the Placer County Code, and the project could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. In addition, standard procedures would be required to limit blasting noise at existing sensitive receptors, consistent with the General Plan Noise Element standards. In the absence of standard practices to limit construction equipment and blasting noise exposure at nearby sensitive receptors, a *significant* impact could occur.

#### Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4-4(a) *The following notes shall be included in the project's Improvement Plans. Exceptions to allow expanded construction activities shall be reviewed on a case-by-case basis as determined by the Community Development Resource Agency Director and/or County Engineer.*

- *Noise-generating construction activities (e.g. construction, alteration or repair activities), including truck traffic coming to and from the project site for any purpose, shall be limited to the hours outlined in Placer County Board of Supervisors Minute Order 90-08; specifically, a) Monday through Friday, 6:00 AM to*

8:00 PM (during daylight savings); b) Monday through Friday, 7:00 AM to 8:00 PM (during standard time); and c) Saturdays, 8:00 AM to 6:00 PM.

- *Project construction activities should be limited to daytime hours unless conditions warrant that certain construction activities occur during evening or early morning hours (i.e., extreme heat).*
- *All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specifications. Mobile or fixed “package” equipment (e.g., arc welders, air compressors) shall be equipped with shrouds and noise-control features that are readily available for that type of equipment.*
- *All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, State, or local agency shall comply with such regulations while in the course of project activity.*
- *Electrically powered equipment shall be used instead of pneumatic or internal combustion-powered equipment, where feasible.*
- *Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.*
- *Construction site and access road speed limits shall be established and enforced during the construction period.*
- *The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.*
- *Project-related public address or music systems shall not be audible at any adjacent receptor.*

4-4(b) *Implement Mitigation Measures 4-3(a) and 4-3(b).*

## **Cumulative Impacts and Mitigation Measures**

The following discussion of impacts is based on the implementation of the proposed project in combination with other cumulative development within Granite Bay. Refer to Chapter 6, Statutorily Required Sections, of this EIR for more detail regarding the cumulative setting analyzed herein.

- 4-5 Result in exposure of persons to or generation of traffic noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies, or a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project under the Cumulative Plus Project Condition. Based on the analysis below, the project’s incremental contribution to this significant cumulative impact is less than cumulatively considerable.**

Future development projects within Granite Bay, including the proposed project, would incrementally affect the future cumulative ambient noise environment. To assess noise impacts due to project-related traffic increases on the local roadway network, noise levels have been calculated for the Cumulative No Project and Cumulative Plus Project conditions (see Table 4-14).

<b>Table 4-14</b>				
<b>Cumulative No Project and Cumulative Plus Project Traffic Noise Levels</b>				
<b>Roadway Name</b>	<b>Segment Description</b>	<b>Noise Level at 100 feet from Centerline (dB, L<sub>dn</sub>)</b>		
		<b>Cumulative No Project</b>	<b>Cumulative Plus Project</b>	<b>Change</b>
Douglas Boulevard	Sierra College Boulevard to Cavitt Stallman Road	70.2	70.3	0.1
	Cavitt Stallman Road to Woodgrove Way	70.0	70.1	0.1
	Woodgrove Way to Seeno Avenue	69.9	70.0	0.1
	Seeno Avenue to Berg Street	69.9	69.9	0.0
	Berg Street to Barton Road	69.7	69.7	0.0
	Barton Road to Auburn Folsom Road	69.7	69.7	0.0
	Joe Rodgers Road to Auburn Folsom Road	69.6	69.7	0.1
Berg Street	Olive Ranch Road to Project Site	54.5	54.6	0.1
	Olive Ranch Road to Douglas Boulevard	54.4	55.8	1.4
Note: Traffic noise levels do not account for shielding from existing noise barriers or intervening structures.				
<i>Source: Bollard Acoustical Consultants, Inc., 2018.</i>				

As shown in the table, traffic noise associated with buildout of the Granite Bay Community Plan could exceed the County’s 60 dB L<sub>dn</sub> threshold for all study roadway segments of Douglas Boulevard under the Cumulative No Project Condition. Thus, a significant cumulative impact would occur related to exposure of persons to or generation of traffic noise levels in excess of standards established in the General Plan. The addition of project traffic under the Cumulative Plus Project Condition would increase traffic noise on such roadway segments. However, per CEQA Guidelines Section 15130(3), a project’s contribution to a significant cumulative impact may be determined to be less than cumulatively considerable. For all Douglas Boulevard roadway segments, the proposed project’s contribution to traffic noise level increases would be below the 3 dB L<sub>dn</sub>/CNEL substantial increase threshold for areas where exterior noise levels exceed 60 dB L<sub>dn</sub> under the Cumulative No Project Condition. For both roadway segments on Berg Street, the project’s contribution to traffic noise increases would be below the 5 dB L<sub>dn</sub>/CNEL substantial increase threshold for areas where exterior noise levels are at or below 60 dB L<sub>dn</sub>. Furthermore, the project would not cause any new exceedances of the County’s 60 dB L<sub>dn</sub> threshold at any of the study roadway segments. Therefore, traffic

generated by the proposed project would not result in a significant increase in traffic noise levels under the Cumulative Plus Project Condition.

Based on the above, project-generated traffic noise at existing sensitive receptors in the project vicinity would not conflict with the County's applicable noise level thresholds under cumulative conditions. In addition, the proposed project's contribution to cumulative traffic noise increases would be below the applicable thresholds. As such, the project would not cause a substantial permanent increase in ambient noise levels in the project vicinity above the Cumulative No Project Condition. Therefore, the proposed project's incremental contribution to significant cumulative impacts related to traffic noise levels would be *less than cumulatively considerable*.

Mitigation Measure(s)

*None required.*