Appendix 11.0

Acoustical Assessment

Acoustical Assessment
Won Meditation Center
City of Wildomar, California

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Appendix A: Existing Ambient Noise Measurements

LIST OF ABBREVIATED TERMS

ADT	average daily traffic
ANSI	American National Standards Institute
APN	Assessor's Parcel Number
BNL	basic noise level
CEQA	California Environmental Quality Act
CL	centerline
CNEL	community equivalent noise level
CRGP	County of Riverside General Plan
cy	cubic yards
dB	decibel
dB	decibel
dBA	A-weighted sound level
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
HVAC	heating ventilation and air conditioning
Hz	hertz
in/sec	inches per second
L_{dn}	day-night noise level
L_{eq}	equivalent noise level
L_{max}	maximum noise level
L_{min}	minimum noise level
mph	miles per hour
PPV	peak particle velocity
RMS	root mean square
sf	square foot
µPa	micropascals
VdB	vibration velocity level
WECS	wind energy conversion system
WMC	Wildomar Municipal Code

1 INTRODUCTION

This report documents the results of an Acoustical Assessment completed for the Won Meditation Center Project (Project). The purpose of this Acoustical Assessment is to evaluate the potential construction and operational noise and vibration levels associated with the proposed Project and determine the level of impact the Project would have on the environment.

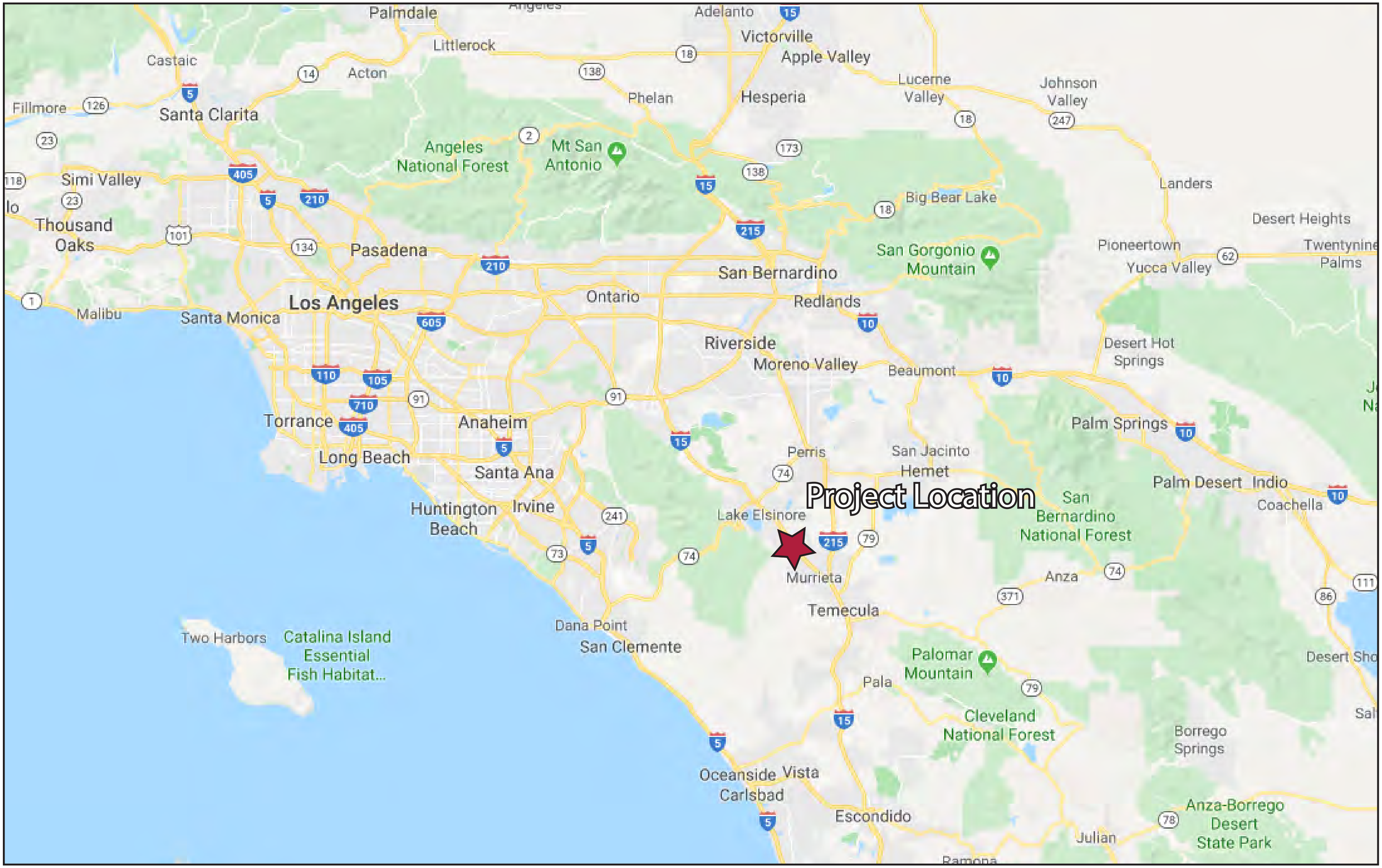
1.1 PROJECT LOCATION

The Project is generally located southwest of Interstate 15 (I-15) and southeast of Lake Elsinore in the City of Wildomar, California; refer to Exhibit 1: Regional Vicinity. More specifically, the Project is located southwest of I-15 and southwest of Grand Avenue; refer to Exhibit 2: Site Vicinity. The Project site includes Assessor Parcel Numbers (APN) 381-140-002 and 382-150-001 and currently consists of one existing single-family home and vacant land uses. Land uses surrounding the Project are mostly residential developments and vacant land. Areas to the south and southwest are comprised of undeveloped hillsides. A vacant lot occupies the adjacent parcel to the east. Areas to the west, north, and east (beyond the adjacent parcel) are occupied by single-family residential neighborhoods.

1.2 PROJECT DESCRIPTION

The Project proposes the development of a recreational retreat/meditation center that includes: a 7,840 square-foot (sf) meditation hall with kitchen and cooking facilities; two guesthouses with combined 27 rooms; and a meditation pavilion on 24.43 acres in the Rural-Residential (R-R) zone located at 19993 Grand Avenue (APN 382-140-002 & 382-150-001). The City of Wildomar General Plan designates the northeast portion of the site as Estate Density Residential -Rural Community (EDR-RC) while the western and southern portion of the site are designated as Rural Mountainous (RM). No construction or operations are proposed in the RM portion of the Project site. One of the guesthouses is 3,185 sf while the second is 2,688 sf. The Project site includes 52 parking stalls and an existing single-family home that would remain. Refer to Exhibit 3: Site Plan. The Project will also include parking and access driveway to the proposed structures.

The proposed Project does not include demolition as the existing structures would remain onsite. Construction activities would include site preparation, grading, construction of buildings, paving, and architectural coating. Site grading would disturb approximately 15 acres. The Project would require approximately 3,593 cubic yard (cy) of cut and approximately 5,760 cy of fill. This would result in approximately 2,167 cubic yards of soil to be imported.



Source: Google, 2019

EXHIBIT 1: Regional Vicinity

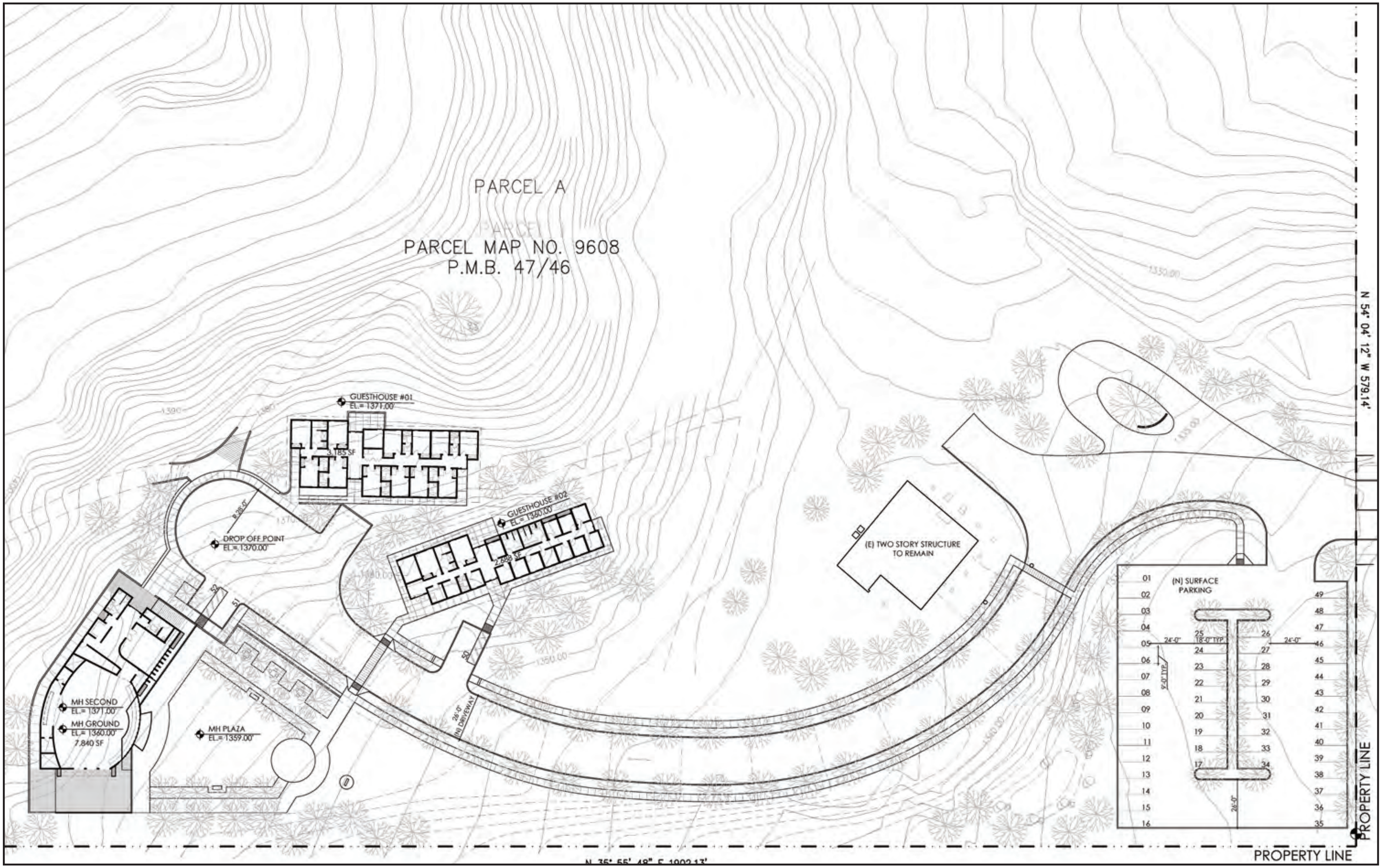
Won Meditation Center

City of Wildomar

Kimley»Horn

EXHIBIT 2: Site Vicinity
Won Meditation Center
City of Wildomar

Kimley»Horn



Source: Andmore Partners, 2019.

EXHIBIT 3: Site Plan

Won Meditation Center

City of Wildomar

Kimley»Horn

2 ACOUSTIC FUNDAMENTALS

2.1 SOUND AND ENVIRONMENTAL NOISE

Acoustics is the science of sound. Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a medium (e.g., air) to human (or animal) ear. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or hertz (Hz).

Noise is defined as loud, unexpected, or annoying sound. The fundamental acoustics model consists of a noise source, a receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path to the receptor determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person. Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (µPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this 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, and changes in levels correspond closely to human perception of relative loudness. Table 1: Typical Noise Levels, provides typical noise levels.

Table 1: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock Band
Jet fly-over at 1,000 feet		
	– 100 –	
Gas lawnmower at 3 feet		
	– 90 –	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	– 70 –	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	– 60 –	
		Large business office
Quiet urban daytime	– 50 –	Dishwasher in next room
Quiet urban nighttime	– 40 –	Theater, large conference room (background)
Quiet suburban nighttime		
	– 30 –	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	– 0 –	Lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) is the average noise level averaged over the measurement period, while the day-night noise level (L_{dn}) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Most commonly, environmental sounds are described in terms of an average level (L_{eq}) that has the same acoustical energy as the summation of all the time-varying events. Each is applicable to this analysis and defined in Table 2: Definitions of Acoustical Terms.

Table 2: Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in μPa (or 20 micronewtons per square meter), where 1 pascals is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in dB as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 μPa). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in dB 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.
Equivalent Noise Level (L_{eq})	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
Maximum Noise Level (L_{max}) Minimum Noise Level (L_{min})	The maximum and minimum dBA during the measurement period.
Exceeded Noise Levels (L_{01}, L_{10}, L_{50}, L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (L_{dn})	A 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 a.m. to 10:00 a.m. and a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The A-weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source.

A-Weighted Decibels

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of dBA, but are expressed as dB, unless otherwise noted.

Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound and twice as loud as a 60 dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions. Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.

Sound Propagation and Attenuation

Sound spreads (propagates uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics. No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The way older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Human Response to Noise

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

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted:

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

Effects of Noise on People

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. A noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance.[1]

2.2 GROUNDBORNE VIBRATION

Sources of groundborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations**,** displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations

Peak Particle Velocity (in/sec)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006-0.019	64-74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4-0.6	98-104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2013.

[1] Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Ground vibration can be a concern in instances where buildings shake and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

3 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

3.1 STATE OF CALIFORNIA

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.2 LOCAL

County of Riverside General Plan

The City of Wildomar does not currently have a General Plan. Therefore, the City defers to the County of Riverside General Plan (CRGP), dated October 2003. The CRGP Noise Element sets general community noise and land use compatibility guidelines as shown in Table 4: Land Use Compatibility for Community Noise Exposure. Sound levels up to 60 dBA CNEL are normally compatible for single-family residential.

Table 4: Land Use Compatibility for Community Noise Exposure				
Land Use Category	**Community Noise Exposure (L_{dn} or CNEL, dBA)**			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential – Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 – 70	70 – 75	75 – 85
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	75 – 85
Transient Lodging – Motel, Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	65 – 85	NA
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75	70 – 85	NA
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 75	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 75	NA	70 – 80	80 – 85
Office Buildings, Businesses, Commercial, and Professional	50 – 70	67.5 – 77.5	NA	75 – 85
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	NA	75 – 85
NA: Not Applicable; L_{dn}: Average Day/Night Sound Level; CNEL: Community Noise Equivalent Level				
Notes: Normally Acceptable – Specified land use is satisfactory, assuming buildings are of conventional construction. Conditionally Acceptable – New development should be undertaken only after detailed analysis of noise reduction requirements are made. Normally Unacceptable – New development should be discouraged, or a detailed analysis of noise reduction requirements must be made. Clearly Unacceptable – New development should generally not be undertaken.				
Source: County of Riverside, *General Plan*, 2003.				

The Noise Element establishes policies to ensure that County residents are protected from excessive noise. The following lists applicable noise policies obtained from the General Plan:

Policy N 1.1: Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If a noise-producing land use cannot be relocated, noise buffers such as setbacks, landscaping or block walls shall be used.

Policy N 1.3: Discourage the following uses noise-sensitive in areas exceeding 65 CNEL:

- Schools
- Hospitals
- Rest homes
- Long-term care facilities
- Mental care facilities
- Residential uses
- Libraries
- Passive recreation uses
- Places of worship

Policy N 9.6: Require that all future exterior noise forecasts use Level of Service C and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts.

Policy N 13.3: Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, using such methods as:

a. Temporary noise attenuation fences;
b. Preferential location of equipment; and
c. Use of current noise suppression technology and equipment.

Policy N 14.1: Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows and dense construction materials.

Policy N 14.5: Consider the issue of adjacent residential land uses when designing and configuring all new, non-residential development. Design and configure on-site ingress and egress points that divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable.

Table 5: Stationary Source Land Use Noise Standards provides noise standards for designated land uses within the County.

Table 5: Stationary Source Land Use Noise Standards

Land Use	Interior Standards	Exterior Standards
Residential		
10:00 p.m. – 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. – 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)
Notes: According to the CRGP, these are preferred standards; final decision made by the Riverside County Planning Department and Office		
Source: County of Riverside, *General Plan*, 2003.		

City of Wildomar Municipal Code

The Wildomar Municipal Code (WMC) includes noise standards in Chapter 9.48 Noise Regulation. Table 6: Sound Level Standards provides noise standards for designated land uses within the City of Wildomar. The general sound level standards set in the WMC apply to sound emanating from all sources except for:

a. Facilities owned or operated by or for a governmental agency;
b. Capital improvement projects of a governmental agency;
c. The maintenance or repair of public properties;
d. Public safety personnel while executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes sound emanating from equipment used by personnel, whether stationary or mobile;
e. Public or private schools and school-sponsored activities;
f. Agricultural operations on land designated “agriculture” in the CRGP, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, sound emanating from equipment used during such operations, whether stationary or mobile;

Table 6: Sound Level Standards				
General Plan Foundation Component	**General Plan Land Use Designation**	**General Plan Land Use Designation Name**	**7:00 a.m. – 10:00 p.m.**	**10:00 p.m. – 7:00 a.m.**
Community Development	EDR	Estate Density Residential (2 AC)	55	45
	VLDR	Very Low Density Residential (1 AC)		
	LDR	Low Density Residential (1/2 AC)		
	MDR	Medium Density Residential (2-5)		
	MHDR	Medium High Density Residential (5-8)		
	HDR	High Density Residential (8-14)		
	VHDR	Very High Density Residential (14-20)		
	H'TDR	Highest Density Residential (20+)		
	CR	Retail Commercial	65	55
	CO	Office Commercial		
	CT	Tourist Commercial		
	CC	Community Center		
	LI	Light Industrial	75	55
	HI	Heavy Industrial	75	75
	BP	Business Park	65	45
	PF	Public Facility		
	SP	Specific Plan – Residential	55	45
		Specific Plan – Commercial	65	55
		Specific Plan – Light Industrial	75	55
		Specific Plan – Heavy Industrial	75	75
Rural Community	EDR	Estate Density Residential (2 AC)	55	45
	VLDR	Very Low Density Residential (1 AC)		
	LDR	Low Density Residential (1/2 AC)		
Rural	RR	Rural Residential (5 AC)	45	45
	RM	Rural Mountainous (10 AC)		
	RD	Rural Desert (10 AC)		
Agricultural	AG	Agriculture (10 AC)	45	45
Open Space	C	Conservation	45	45
	CH	Conservation Habitat		
	REC	Recreation		
	RUR	Rural (20 AC)		
	W	Watershed		
	MR	Mineral Resources	75	45
Source: City of Wildomar, *Municipal Code*, 2018.				

g. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Title 17;

h. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

i. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

   1. Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, and

   2. Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May;

j. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between 7:00 a.m. and 8:00 p.m.;

k. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

l. Heating and air conditioning equipment;

m. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

n. The discharge of firearms consistent with all state laws (Ord. 18 § 2, 2008, RCC § 9.52.020).

Special sound sources such as off-highway vehicles, sound systems, power tools and equipment, audio equipment, and sound-amplifying equipment and live music are subject to additional standards.

<u>Motor Vehicles</u>

1. Off-Highway Vehicles

    a. No person shall operate an off-highway vehicle unless it is equipped with a USDA qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

    b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than 96 dBA if the vehicle was manufactured on or after January 1, 1986 or not more than 101 dBA if the vehicle was manufactured before January 1, 1986. Emitted noise shall be measured a distance of 20 inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

2. Sound Systems

    No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of 10:00 p.m. and 8:00 a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than 100 feet from the vehicle.

<u>Power Tools and Equipment</u>

No person shall operate any power tools or equipment between the hours of 10:00 p.m. and 8:00 a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than 100 feet from the power tools or equipment.

<u>Audio Equipment</u>

No person shall operate any audio equipment, whether portable or not, between the hours of 10:00 p.m. and 8:00 a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than 100 feet from the equipment.

<u>Sound-Amplifying Equipment and Live Music</u>

No person shall install, use or operate sound-amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:

1. Sound-amplifying equipment or live music is prohibited between 10:00 p.m. and 8:00 a.m.
2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than 200 feet from the equipment or music (Ord. 18 § 2, 2008, RCC § 9.52.060).

4 EXISTING CONDITIONS

4.1 NOISE MEASUREMENTS

To determine ambient noise levels in the project area, three 10-minute noise measurements were taken using a 3M SoundPro DL-1 Type I integrating sound level meter between 11:33 a.m. and 12:05 p.m. on July 24, 2019; refer to Appendix A: Existing Ambient Noise Measurements for existing noise measurement data and Table 7: Noise Measurements. Noise Measurement 1 was taken to represent the ambient noise level in the residential area north of the Project site; Noise Measurement 2 was taken to represent the ambient noise level northeast of the Project site near Grand Avenue and Corydon Road; and Noise Measurement 3 was taken to represent the ambient noise level east of the site in the existing single-family neighborhood. The primary noise sources during all three measurements was traffic on Grand Avenue, residential area noise, and planes flying overhead. Table 7 provides the ambient noise levels measured at these locations.

Table 7: Noise Measurements

Site #	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Time
1	Residential area on Richard Lane	48.1	37.9	57.0	98.6	11:33 a.m.
2	Corydon Rd and Grand Ave	63.1	49.3	78.1	100.6	11:49 a.m.
3	Residential area on Robert Street	56.3	54.8	64.5	89.4	12:05 p.m.

Source: Noise measurements taken by Kimley-Horn, July 24, 2019. See Appendix A for noise measurement results.

4.2 SENSITIVE RECEPTORS

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. Sensitive receptors near the Project are listed in Table 8: Sensitive Receptors.

Table 8: Sensitive Receptors

Receptor Type/Description	Distance and Direction from the Project Site
Single-Family Residential Dwelling	50 feet northeast
Single-Family Residential Dwelling	85 feet west
Single-Family Residential Neighborhood	415 feet east
William Collier Elementary	0.35-mile northeast
Elsinore First Assembly Church	0.30-mile northwest
Regency Heritage Park	0.45-mile northeast
Serenity Park	0.65-mile north

EXHIBIT 4 Noise Measurement Locations

Won Meditation Center

City of Wildomar

Kimley»Horn

4.3 EXISTING NOISE LEVELS

Mobile Sources

Surrounding land uses includes single-family residences and vacant land. Existing mobile noise sources are generated primarily by vehicles on Grand Avenue.

Stationary Sources

The Project is located within an urbanized area. The primary sources of stationary noise in the Project vicinity are urban-related activities (i.e., mechanical equipment, commercial areas, parking areas, and pedestrians). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA THRESHOLDS

Appendix G of the CEQA Guidelines contains analysis guidelines related to noise impacts. These guidelines have been used by the City to develop thresholds of significance for this analysis. A project would create a significant environmental impact if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive ground borne vibration or ground borne noise levels; and
- For a project located within the vicinity of a private airstrip or 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, expose people residing or working in the Project area to excessive noise levels.

5.2 METHODOLOGY

Construction noise estimates are based upon noise levels from the FHWA Roadway Construction Noise Model (FHWA-HEP-05-054) as well as the distance to nearby receptors. Reference noise levels from FHWA are used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Construction noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. Predicted construction noise levels were based on typical noise levels generated by construction equipment.

Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from the Federal Transit Administration (FTA) guidelines (2018). Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria for structural damage and human annoyance.

6 POTENTIAL IMPACTS AND MITIGATION

6.1 ACOUSTICAL IMPACTS

Threshold 6.1 Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods near the construction site. At the nearest, Project construction would occur at 130 feet from existing single-family residences. However, it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the sensitive receptors.

Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Such activities would require graders, scrapers, and tractors during site preparation; graders, dozers, and tractors during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in Table 9: Typical Construction Noise Levels.

Table 9: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 50 Feet from Source[1]	Typical Noise Level (dBA) at 100 Feet from Source[1]
Air Compressor	80	70
Backhoe/Front End Loader	80	70
Compactor (Ground)	80	72
Concrete Mixer	85	75
Concrete Mixer (Vibratory)	80	66
Concrete Pump Truck	82	72
Concrete Saw	90	72
Crane	85	78
Dozer/Grader/Excavator/Scraper	85	75
Drill Rig Truck	84	
Generator	82	72
Gradall	85	79
Hydraulic Break Ram	90	
Jackhammer	85	78
Mounted Impact Hammer	90	84

Table 9: Typical Construction Noise Levels		
Equipment	**Typical Noise Level (dBA) at 50 Feet from Source[1]**	**Typical Noise Level (dBA) at 100 Feet from Source[1]**
Pavement Scarifier/Roller	85	75
Paver	85	75
Pneumatic Tools	85	75
Pumps	77	67
Truck (Dump/Flat Bed)	84	74

Note:

1. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1 + 20Log(d_1/d_2)$

Where: dBA2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, 2018.

As shown in Table 9, exterior noise levels could affect the nearest existing sensitive receptors in the vicinity. Pursuant to WMC Section 9.48.020, construction activities may occur between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and 7:00 a.m. to 6:00 p.m. during the months of October through July. These permitted hours of construction are included in the code in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant disruption. The potential for construction-related noise to affect nearby residential receptors would depend on the location and proximity of construction activities to these receptors. Construction would occur primarily on the southern portion of the Site approximately 130 feet from the nearest sensitive receptors. Construction would occur throughout the Project site and would not be concentrated or confined in the area directly adjacent to sensitive receptors.

It should be noted that the noise levels depicted in Table 9 are worst-case noise levels, which would occur sporadically when construction equipment is operated in proximity to sensitive receptors. Given the sporadic and variable nature of Project construction and the implementation of time limits specified in the WMC, noise impacts would be reduced to a less than significant level. Additionally, to further reduce the potential for noise impacts, Mitigation Measure NOI-1 would be implemented to incorporate best management practices during construction. Implementation of Mitigation Measure NOI-1 would further minimize impacts from construction noise as it requires construction equipment to be equipped with properly operating and maintained mufflers and other state required noise attenuation devices. Thus, a less than significant noise impact would result from construction activities.

Construction Truck Trips

Construction activities would also cause increased noise along access routes to and from the site due to movement of equipment and workers. Grading of the Project site is expected to be mostly balanced with approximately 2,167 cy of import. This would result in approximately 271 soil hauling trips. It is anticipated that construction worker trips would be a maximum of 42 trips per day. Approximately 12 vendor trips per day are anticipated during the building construction phase. Mobile source noise would increase along access routes to and from the Project during construction. However, this source of noise would be temporary and would cease upon Project completion. It is anticipated that hauling would occur along major City roadways, which are collector streets. These include Grand Avenue, Corydon Road, Mission Trail, and Bundy Canyon Road to name a few. Although there would be a relatively high single-event noise exposure resulting in intermittent noise nuisance, the effect on longer term (hourly or daily) ambient noise levels would be minimal. Additionally, construction activities would only take place within the allowable hours specified by Municipal Code Section 9.48.020. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the Project would be less than significant.

Operations

Implementation of the proposed Project would create new sources of noise in the Project vicinity. The major noise sources associated with the Project that would potentially impact existing and future nearby residences include off-site traffic noise, mechanical equipment, and parking area noise.

Off-Site Traffic Noise

Future development generated by the Project would result in additional traffic on adjacent roadways, increasing vehicular noise near existing and proposed land uses. The Project is projected to generate a maximum daily of approximately 146 daily trips. The maximum daily peak hour would have approximately 65 trips. However, it is important to note that the peak hour traffic to and from the site is different than typical traffic peak hours. People would arrive and depart during certain times depending on appointed retreats and programs. These times would likely not overlap with peak hour commute times. Additionally, it was assumed in the Traffic Statement for Won Meditation Center prepared by Kimley-Horn (September 2019) that a substantial portion of visitors would carpool. Therefore, the estimated 146 daily trips would be conservative and the Project would realistically generate much fewer trips. The Project would not affect traffic noise on nearby residences.

Mechanical Equipment

Typically, mechanical equipment noise is 52 dBA at 50 feet from the source.[2] The HVAC units would be located as close as approximately 600 feet away from the closest receptors and would not be audible at this distance. As the Project would not place mechanical equipment associated adjacent to residential uses, noise from the HVAC units would not be perceptible at the nearest residents.

Parking Areas

Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA and may be an annoyance to adjacent noise-sensitive receptors.[3] Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 50 feet for normal speech to 50 dBA at 50 feet for very loud speech.[4] The parking area is located approximately 245 feet from the nearest sensitive receptor. At this distance, noise from parking areas would attenuate to approximately 47.2 dBA for noises generated by car door slamming, engine starting up and car pass-bys while noise from speech would attenuate to approximately 36.2 dBA. Therefore, the proposed parking would not result in substantially greater noise levels than currently exist at the Project site. Noise associated with parking lot activities is not anticipated to exceed the County's Noise Standards

[2] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

[3] Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

[4] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden. *Noise Navigator Sound Level Database with Over 1700 Measurement Values,* July 6,2010.

or the California Land Use Compatibility Standards during operation. Therefore, noise impacts from parking lots would be less than significant.

Mitigation Measures:

NOI-1 Prior to Grading Permit issuance, the Project applicant shall demonstrate, to the satisfaction of the City of Wildomar Planning Department that the Project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state required noise attenuation devices.
- Property owners and occupants located within 200 feet of the Project boundary shall be sent a notice, at least 15 days prior to commencement of construction of each phase, regarding the construction schedule of the proposed Project. A sign, legible at a distance of 50 feet shall also be posted at the Project construction site. All notices and signs shall be reviewed and approved by the City of Wildomar Community Development Director (or designee), prior to mailing or posting and shall indicate the dates and duration of construction activities, as well as provide a contact name and a telephone number where residents can inquire about the construction process and register complaints.
- The Contractor shall provide evidence that a construction staff member will be designated as a Noise Disturbance Coordinator and will be present on-site during construction activities. The Noise Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Noise Disturbance Coordinator shall notify the City within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by the Community Development Director (or designee). All notices that are sent to residential units immediately surrounding the construction site and all signs posted at the construction site shall include the contact name and the telephone number for the Noise Disturbance Coordinator.
- Prior to issuance of any Grading or Building Permit, the Project Applicant shall demonstrate to the satisfaction of the Community Development Director (or designee) that construction noise reduction methods shall be used where feasible. These reduction methods include shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and electric air compressors and similar power tools.
- Construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.), to the extent feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction activities shall not take place outside of the allowable hours specified by the City's Municipal Code Section 9.48.020, (6:00 a.m. and 6:00 p.m. during the months of June through September and 7:00 a.m. to 6:00 p.m. during the months of October through July).

Level of Significance: Less than significant impact.

Threshold 6.2 Would the Project generate excessive ground borne vibration or ground borne noise levels?

Once operational, the Project would not be a source of groundborne vibration. Increases in groundborne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.20 in/sec is considered safe and would not result in any construction vibration damage.

Table 10: Typical Construction Equipment Vibration Levels, lists vibration levels at 25 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in Table 10, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.003 to 0.210 in/sec PPV at 25 feet from the source of activity.

Table 10: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 130 Feet (in/sec)[1]
Large Bulldozer	0.089	0.0075
Caisson Drilling	0.089	0.0061
Loaded Trucks	0.076	0.0064
Rock Breaker	0.059	0.0050
Jackhammer	0.035	0.0030
Small Bulldozer/Tractors	0.003	0.0003
Vibratory Roller	0.210	0.0177

Notes:
[1] Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$; where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 12-2 of the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, 2006; D = the distance from the equipment to the receiver.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, 2018.

The nearest sensitive receptors are the residential uses approximately 50 feet to the northeast and the nearest structures are approximately 130 feet or more from the active construction zone. Using the calculation shown in Table 10, at 130 feet the vibration velocities from construction equipment would not exceed 0.0177 in/sec PPV, which is below the FTA's 0.20 PPV threshold. It is also acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the nearest residential structure. Therefore, vibration impacts associated with the Project would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 6.3 For a Project located within the vicinity of a private airstrip or 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?

The Project is not located within an airport land use plan. There is no public airport, public use airport, or private airstrip located within two miles of the project site. The proposed project would not expose people residing or working in the area to excessive noise levels. Therefore, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.2 CUMULATIVE NOISE IMPACTS

As discussed above, all Project construction and operational noise impacts would be less than significant. Construction noise impacts are by nature localized. Based on the fact that noise dissipates as it travels away from its source, noise impacts would be limited to the project site and vicinity. The Project site is bounded by I-15 to the west, existing residences to the southeast, existing rural residential properties to the north, and vacant land to the east.

Construction activities at other planned and approved projects would be required to take place during daytime hours, and the City and project applicants would be required to evaluate construction noise impacts and implement mitigation, if necessary, to minimize noise impacts. Each project would be required to comply with the applicable City of Wildomar Municipal Code limitations on allowable hours of construction. Therefore, Project construction would not contribute to cumulative impacts and impacts in this regard are not cumulatively considerable.

As discussed above, operational noise caused by the proposed Project would be less than significant. Due to site distance and these intervening land uses, cumulative stationary noise impacts would not occur. The Project would generate a maximum daily of approximately 146 vehicle trips. However, the traffic to and from the site is different than typical peak hour traffic as people would arrive and depart during certain times depending on retreats and programs schedules. The traffic generated from the Project is nominal and infrequent, and would not affect traffic noise on nearby residences. No known past, present, or reasonably foreseeable projects would compound or increase the operational noise levels generated by the Project. Therefore, cumulative impacts relative to temporary and permanent noise generation from the proposed project would be less than significant.

7 REFERENCES

1. Andmore Partners, *Site Plan*, 2019.
2. California Department of Transportation, *California Vehicle Noise Emission Levels*, 1987.
3. California Department of Transportation, *Traffic Noise Analysis Protocol*, May 2011.
4. California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.
5. California Department of Transportation, *Transportation Related Earthborne Vibrations*, 2002.
6. California Department of Transportation, Transportation and Construction-Induced Vibration Guidance Manual, 2004.
7. Federal Highway Administration, *Roadway Construction Noise Model*, 2006.
8. Federal Highway Administration, Roadway Construction Noise Model User's Guide Final Report, 2006.
9. Federal Interagency Committee on Noise, Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.
10. Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, 2018.
11. Michael Baker International, Faith Bible Church Traffic Impact Analysis Report, 2016.
12. County of Riverside, *General Plan*, 2003.
13. United States Environmental Protection Agency, *Protective Noise Levels (EPA 550/9-79-100)*, November 1979.
14. City of Wildomar, *Municipal Code*, 2018.

Appendix A

Existing Ambient Noise Measurements

Noise Measurement Field Data

Project:	Won Meditation Center	**Job Number:**	194171001
Site No.:	1	**Date:**	7/24/2019
Analyst:	Prathna Maharaj and Kiera Pascua	**Time:**	11:33 AM
Location:	34198 Richard Lane, Lake Elsinore, CA		
Noise Sources:	Ambient noise		
Comments:			

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	48.1	37.9	57.0	98.6

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	85°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	29.93"
Humidity:	48%

Photo:

Kimley»Horn

Summary

File Name on Meter	WON.001	
File Name on PC	SLM_0005586_WON_001.00.ldbin	
Serial Number	0005586	
Model	SoundExpert® LxT	
Firmware Version	2.302	
User	Prathna and Kiera	
Location	Won Meditation Center	
Job Description	Noise Measurements	
Note		

Measurement

Description		
Start	2019-07-24 10:21:29	
Stop	2019-07-24 11:43:50	
Duration	00:11:17.1	
Run Time	00:10:02.9	
Pause	00:01:14.2	
Pre Calibration	2019-07-24 10:18:52	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	At LMax	
Overload	122.1 dB	
	A	**C**
Under Range Peak	78.4	75.4
Under Range Limit	**27.4**	26.0
Noise Floor	16.9	16.9

Results

LA_{eq}	48.1	
LAE	75.9	
EA	4.309 µPa²h	
$LZ_{peak\ (max)}$	2019-07-24 11:35:54	98.6
LAS_{max}	2019-07-24 10:21:29	57.0
LAS_{min}	2019-07-24 11:39:17	37.9

SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LZpeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LZpeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LZpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0

Community Noise	**Ldn**	**LDay 07:00-22:00**
	48.1	48.1

LCeq	58.3 dB
LAeq	48.1 dB
LCeq - LAeq	10.2 dB
LAIeq	52.9 dB
LAeq	48.1 dB
LAIeq - LAeq	4.8 dB

	A	
	dB	**Time Stamp**
Leq	48.1	
LS(max)	57.0	2019/07/24 10:21:29
LS(min)	37.9	2019/07/24 11:39:17
LPeak(max)		

# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics

LAI5.00	52.1 dB
LAI10.00	51.3 dB
LAI33.30	48.6 dB
LAI50.00	46.8 dB
LAI66.60	45.2 dB
LAI90.00	42.6 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**
PRMLxT1L	2019-07-24 10:18:41	-28.4
PRMLxT1L	2019-07-09 15:36:26	-28.3
PRMLxT1L	2019-06-10 15:25:58	-28.3
PRMLxT1L	2019-05-01 10:09:52	-28.5
PRMLxT1L	2019-04-10 09:39:53	-28.7
PRMLxT1L	2019-04-10 09:39:38	-28.7
PRMLxT1L	2019-04-10 09:39:18	-28.8
PRMLxT1L	2019-04-10 09:38:57	-28.8
PRMLxT1L	2019-03-19 13:06:48	-28.5

Noise Measurement Field Data

Project:	Won Meditation Center	**Job Number:**	194171001
Site No.:	2	**Date:**	7/24/2019
Analyst:	Prathna Maharaj and Kiera Pascua	**Time:**	11:49 AM
Location:	Corydon Rd and Grand Ave, Lake Elsinore, CA		
Noise Sources:	Ambient noise		
Comments:			

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	63.1	49.3	78.1	100.6

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	85°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	29.93"
Humidity:	48%

Photo:

Kimley»Horn

Summary

File Name on Meter	WON.002	
File Name on PC	SLM_0005586_WON_002.00.ldbin	
Serial Number	0005586	
Model	SoundExpert® LxT	
Firmware Version	2.302	
User	Prathna and Kiera	
Location	Won Meditation Center	
Job Description	Noise Measurements	
Note		

Measurement

Description		
Start	2019-07-24 11:49:53	
Stop	2019-07-24 11:59:53	
Duration	00:10:00.0	
Run Time	00:10:00.0	
Pause	00:00:00.0	
Pre Calibration	2019-07-24 10:18:41	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	At LMax	
Overload	122.1 dB	
	A	**C**
Under Range Peak	78.4	75.4
Under Range Limit	**27.4**	26.0
Noise Floor	16.9	16.9

Results

LA_{eq}	63.1	
LAE	90.8	
EA	134.878 µPa²h	
$LZ_{peak\ (max)}$	2019-07-24 11:51:40	100.6
LAS_{max}	2019-07-24 11:51:41	78.1
LAS_{min}	2019-07-24 11:53:00	49.3

SEA	-99.9	dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0		0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0		0.0
LZpeak > 135.0 dB (Exceedance Counts / Duration)	0		0.0
LZpeak > 137.0 dB (Exceedance Counts / Duration)	0		0.0
LZpeak > 140.0 dB (Exceedance Counts / Duration)	0		0.0

Community Noise	**Ldn**	**LDay 07:00-22:00**
	63.1	63.1

LCeq	75.4	dB
LAeq	63.1	dB
LCeq - LAeq	12.3	dB
LAIeq	64.4	dB
LAeq	63.1	dB
LAIeq - LAeq	1.4	dB

	A	
	dB	**Time Stamp**
Leq	63.1	
LS(max)	78.1	2019/07/24 11:51:41
LS(min)	49.3	2019/07/24 11:53:00
LPeak(max)		

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Statistics

LAI5.00	68.6	dB
LAI10.00	65.2	dB
LAI33.30	60.5	dB
LAI50.00	58.0	dB
LAI66.60	56.0	dB
LAI90.00	52.7	dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**
PRMLxT1L	2019-07-24 10:18:41	-28.4
PRMLxT1L	2019-07-09 15:36:26	-28.3
PRMLxT1L	2019-06-10 15:25:58	-28.3
PRMLxT1L	2019-05-01 10:09:52	-28.5
PRMLxT1L	2019-04-10 09:39:53	-28.7
PRMLxT1L	2019-04-10 09:39:38	-28.7
PRMLxT1L	2019-04-10 09:39:18	-28.8
PRMLxT1L	2019-04-10 09:38:57	-28.8
PRMLxT1L	2019-03-19 13:06:48	-28.5

Noise Measurement Field Data

Project:	Won Meditation Center	**Job Number:**	194171001
Site No.:	3	**Date:**	7/24/2019
Analyst:	Prathna Maharaj and Kiera Pascua	**Time:**	12:05 PM
Location:	33116 Robert Street, Lake Elsinore, CA		
Noise Sources:	Plane flying overhead		
Comments:			

Results (dBA):

	Leq:	Lmin:	Lmax:	Peak:
Measurement 1:	56.3	54.8	64.5	89.4

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	85°
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	29.93"
Humidity:	48%

Photo:

Kimley»Horn

Summary

File Name on Meter	WON.003	
File Name on PC	SLM_0005586_WON_003.00.ldbin	
Serial Number	0005586	
Model	SoundExpert® LxT	
Firmware Version	2.302	
User	Prathna and Kiera	
Location	Won Meditation Center	
Job Description	Noise Measurements	
Note		

Measurement

Description		
Start	2019-07-24 12:05:13	
Stop	2019-07-24 12:15:13	
Duration	00:10:00.0	
Run Time	00:10:00.0	
Pause	00:00:00.0	
Pre Calibration	2019-07-24 10:18:41	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	At LMax	
Overload	122.1 dB	
	A	**C**
Under Range Peak	78.4	75.4
Under Range Limit	**27.4**	26.0
Noise Floor	16.9	16.9

Results

LA_{eq}	56.3	
LAE	84.1	
EA	28.398 µPa²h	
$LZ_{peak\ (max)}$	2019-07-24 12:05:36	89.4
LAS_{max}	2019-07-24 12:05:13	64.5
LAS_{min}	2019-07-24 12:14:33	54.8

SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LZpeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LZpeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LZpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0
Community Noise	**Ldn**	**LDay 07:00-22:00**
	56.3	56.3
LCeq	72.3 dB	
LAeq	56.3 dB	
LCeq - LAeq	16.0 dB	
LAIeq	56.9 dB	
LAeq	56.3 dB	
LAIeq - LAeq	0.6 dB	

	A	
	dB	**Time Stamp**
Leq	56.3	
LS(max)	64.5	2019/07/24 12:05:13
LS(min)	54.8	2019/07/24 12:14:33
LPeak(max)		

# Overloads	0	
Overload Duration	0.0 s	
# OBA Overloads	0	
OBA Overload Duration	0.0 s	

Statistics

LAI5.00	57.3 dB
LAI10.00	56.9 dB
LAI33.30	56.5 dB
LAI50.00	56.1 dB
LAI66.60	55.7 dB
LAI90.00	55.4 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
PRMLxT1L	2019-07-24 10:18:41	-28.4
PRMLxT1L	2019-07-09 15:36:26	-28.3
PRMLxT1L	2019-06-10 15:25:58	-28.3
PRMLxT1L	2019-05-01 10:09:52	-28.5
PRMLxT1L	2019-04-10 09:39:53	-28.7
PRMLxT1L	2019-04-10 09:39:38	-28.7
PRMLxT1L	2019-04-10 09:39:18	-28.8
PRMLxT1L	2019-04-10 09:38:57	-28.8
PRMLxT1L	2019-03-19 13:06:48	-28.5