

### ***5.3 NOISE***

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### Noise – Environmental Setting

#### FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL NOISE

Noise can be defined as unwanted sound and is commonly measured with an instrument called a sound level meter. The sound level meter “captures” sound with a microphone and converts it into a number called a sound level. Sound levels are expressed in units of decibels (dB).

To correlate the microphone signal to a level that corresponds to the way humans perceive noise, the A-weighting filter is used. A-weighting de-emphasizes low-frequency and very high-frequency sound in a manner similar to human hearing. The use of A-weighting is required by most local agencies as well as other federal and State noise regulations (e.g., Caltrans, EPA, OSHA and HUD). The abbreviation dBA is often used when the A-weighted sound level is reported.

Because of the time-varying nature of environmental sound, many descriptors are used to quantify the sound level. Although one individual descriptor alone does not fully describe a particular noise environment, taken together, they can more accurately represent the noise environment. There are four descriptors that are commonly used in environmental studies: the  $L_{max}$ ,  $L_{eq}$ ,  $L_{90}$  and  $L_{dn}$  (or CNEL).

The maximum instantaneous noise level ( $L_{max}$ ) is often used to identify the loudness of a single event such as a car pass-by or airplane flyover. To express the average noise level, the  $L_{eq}$  (equivalent noise level) is used. The  $L_{eq}$  can be measured over any length of time but is typically reported for periods of 15 minutes to one hour. The background noise level (or residual noise level) is the sound level during the quietest moments. It is usually generated by steady sources such as distant freeway traffic. It can be quantified with a descriptor called the  $L_{90}$  which is the sound level exceeded 90 percent of the time.

To quantify the noise level over a 24-hour period, the Day/Night Average Sound Level ( $L_{dn}$  or DNL) or Community Noise Equivalent Level (CNEL) is used. These descriptors are averages like the  $L_{eq}$  except they include, by definition, a ten dBA “penalty” for noises that occur during nighttime hours (10:00 PM to 7:00 AM) to account for people's sensitivity to intrusive noise during these hours. The CNEL also includes a five dBA “penalty” during evening hours (7:00 PM to 10:00 PM in the CNEL).<sup>1</sup> In general, human sound perception is such that a change in sound level of three dB is just noticeable, a change of five dB is clearly noticeable and a change of ten dB is perceived as a doubling (or halving) of loudness.<sup>2</sup> **Exhibit 5.3-1** describes typical indoor and outdoor noise levels as a point of reference.

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<sup>1</sup> ANSI S1.1-1994, *Acoustical Terminology*, American National Standards Institute, 1994.

<sup>2</sup> *Handbook of Environmental Acoustics*, Cowen, 1994.

**Exhibit 5.3-1  
 Typical Indoor and Outdoor Noise Sources and Levels**

<i>Common Outdoor Noise Source</i>	<i>Noise Level (dBA)</i>	<i>Common Indoor Noise Source</i>
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

Source: Illingworth and Rodkin, 2006.

### **EXISTING NOISE ENVIRONMENT**

The major source of noise affecting at the project site is traffic traveling along Arnold Drive. No other significant noise sources exist near the site. Existing noise sensitive receptors near the project site are single-family residences to the north and west of the project site as illustrated in **Exhibit 5.3-2**.

In order to quantify the existing noise environment on and around the project site, Rosen Goldberg Der & Lewitz, Inc., (i.e., the EIR noise consultant) made two long-term and five short-term noise measurements at different locations on and around the project site. The noise measurements were conducted from Saturday, December 3<sup>rd</sup> to Tuesday, December 6<sup>th</sup>, 2005. **Exhibit 5.3-2** illustrates the noise measurement locations.

Long-term noise measurement A is located approximately 120 feet east of the centerline of Arnold Drive at an elevation of 20 feet. This location is near the northern property line of the project site, about 60 feet south of the existing single-family residence to the north. The three-day measurement at location A yielded a day-night average sound level ( $L_{dn}$ ) of 57 dBA.<sup>3</sup> **Exhibit 5.3-3** shows an hourly plot of measured noise levels at Location A.

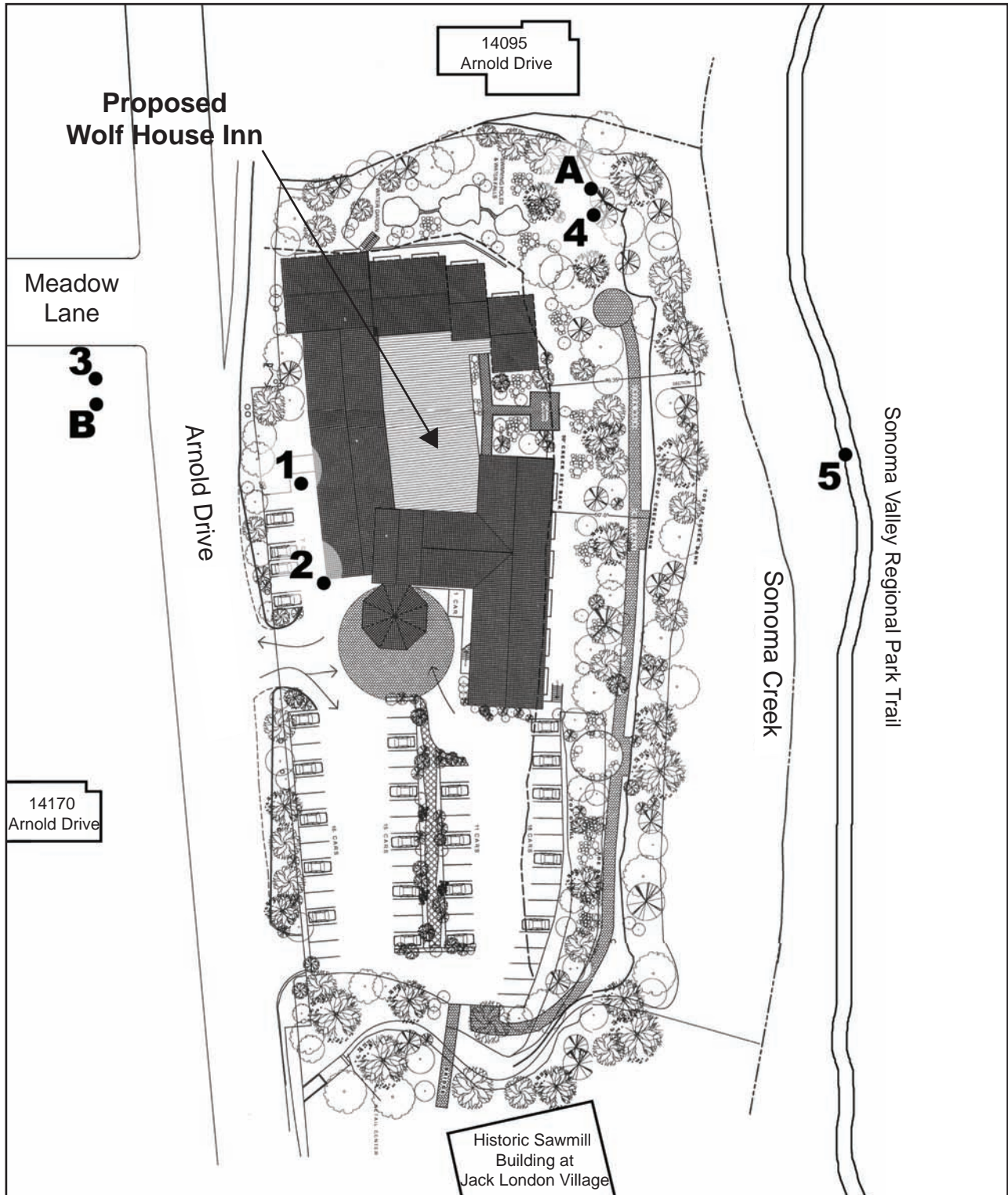
Long-term noise measurement B is located about 66 feet west of the centerline of Arnold Drive at an elevation of 15 feet. Measurement B represents the noise exposure of the closest single-family residence west of Arnold Drive. The noise level at location B was an  $L_{dn}$  of 64 dBA. **Exhibit 5.3-4** shows an hourly plot of measured noise levels at Location B.

The results of the five short-term measurements were correlated with the long-term measurements in order to calculate the  $L_{dn}$  at the short-term noise measurement locations. For example, the measurement made at location 3 (between 1:30 PM and 2:00 PM) was compared with the measurement at the long-term monitor location B during the same period. The difference between the two measurements was applied to the calculated  $L_{dn}$  at location B to determine the  $L_{dn}$  at location 3. **Exhibit 5.3-5** summarizes the short-term noise measurements.

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<sup>3</sup> As previously explained,  $L_{dn}$  is the average A-weighted noise level (measured in decibels and expressed as dBA) during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 PM and 7:00 AM. A-weighted noise is the sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.

**Exhibit 5.3-2  
Noise Measurement Locations**



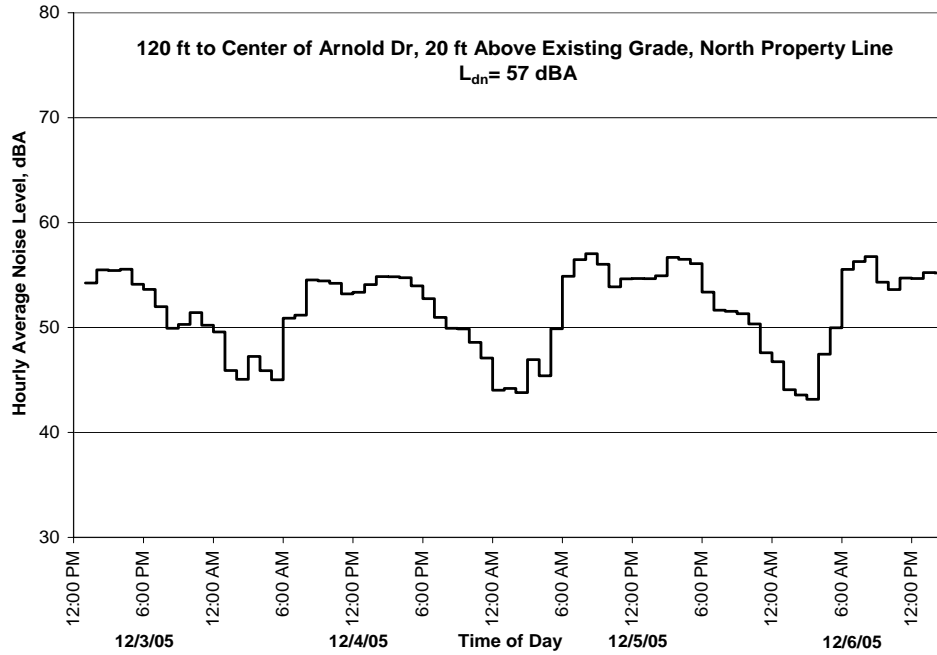
**Legend**

- 1 through 5: Short-Term Noise Measurement Locations
- A and B: Long-Term Noise Measurement Locations



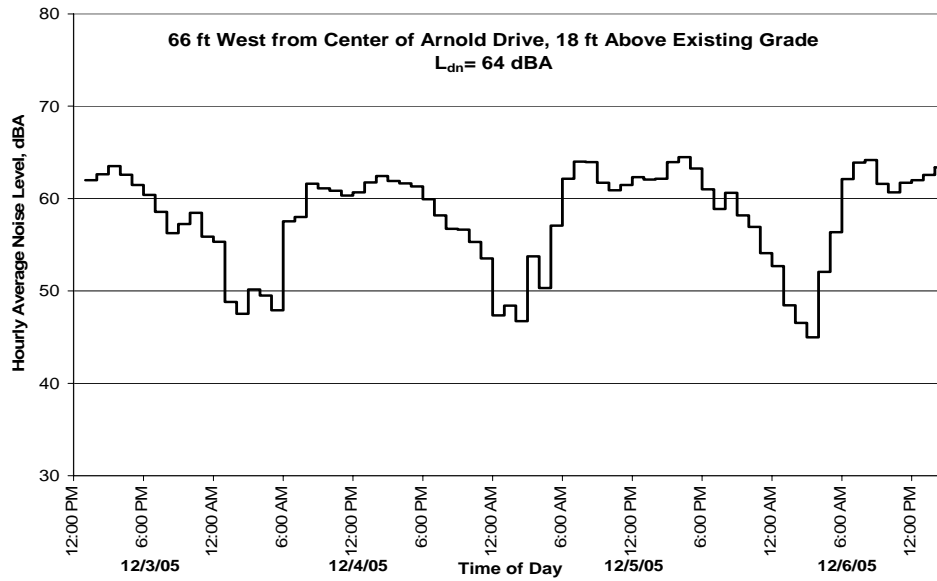
Sources: Rosen Goldberg Der & Lewitz, Inc. and Nichols Berman, September 2007.

**Exhibit 5.3-3**  
**Long-Term Noise Measurement Results at Location A**



Source: Rosen Goldberg Der & Lewitz, Inc., December 2005.

**Exhibit 5.3-4**  
**Long-Term Noise Measurement Results at Location B**



Source: Rosen Goldberg Der & Lewitz, Inc., December 2005.

**Exhibit 5.3-5  
 Short-Term Noise Measurement Results**

Location <sup>a</sup>		Time and Date	Sound Level (dBA)				
			L <sub>eq</sub> <sup>b</sup>	L <sub>2</sub> <sup>c</sup>	L <sub>8</sub> <sup>c</sup>	L <sub>50</sub> <sup>c</sup>	L <sub>dn</sub>
1	64 feet east of Arnold Drive centerline, 5 feet elevation, even with road surface (Building façade)	1:30 PM - 2:00 PM 12/03/2005	56	63	61	53	60
2	72 feet east of Arnold Drive centerline, 20 feet elevation, 15 feet above road surface.	1:30 PM - 2:00 PM 12/06/2005	63	70	67	60	64
3	80 feet west of Arnold Drive centerline, 5 feet above road surface.	1:30 PM - 2:00 PM 12/06/2005	60	68	63	56	60
4	120 feet east of Arnold Drive centerline, 5 feet elevation, even with road surface.	2:30 PM - 3:00 PM 12/06/2005	53	59	57	52	55
5	Within Sonoma Valley Regional Park, east of project site.	2:30 PM - 3:00 PM 12/06/2005	49	54	52	49	51

a See **Exhibit 5.3-2** for noise measurement locations.

b L<sub>eq</sub> is the average noise level during the measurement period

c L<sub>2</sub>, L<sub>8</sub> and L<sub>50</sub> are defined as the noise level exceeded 2, 8, and 50 percent of the stated time period, respectively.

Source: Rosen Goldberg Der & Lewitz, Inc., December 2005.

**REGULATORY SETTING**

**State Regulations**

The State of California Building Code (CBC Section 1207) requires that indoor noise levels in new multi-family housing be controlled to an L<sub>dn</sub> of 45 dBA if outdoor levels are in excess of an L<sub>dn</sub> of 60 dBA. Furthermore, if windows must be closed to meet this goal, then an alternate means of providing fresh air such as mechanical ventilation or air-conditioning must be included in the design. The ventilation system must not compromise the noise reduction provided by the façade.

The California Environmental Quality Act (CEQA) requires that a project be evaluated to determine its potential to increase noise substantially. Since specific guidelines of what represents a substantial increase in noise and thus the level of impact are not explicitly stated, guidelines from other agencies (e.g., U.S. Department of Transportation) are typically used.

**County of Sonoma Regulations**

The *Sonoma County 1989 General Plan Noise Element (1989 Noise Element)* includes policies regarding acceptable levels of noise. For residential development, Policy NE-1b states:

*For noise due to traffic on public roadways, railroads and airports, reduce exterior to 60 dB L<sub>dn</sub> or less in outdoor activity areas and interior noise levels to 45 dB L<sub>dn</sub> or less with windows and doors closed. Where it is not possible to meet this 60 dB L<sub>dn</sub> standard using a practical application of the best available noise reduction technology, a maximum up to 65 dBA L<sub>dn</sub> may be allowed but interior noise level shall be maintained so as not to exceed 45 dB L<sub>dn</sub>.*<sup>4</sup>

In addition, Policy NE-1c states:

*Control non-transportation related noise from new projects. The total noise level resulting from new sources and ambient noise shall not exceed the standards set forth in Table NE-2 as measured at the exterior property line of any affected residential land use.*<sup>5</sup>

Exhibit 5.3-6 summarizes Table NE-2 of the *1989 Noise Element*.

**Exhibit 5.3-6  
 Noise Level Performance Standards (1989 Noise Element Table NE-2)**

Category	Cumulative Duration of Noise Event in any One-Hour Period (Minutes)	Maximum Exterior Noise Level Standards (dBA)	
		Daytime (7 AM - 10 PM)	Nighttime (10 PM - 7 AM)
1	30-60	50	45
2	15-30	55	50
3	5-15	60	55
4	1-5	65	60
5	0-1	70	65

Source: *Sonoma County 1989 General Plan Noise Element*, County of Sonoma Permit and Resource Management Department, March 23, 1989, as revised through March 1, 1994.

<sup>4</sup> *Sonoma County 1989 General Plan Noise Element*, County of Sonoma Permit and Resource Management Department, March 23, 1989, as revised through March 1, 1994.

<sup>5</sup> *Sonoma County 1989 General Plan Noise Element*, County of Sonoma Permit and Resource Management Department, March 23, 1989, as revised through March 1, 1994.

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## **Noise – Significance Criteria**

This noise analysis uses criteria from the *State CEQA Guidelines*. According to these criteria, the project would have a significant noise impact if it would:

- Expose persons to or generate noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies.

A significant noise impact would result if proposed land uses would be exposed to exterior noise levels greater than 60 dBA Ldn or interior noise levels in excess of 45 dBA Ldn.

- Expose persons to, or generation of excessive groundborne vibration or groundborne noise levels.
- Generate a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

CEQA does not define what noise level increase would be considered substantial. Typically, project-generated noise level increases of three dBA Ldn or greater would be considered significant where exterior noise levels would exceed the normally acceptable noise level standard (60 dBA Ldn for residential land uses). Where noise levels would remain at or below the normally acceptable noise level standard with the project, noise level increases of five dBA Ldn or greater would be considered significant.

- Generate a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

A significant temporary noise impact would result if construction noise levels generated by the project would exceed 60 dBA Leq and the ambient noise environment by five dBA Leq or more at noise-sensitive uses in the project vicinity for a period greater than one construction season (typically one year).

- Expose people residing or working in the project area to excessive noise levels, 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.
- For a project within the vicinity of a private airstrip, the project would expose people residing or working in the project area to excessive noise levels.

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## Noise – Impacts and Mitigation Measures

### LESS-THAN-SIGNIFICANT IMPACTS

Based on the findings of the Initial Study (see *Appendix A Initial Study*) together with additional analyses completed as a part of this EIR it has been determined that the proposed *Wolf House Inn* would have no or less-than-significant impacts for the following significance criteria.

- *Expose persons to, or generation of excessive groundborne vibration or groundborne noise levels.*

No activities (e.g., pile driving) that would generate substantial vibrations would be expected during project construction. Therefore, adjacent residences and commercial uses at the Jack London Village would not be subject to adverse effects including structural damage. No impact would result.

- *Expose people residing or working in the project area to excessive noise levels, 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.*
- *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.*

The project site is located over five miles from either the Sonoma Valley Airport or the Sonoma Skypark. No impact would result.

#### **Impact 5.3-1 Land Use Compatibility and Traffic Noise**

*Implementation of the Wolf House Inn would expose project land uses to traffic noise from vehicles traveling along Arnold Drive to an  $L_{dn}$  greater than 60 dBA. This would be a significant impact.*

The proposed *Wolf Hose Inn* would be exposed to noise levels with an  $L_{dn}$  of 60 to 64 dBA generated by traffic traveling on Arnold Drive. Rooms on the second floor would experience the greatest noise levels. In the future, increases in traffic volume along Arnold Drive would result in a future  $L_{dn}$  of 62 dBA to 66 dBA.

*Section 3.2 Description of the Proposed Project* identifies outdoor uses that include three swimming holes and balconies. The swimming holes would be located along the north edge of the site, below the grade of Arnold Drive. Therefore, the proposed building would provide some acoustical shielding of noise (i.e., about three dBA) from Arnold Drive. The future noise level at the swimming holes is calculated to be an  $L_{dn}$  of 59 dBA and this would meet the County's outdoor standard of an  $L_{dn}$  of 60 dBA.

In addition, the outdoor balconies would be located along the north side of the proposed building at the second floor elevation. This location would shield the balcony from some traffic noise from Arnold Drive. However, in the future, the noise level ( $L_{dn}$ ) on the balconies would be 63 dBA or less but would exceed the County's outdoor standard of an  $L_{dn}$  of 60 dBA. Therefore, this would be a significant impact.

Although exterior noise levels would exceed an  $L_{dn}$  of 60 dBA in some outdoor activity areas, the Policy NE-1b of the *1989 Noise Element* would allow noise levels of up to a maximum  $L_{dn}$  of 65 dBA in outdoor activity areas provided that interior noise levels meet an  $L_{dn}$  of 45 dBA. Noise levels in all outdoor activity areas would be less than an  $L_{dn}$  of 65 dBA and meet this requirement. Therefore, the following mitigation focuses on measures to ensure that the interior noise level of the proposed *Wolf House Inn* would meet the required  $L_{dn}$  of 45 dBA.

#### **Mitigation Measure 5.3-1**

The project applicant shall submit an acoustical report to Sonoma County Permit and Resource Management Department (PRMD) that demonstrates how interior noise levels would be controlled to an  $L_{dn}$  of 45 dBA since outdoor levels would exceed an  $L_{dn}$  of 60 dBA.

Because the outdoor noise level is projected to be an  $L_{dn}$  of up to 66 dBA an exterior-to-interior noise reduction of up to 21 dBA would be required to meet the State of California's Building Code requirement of  $L_{dn}$  45 dBA inside habitable rooms (CBC 1207). This amount of noise reduction is feasible for a building of normal construction provided that commonly available sound rated windows are used. The precise window sound-ratings shall be determined during the detailed architectural design phase of the project and would depend on the floor plans and window size and locations. Mechanical ventilation would be required so that windows can be closed for noise control while still allowing for adequate ventilation. The mechanical ventilation requirement is also part of State Building Code.

**Significance After Mitigation** Implementation of mitigation measures consistent with the requirements of the State of California Building Code, Section 1207 would reduce adverse effects of noise from traffic on Arnold Drive to a less-than-significant impact.

**Responsibility and Monitoring** Prior to issuance of a building permit, the applicant would be responsible to incorporate these measures into construction plans. Sonoma County Permit and Resource Management Department staff would be responsible to ensure these measures have been incorporated into the project design.

#### **Impact 5.3-2 Operational Noise**

*Noise generated from daily operation of the proposed Wolf House Inn would expose nearby residents to noise levels in excess of the County's Noise Level Performance Standards. This would be a significant impact.*

Daily operation of the proposed *Wolf House Inn* would create new noise sources. The primary sources of noise would include the building's mechanical systems and the proposed swimming holes (e.g., from voices of residents / guests).

The mechanical equipment controlling the ventilation system would consist of fans and other equipment that would run throughout the day. However, the design of the project states that the systems will be "laid out with a central mechanical room and central air ducts" and that "there is no need for through wall air-conditioning unit..."<sup>6</sup> Air-conditioning and other rooftop mechanical equipment would generate noise that could adversely affect adjacent residences and Sonoma Valley

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<sup>6</sup> Rosen Goldberg Der & Lewitz, Inc., communication with Paula Stamp AICP, Sonoma County Permit and Resources Management Department, June 2007.

Regional Park. As no detailed information was available regarding the operations and noise levels of the rooftop equipment, potential noise from its use could exceed levels specified in the County's Noise Level Performance Standards (see **Exhibit 5.3-6**).

In addition, the three proposed swimming holes shown at the north end of the project site in **Exhibit 3.0-5** would be located within 50 feet of the existing residence to the north. As shown in **Exhibit 5.3-6** the applicable criteria from the County is (1) 70 dBA for sounds that occur up to one minute per hour and (2) 55 dBA for sounds that occur up to 30 minutes per hour. There is a five dBA penalty for each of these standards because the noise is produced by speech, so these standards are increased to a more restrictive level of 65 dBA and 50 dBA respectively.<sup>7</sup>

To evaluate the noise impact of the proposed swimming holes, the EIR consultant evaluated two scenarios: one in which six people are talking in normal voices and another with one person shouting. Six people talking in a normal voice would each create a sound level of 57 dBA at one meter distance. Accounting for distance to the property line, the total sound level would be 46 dBA at the property line when all six people are talking. A sound level of 46 dBA would not exceed the standard of 50 dBA for sounds that occur up to 30 minutes in one hour as described above and in **Exhibit 5.3-6**. However, a person shouting at one meter could generate a sound level of 88 dBA.<sup>8</sup> This would be the equivalent level of 69 dBA at the property line. A maximum sound level of 69 dBA would exceed the County's 65 dBA standard described above and in **Exhibit 5.3-6**.

Therefore, operation of the rooftop equipment and use of the three proposed swimming holes could generate noise that would exceed levels specified in the *1989 Noise Element*. This would be a significant impact. The following mitigation would be required.

**Mitigation Measure 5.3-2(a)** Rooftop equipment must be designed so as to comply with the noise level limits set forth in Table NE-2 of the *1989 Noise Element*. Typical methods include selection of quiet equipment or installation of acoustical baffles (e.g., silencers) and / or noise barriers.

**Mitigation Measure 5.3-2(b)** In order for noise from the swimming holes to meet levels specified in the *1989 Noise Element* either of the following measures shall be implemented:

- Construct a sound wall located along the north side of the project site, adjacent to the proposed swimming holes.

Since the terrain north of the swimming holes slopes down toward the unnamed drainage, the sound wall should be located near the top of slope. In general, to be acoustically effective, the sound wall must break the line of sight between the swimming holes and the outdoor use spaces of the adjacent residence to the north that include a grassy area at ground level and an elevated wooden deck.

Based on field observations, a six- to eight-foot tall noise barrier (i.e., relative to the elevation of the swimming holes) should be adequate to block line of sight between the people at the swimming hole and the adjacent outdoor use spaces of the residence to the north. The barrier

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<sup>7</sup> *Sonoma County 1989 General Plan Noise Element*, County of Sonoma Permit and Resource Management Department, March 23, 1989, as revised through March 1, 1994.

<sup>8</sup> *Acoustical Measurements and Noise Control*, Cyril M. Harris, 1997, Chapter 16, p. 16.2.

would reduce outdoor noise levels to comply with the County's standard at the adjacent residence to the north.

The exact height and location of the barrier should be refined during the architectural design phase. The wall can be wood, masonry, concrete or metal provided it is solid, has no cracks or gaps and has a minimum surface weight of 2.5 pounds per square foot.

- Relocate the swimming holes a minimum of 20 feet in the southerly direction.

With the relocation of the swimming holes a minimum of 20 feet in the southerly direction the resulting noise levels would comply with the County's standard and no other mitigation would be required.

**Significance After Mitigation** Incorporation of appropriate rooftop equipment and either construction of a sound barrier or relocation of the swimming holes would reduce adverse effects from noise to adjacent residential uses to a less-than-significant impact. Since the noise barrier would block the line-of-sight from the project's outdoor use area to the adjacent residence, it would be similar to a simple wooden privacy fence that might be included in a project of this type. In addition to the typical materials mentioned above, there are options for other materials such as glass panels that can be added to the design of the barrier to help minimize potential visual obtrusiveness.

**Responsibility and Monitoring** Prior to issuance of a building permit, the applicant would be responsible to incorporate these measures into construction plans. Sonoma County Permit and Resource Management Department staff would be responsible to ensure these measures have been incorporated into the project design.

**Impact 5.3-3 Project Traffic Noise**

*Additional traffic volumes generated by the project would be negligible on surrounding roads and the resultant increase in traffic noise would be less than one dBA. Therefore, this would be a less-than-significant impact.*

Arnold Drive is a major thoroughfare for Glen Ellen and surrounding areas; hence existing traffic volumes are relatively high compared to those on surrounding roads. As described in **Section 5.2 Traffic and Circulation**, projected traffic data for the proposed project shows that compared to Arnold Drive, project generated traffic volumes would be negligible and therefore, the expected increase in existing traffic noise is below one dBA.<sup>9</sup>

Since project generated traffic would not expose existing residential land uses to an increase in the  $L_{dn}$  of between 3 and 5 dBA (i.e., since the future noise level will be greater than an  $L_{dn}$  of 60 dBA), this would be a less-than-significant impact. No mitigation would be required.

**Mitigation Measure 5.3-3** No mitigation would be required.

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<sup>9</sup> Rosen Goldberg Der & Lewitz, Inc. communication with David Reed, Crane Transportation Group, July 2007.

**Impact 5.3-4 Construction Noise**

*Existing noise-sensitive residential land uses would be exposed to elevated construction noise levels over a temporary period. This would be a significant impact.*

Construction of the *Wolf House Inn* project would occur in eight distinct phases.<sup>10</sup> Different machinery would be used in each phase in order to accomplish different tasks. The first three phases would involve site preparation and foundation work. These three phases would each last about a month. Louder equipment to be used during these phases would include bulldozers and haul trucks. Phases four and five, which would last two and four months, respectively, would include framing, electrical rough in, construction of exterior walls, and installation of mechanical equipment. Phases six through eight would include interior finishes and final grading. These phases would last about five months. Most work would be interior with relatively low noise levels except that final grading, which would last about a month, would include use of bulldozers, pavers and other diesel machinery.

The closest residence is just north of the site at 14095 Arnold Drive (see **Exhibit 5.3-2**). The next closest residence is to the southwest, across the street, at 14170 Arnold Drive. There would be potentially significant noise impacts from the construction due to the aforementioned activities. Though this impact would cease when construction is completed, construction noise would be a significant impact and the following mitigation would be required.

**Mitigation Measure 5.3-4** Mitigation of the noise produced by construction shall be accomplished by the following measures:

- All internal combustion engines used during construction of this project shall be operated with mufflers that meet the requirements of the State Resources Code, and, where applicable, the Vehicle Code. Equipment shall be properly maintained and turned off when not in use;
- Except for actions taken to prevent an emergency, or to deal with an existing emergency, all construction activities shall be restricted to between the hours of 7:00 AM and 7:00 PM on weekdays, 9:00 AM and 5:00 PM on Saturday and not at all on Sundays and holidays. If work outside the times specified above becomes necessary, the applicant shall notify the PRMD Project Review Division as soon as practical;
- There shall be no start-up of machines or equipment prior to 7:00 AM Monday through Friday; no delivery of materials or equipment prior to 7:00 AM nor past 7:00 PM and no servicing of equipment past 7:00 PM. A sign(s) shall be posted on the site regarding the allowable hours of construction, and including the developer's phone number for public contact;
- Construction maintenance, storage, and staging areas for construction equipment shall avoid proximity to residential areas to the maximum extent practicable. Stationary construction equipment (e.g., compressors, mixers, etc.) shall be placed away from residential areas and / or provided with acoustical shielding. Quiet construction equipment shall be used when possible; and
- The developer shall designate a Project Manager with authority to implement the mitigation prior to issuance of a building / grading permit. The Project Manager's phone number shall be

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<sup>10</sup> Memo to Steve Dee, Sonoma County Permit and Resource Management Department from John Pflueger, Project Architect, December 8, 2005.

conspicuously posted at the construction site. The Project Manager shall determine the cause of noise complaints (e.g., starting too early, faulty muffler, etc.) and shall take prompt action to correct the problem.

**Significance After Mitigation** Implementation of the above mitigation measures would reduce construction noise impacts on residents of homes to the north and southwest to a less-than-significant level.

**Responsibility and Monitoring** Sonoma County Permit and Resource Management Department staff would be responsible for ensuring that the above mitigation measures are implemented during project construction. The project applicant would be responsible for designating a person to monitor complaints and correct problems.