Noise Impact Assessment

Victorville Wellness Center Project

City of Victorville, California

Prepared For:

City of Victorville
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LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
BNSFFR	Burlington Northern Santa Fe Railroad
C-1	Commercial
City	City of Victorville
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	Decibel is A-weighted
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
I-15	Interstate 15
L_{dn}	Day/Night noise level
L_{eq}	Equivalent noise level
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
OTSP	Old Town Specific Plan
PPV	Peak particle velocity
Project	Victorville Wellness Center Project
RMS	Root mean square
sf	Square Foot
SF	Square Feet
STC	Sound Transmission Class
WEAL	Western Electro-Acoustic Laboratory, Inc.

1.0 INTRODUCTION

This report documents the results of a Noise Impact Assessment completed for the Victorville Project (Project), which includes the development of 23,360 square feet (SF) of building space with 168 beds and supporting services buildings (Phase 1); and 30 320-square foot affordable housing cottages and associated features (Phase 2) on 4.5 acres of land at the northern edge of the Old Town Specific Plan (OTSP) area in the City of Victorville, California (Figure 1-1). This assessment was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the City of Victorville (City) General Plan Noise Element and Municipal Code. The purpose of this report is to estimate Project-generated noise levels and determine the level of impact the Project would have on the environment.

1.1 Project Location

The Proposed Project is located on a 4.5-acre site at the northeastern edge of Victorville, California. The site is located west of the Mojave River and south of Interstate 15 (I-15), approximately 90 miles northeast of the City of Los Angeles and 30 miles north of the City of San Bernardino. The Site is generally bound by I-15 to the north, with a gas station, vacant land, and industrial facilities beyond; single-family residences fronting River Street, Cottonwood Street, and Willow Street to the west, with the Friendly Temple Church of God, E Street, and the Burlington Northern Santa Fe Railroad (BNSFRR) beyond; Eva Dell Park to the south, with the BNSFRR, and a Greyhound bus station beyond; and the Mojave River to the east, with vacant land beyond (Figure 1-2). The Project Site is currently undeveloped with a scattering of vegetation and some debris spread throughout the Site.

The Project Site was originally zoned for Open Space and Active Open Space in the 2018 OTSP. However, on June 16, 2021 the OTSP was amended to re-designate the Project Site to Medium Density Residential (Ordinance No. 2420). Homeless and emergency shelters are currently permitted in the Commercial (C-1 only) zone, and conditionally permitted within the Mixed Density, Medium Density and High-Density Residential zones. The Site is bordered by open space, public park, residential, commercial, and light industrial land uses.

1.2 Project Objectives

The Proposed Project would fulfill goals and policies set out by the Housing Element by providing publicly owned land to build affordable living opportunities that will enhance the quality of life for the City's homeless population. The Wellness Center Campus aims to provide a supportive, safe and stable environment for homeless persons and their families to receive life-changing services needed to break the cycle of homelessness and improve quality of life. The main Wellness Center is planned as a low-barrier, navigation center providing interim housing, supportive services, medical oversight and recuperative care to help homeless men, women, and families transition out of homelessness. In addition, permanent supportive housing units will be a component of the campus allowing some guests to transfer from the emergency shelter, that provides interim housing for approximately 180 days, to the abutting 30-unit permanent supportive housing area. An onsite medical clinic would be available to the residents of the

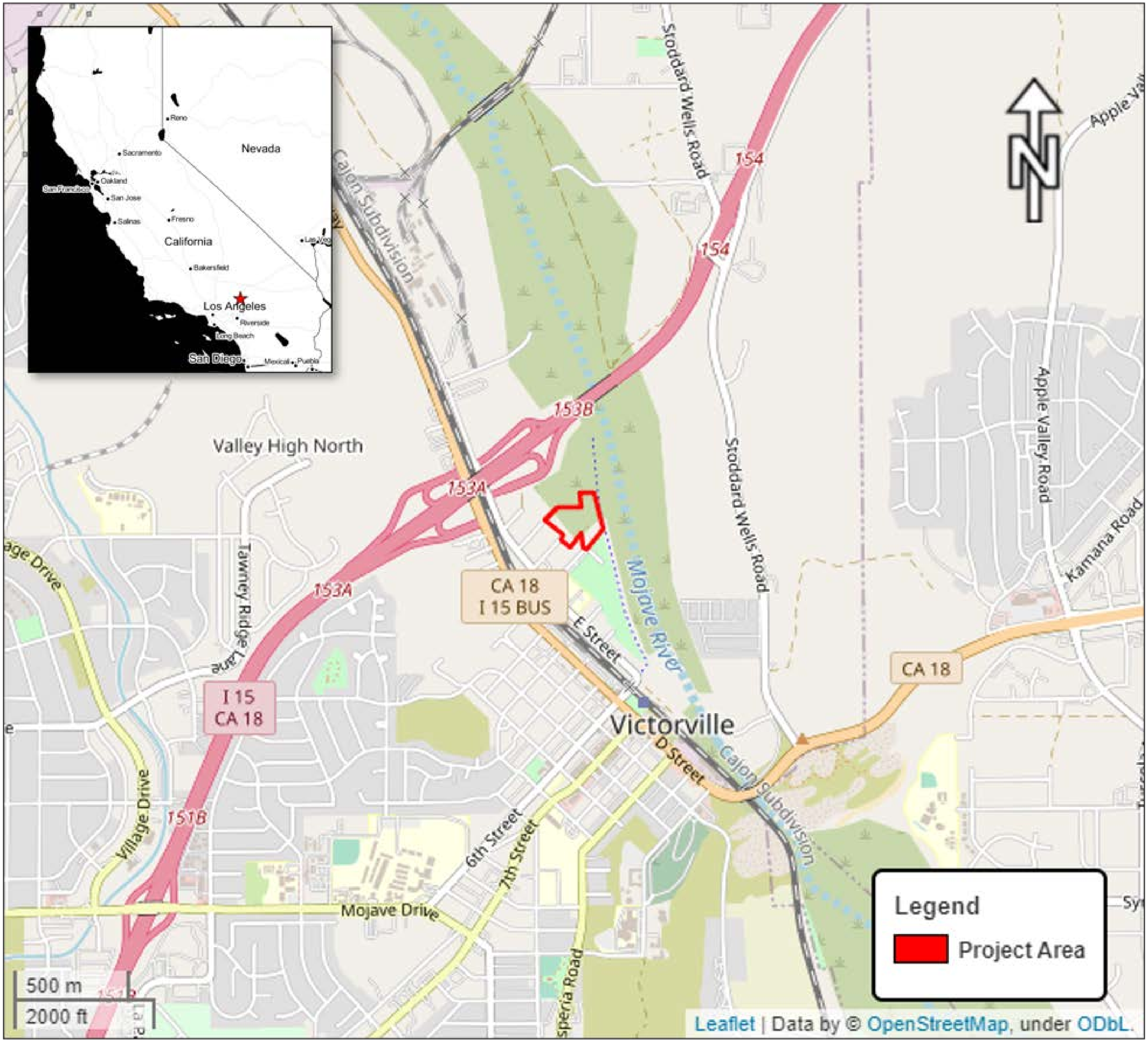

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Figure 1-1. Project Location
Victorville Wellness Center

9/22/2021

1:9,028

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Project Boundary

Surrounding Land Use

Transportation Sources

Burlington Northern Santa Fe Railroad

Highway 15

Surrounding Land Use Areas

Single-Family Residential

Mixed Use Commercial/Residential

Vacant Land

Mojave River Greenway

Parkland

School

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Figure 1-2. Surrounding Land Uses

Victorville Wellness Center

campus and the community. Case managers would be onsite to develop individualized service plans that include a successful exit strategy to stable housing. Individuals would be connected to tools and resources to help break the cycle of homelessness.

1.3 Project Characteristics

The Project would be constructed in two phases. Phase 1 includes 23,360 SF of building space with 168 beds and supporting services buildings, parking spaces, bicycle parking, a classroom, 3 covered patios, landscaping, garden, community farm, dog run, and entry plaza, bus stop and associated site improvements (utilities, landscaping, etc.). Phase 2 includes permanent affordable housing adjacent to the Wellness Center (Figure 1-3). The Project Site is part of the Old Town Specific Plan (OTSP) area, for which an *Initial Study/Mitigated Negative Declaration (*IS/MND) was completed in November 2018.

1.3.1 Phase 1

1.3.1.1 Navigation Center Buildings

The Project would construct four separate residential buildings including one family unit building, three single unit buildings, and one behavioral health building. Each building would be 2,240 SF. The family unit building would be located in the southeastern portion of the Project Site, and the other buildings are positioned in the northern portion of the site.

1.3.1.2 Recuperative Care Center Buildings

The Project would construct two recuperative care buildings, each totaling 2,240 SF. Both units would have 24 beds, three showers, three toilets, and one accessible toilet. These buildings would be located on the easter portion of the campus.

1.3.1.3 Cafeteria

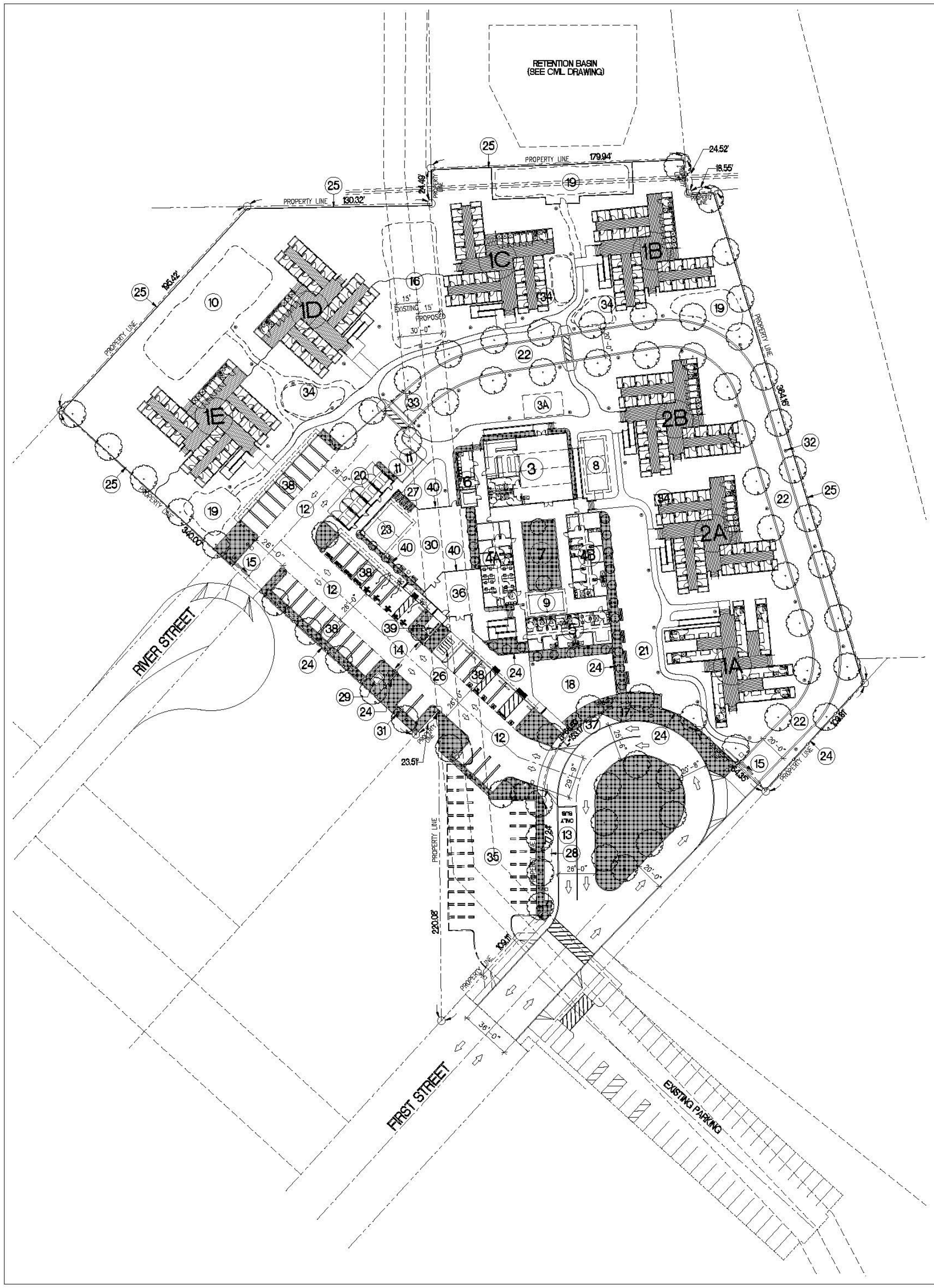
The Project would include a 2,880-SF cafeteria with 1,842-SF of dining space, 696-SF kitchen area, and 342-SF toilet area. The cafeteria would be located in the center of the campus.

1.3.1.4 Office Space

The Project would construct a 1,440-SF wellness center building, 1,440-SF recuperative care building, and a 1,440-SF exam/clinic building in the center of the campus.

1.3.1.5 Circulation and Parking

In total, the Project would construct four accessible spaces, 27 standard spaces, four EV charging stations, and four clean air/vanpool spaces for a total of 39 parking spaces. The Project includes a tubular steel driveway with sliding gate, bus stop lane, a 20-foot-wide fire truck loop road, short-term and long-term bicycle parking areas, and pedestrian walkways throughout the campus.



SITE DATA :

PHASE - 1

NAVIGATION CENTER BUILDINGS : 11,200 SF. (TOTAL)

- (1A) FAMILY UNIT-1 BUILDING = 2,240 SF.
  - 21 - BED
  - 7 - TOILET (WITH SHOWER) ADA ACCESSIBLE
- (1B) SINGLE UNIT-1 BUILDING = 2,240 SF.
  - 24 - BED, 3 - SHOWER, 3 - TOILET
  - 1 - TOILET (WITH SHOWER) ADA ACCESSIBLE
- (1C) SINGLE UNIT-2 BUILDING = 2,240 SF.
  - 24 - BED, 3 - SHOWER, 3 - TOILET
  - 1 - TOILET (WITH SHOWER) ADA ACCESSIBLE
- (1D) SINGLE UNIT-3 BUILDING = 2,240 SF.
  - 24 - BED, 3 - SHOWER, 3 - TOILET
  - 1 - TOILET (WITH SHOWER) ADA ACCESSIBLE
- (1E) BEHAVIOR HEALTH BUILDING = 2,240 SF.
  - 24 - BED, 3 - SHOWER, 3 - TOILET
  - 1 - TOILET (WITH SHOWER) ADA ACCESSIBLE

RECUPERATIVE CARE CENTER BUILDINGS : 4,480 SF. (TOTAL)

- (2A) UNIT-1 BUILDING = 2,240 SF.
  - 24 - BED, 3 - SHOWER, 3 - TOILET
  - 1 - TOILET (WITH SHOWER) ADA ACCESSIBLE
- (2B) UNIT-2 BUILDING = 2,240 SF.
  - 24 - BED, 3 - SHOWER, 3 - TOILET
  - 1 - TOILET (WITH SHOWER) ADA ACCESSIBLE

- (3) CAFETERIA (MODULAR BUILDING) : 2,880 SF. (TOTAL) (SEE ENLARGED PLAN ON A-2.1)
  - DINING AREA = 1,842 SF.
  - KITCHEN AREA = 696 SF.
  - TOILET AREA = 342 SF.

OFFICE (MODULAR BUILDINGS) : 2,880 SF. (TOTAL)

- (4A) WELNESS CENTER BUILDING (SEE ENLARGED PLAN ON A-2.0) = 1,440 SF.
- (4B) RECUPERATIVE CARE BUILDING (SEE ENLARGED PLAN ON A-2.0) = 1,440 SF.
- (5) EXAM/CLINIC (MODULAR BUILDING) (SEE ENLARGED PLAN ON A-2.0) = 1,440 SF.
- (6) LAUNDRY (STORAGE/JANITOR AND UTILITY) MODULAR BUILDING (SEE ENLARGED PLAN ON A-2.1) = 480 SF.
- (7) CENTRAL COURTYARD (ELEVATED)
- (11) SERVICE PARKING STALLS LOADING / UNLOADING
- (12) PARKING AREA (ASPHALT CONC. PAVING FINISH)
- (13) BUS STOP LANE LOADING / UNLOADING
- (14) TUBULAR STEEL DRIVEWAY ROLLING/SLIDING GATE (AUTOMATIC/REMOTE CONTROL OPERATIONS)
- (15) TUBULAR STEEL DRIVEWAY ROLLING/SLIDING GATE (AUTOMATIC/REMOTE CONTROL OPERATIONS)
- (17) FRONT LANDSCAPE AREA
- (20) COVERED AND ENCLOSED TRASH ENCLOSURE WITH (8)-3 CUBIC YARD BIN (PER CITY OF VICTORVILLE STANDARDS) (SEE ENLARGED PLAN ON A-6.0)
- (21) OPEN SPACE (DG FINISH)
- (22) 20'-0" WIDE FIRE TRUCK LOOP ROAD (ASPHALT CONC. PAVING FINISH WITH ZERO INCH CURB AND 12" WIDE CONC. EDGE BORDER)
- (24) 7'-0" HIGH TUBULAR STEEL FENCE (WITH 16"x16" AT 7'-0" HIGH DECORATIVE CONCRETE BLOCK WALL PILASTER AT 16'-0" O.C. MAXIMUM)
- (25) CHAIN LINK FENCE (8'-0" HIGH)
- (26) SHORT-TERM BICYCLE PARKING AREA (24" WIDE x 6'-0" LONG BICYCLE PARKING SPACE WITH ANCHOR RACK) (TYPICAL AT 6 SPACES)
- (27) COVERED AND ENCLOSED LONG-TERM BICYCLE PARKING AREA (18" WIDE x 4'-0" DEEP x 6'-0" HIGH BICYCLE PARKING SPACE WITH WALL MOUNT RACK) (TYPICAL AT 8 SPACES) (SEE ENLARGED PLAN ON A-4.0)
- (28) BUS STOP CANOPY (WAITING AREA) (PER CITY OF VICTORVILLE STANDARDS)
- (29) ELECTRICAL TRANSFORMER LOCATION
- (30) ENCLOSED RESIDENTS ENTRY PLAZA
- (31) 22'-6" HIGH PARKING AREA LIGHT POLE
- (32) 8'-0" HIGH WALKWAY/PEDESTRIAN LIGHT POLE
- (33) TUBULAR STEEL (OR EQUAL) MANUAL DOUBLE SWING BARRIER GATE ARM
- (36) ENCLOSED RESIDENTS SECURITY CHECK AREA
- (37) DROP-OFF/PICK-UP AREA
- (38) PARKING LOT SOLAR PANEL CANOPY (DESIGN AND INSTALLATION BY SOLAR CANOPY COMPANY)
- (39) ELECTRIC METER/SERVICE PANEL, TELEPHONE AND CABLE PANELS LOCATION (MOUNT ON 8" THICK x 10'-0" LONG AT 6'-0" HIGH CONCRETE BLOCK WALL)
- (40) 7'-0" HIGH TUBULAR STEEL FENCE

PHASE - 2

- (3A) CLASSROOM (MODULAR BUILDING) = 448 SF.
- (8) COVERED PATIO (OUTDOOR DINING AREA) (SEE ENLARGED PLAN ON A-3.5) = 504 SF.
- (9) COVERED PATIO (OUTDOOR WAITING AREA) (SEE ENLARGED PLAN ON A-3.3) = 312 SF.
- (10) COMMUNITY FARM AREA
- (16) GARDEN AREA
- (18) ENTRY PLAZA (DG FINISH)
- (19) DOG RUN / DOG KENNEL AREA
- (23) COVERED PATIO (OUTDOOR LOCKER AREA) (SEE ENLARGED PLAN ON A-3.4) = 560 SF.
- (34) HIGHLIGHT LANDSCAPE AREA
- (35) PARKING AREA

PARKING PROVIDED :

ACCESSIBLE	=	4 SPACES
STANDARD	=	27 SPACES
EV CHARGING STATION	=	4 SPACES
CLEAN AIR/VANPOOL/EV	=	4 SPACES
TOTAL	=	39 SPACES

BICYCLE PARKING :

LONG-TERM PARKING	=	8 SPACES
SHORT-TERM PARKING	=	6 SPACES

NORTH

SITE PLAN 1"=40'-0" SCALE 1

ARCHITECTS CMC AND ENGINEERS

783 PHILLIPS DRIVE
CITY OF INDUSTRY, CA 91748
PHONE : (626) 569-1810

REVISIONS

No.	NOTE	DATE

PROJECT OWNER

CITY OF VICTORVILLE, CALIFORNIA

14343 CIVIC DRIVE
VICTORVILLE, CA 92392
PHONE : (760) 955-5000

LICENSED ARCHITECT STATE OF CALIFORNIA NO. C2573 REN. 2-28-23

PROJECT NAME

PROPOSED VICTORVILLE WELLNESS AND RECUPERATIVE CARE CENTER

VICTORVILLE, CALIFORNIA

DRN ECLJR · CHK M.CHUNG · DRAWING NAME SITE PLAN · VERSION No. · DATE · DRAWING NO. A-1.0 · DB NAME

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Figure 1-3. Project Site Plans
Victorville Wellness Center

1.3.1.6 Other Facilities

The Project would construct a 480-SF laundry facility, elevated central courtyard, 448-SF classroom, two covered patios and outdoor dining areas, a community farm area, garden area, entry plaza, dog run/dog kennel area, outdoor locker area and covered patio, landscaping, utilities, and associated facilities. The entire property would be surrounded by chain link and tubular steel fencing.

1.3.2 Phase 2

Phase 2 of the Wellness Center would include a micro-housing community called the Wellness Cottages that provide permanent affordable housing adjacent to the Wellness Center. These units would be located in the southwestern portion of the Project Site. Each 320-SF cottage (30 units total) would contain an accessible restroom, living/sleeping area, dining space, kitchenette, and storage unit. These units would assist those exiting the temporary Wellness Center shelter or who are chronically homeless. Phase II would also include separate parking, landscaping, utilities, and associated facilities for the Wellness Cottages.

2.0 ENVIRONMENTAL NOISE AND GROUNDBORNE VIBRATION ANALYSIS

2.1 Fundamentals of Noise and Environmental Sound

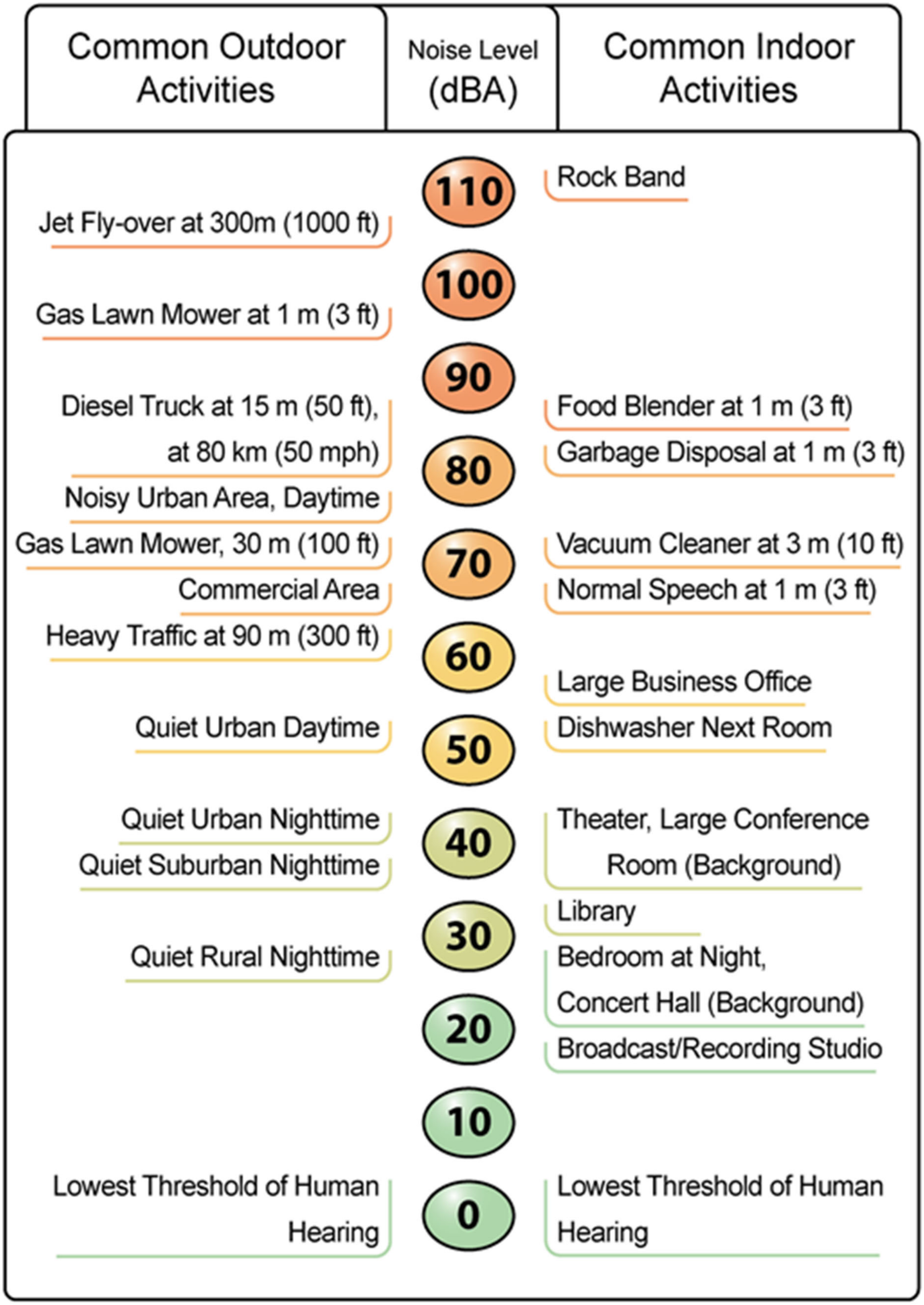
2.1.1 Addition of Decibels

The decibel (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 decibel is A-weighted (dBA), 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 three dB higher than one source under the same conditions (Federal Transit Administration [FTA] 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by three dB). Under the decibel scale, three sources of equal loudness together would produce an increase of five dB.

Typical noise levels associated with common noise sources are depicted on Figure 2-1.

2.1.2 Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately six 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, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately three dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (Federal Highway Administration [FHWA] 2011). No excess attenuation is assumed for hard surfaces like a



Source: California Department of Transportation (Caltrans) 2020a

Figure 2-1. Common Noise Levels
Victorville Wellness Center

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 three dB per doubling of distance is assumed (FHWA 2011).

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about five dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. [WEAL] 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the “line of sight” between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend lengthwise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver.

The manner in which 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 (Caltrans 2002). The exterior-to-interior reduction of newer residential units is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. [HMMH] 2006). Generally, in exterior noise environments ranging from 60 dBA Community Noise Equivalent Level (CNEL) to 65 dBA CNEL, interior noise levels can typically be maintained below 45 dBA, a typical residential interior noise standard, with the incorporation of an adequate forced air mechanical ventilation system in each residential building, and standard thermal-pane residential windows/doors with a minimum rating of Sound Transmission Class (STC) 28. (STC is an integer rating of how well a building partition attenuates airborne sound. In the U.S., it is widely used to rate interior partitions, ceilings, floors, doors, windows, and exterior wall configurations). In exterior noise environments of 65 dBA CNEL or greater, a combination of forced-air mechanical ventilation and sound-rated construction methods is often required to meet the interior noise level limit. Attaining the necessary noise reduction from exterior to interior spaces is readily achievable in noise environments less than 75 dBA CNEL with proper wall construction techniques following California Building Code methods, the selections of proper windows and doors, and the incorporation of forced-air mechanical ventilation systems.

2.1.3 Noise Descriptors

The decibel 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 noise descriptors most often encountered when dealing with traffic, community, and environmental noise include the average hourly noise level (in L_{eq}) and the average daily noise levels/community noise equivalent level (in L_{dn}/CNEL). The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is 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.
- **Day-Night Average (L_{dn})** is a 24-hour average L_{eq} with a 10-dBA "weighting" added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the 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)** is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively.

Table 2-1 provides a list of other common acoustical descriptors.

Table 2-1. Common Acoustical Descriptors

Descriptor	Definition
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 micropascals (or 20 micronewtons per square meter), where 1 pascal 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 decibels 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 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hertz (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 sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	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.
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.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.

Table 2-1. Common Acoustical Descriptors

Descriptor	Definition
Day/Night Noise Level, L_{dn} or DNL	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 in the 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 p.m. to 10:00 p.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.
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.

The A-weighted decibel 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 ±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. Close to the noise source, the models are accurate to within about ±1 to 2 dBA.

2.1.4 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 A-weighted noise levels (dBA), the following relationships should be noted in understanding this analysis:

- 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 change in level of at least 5 dBA is required before any noticeable change in community response would be expected. An increase of 5 dBA 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.

2.1.5 Effects of Noise on People

2.1.5.1 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 (OSHA) 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 eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

2.1.5.2 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.

2.2 Fundamentals of Environmental Groundborne Vibration

2.2.1 Vibration Sources and Characteristics

Sources of earthborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or manmade 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.

PPV is generally accepted as the most appropriate descriptor for evaluating the potential for building damage. For human response, however, an average vibration amplitude is more appropriate because it takes time for the human body to respond to the excitation (the human body responds to an average vibration amplitude, not a peak amplitude). Because the average particle velocity over time is zero, the RMS amplitude is typically used to assess human response. The RMS value is the average of the amplitude squared over time, typically a 1- sec. period (FTA 2018).

Table 2-2 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.

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. For instance, heavy-duty trucks generally generate groundborne vibration velocity levels of 0.006 PPV at 50 feet under typical circumstances, which as identified in Table 2-2 is considered very unlikely to cause damage to buildings of any type. 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.

Table 2-2. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

PPV (inches/second)	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: Caltrans 2020b

3.0 EXISTING ENVIRONMENTAL NOISE SETTING

3.1 Noise Sensitive Land Uses

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

The nearest existing noise-sensitive land uses to the Project Site are the single-family residences located directly adjacent and southeast of the Project Site. Additionally, once construction is completed, the Project itself would become a noise-sensitive land use.

3.2 Existing Ambient Noise Environment

The noise environment in the Proposed Project vicinity is impacted by various noise sources. As previously discussed, the Site consists of vacant undeveloped land with a scattering of debris and vegetation and a slight slope (0 to 2 degrees) eastward towards the Mojave River. It is generally bound by residential land uses to the south and west, with the BNSFRR and mixed commercial/residential uses beyond; vacant land to the north with I-15 beyond; and the Mojave River to the east with vacant land and a mobile home park beyond. Mobile sources of noise, especially cars and trucks on area roadways and freight trains on the BNSFRR, are the most common and significant sources of noise in the Project vicinity. Noise generated by freight rail is primarily generated by the train's steel wheels rolling on steel rails. This rolling noise increases in direct proportion to increases in train speed, and also increases substantially when collisions occur as train wheels traverse the rail gaps and joints of special trackwork for crossovers and turnouts. Other sources of noise include the residential land uses throughout the area generating typical neighborhood noise (i.e. talking, car doors shutting, dogs barking). The Project Site is located outside of any airport land use plan. Furthermore, the Project Site is located beyond two miles from any airport. The Southern California Logistics Airport and the Osborne Airport are the closest airports to the Project Site; located northwest and northeast of the Site and approximately 5.75 and 3.50 miles distant, respectively.

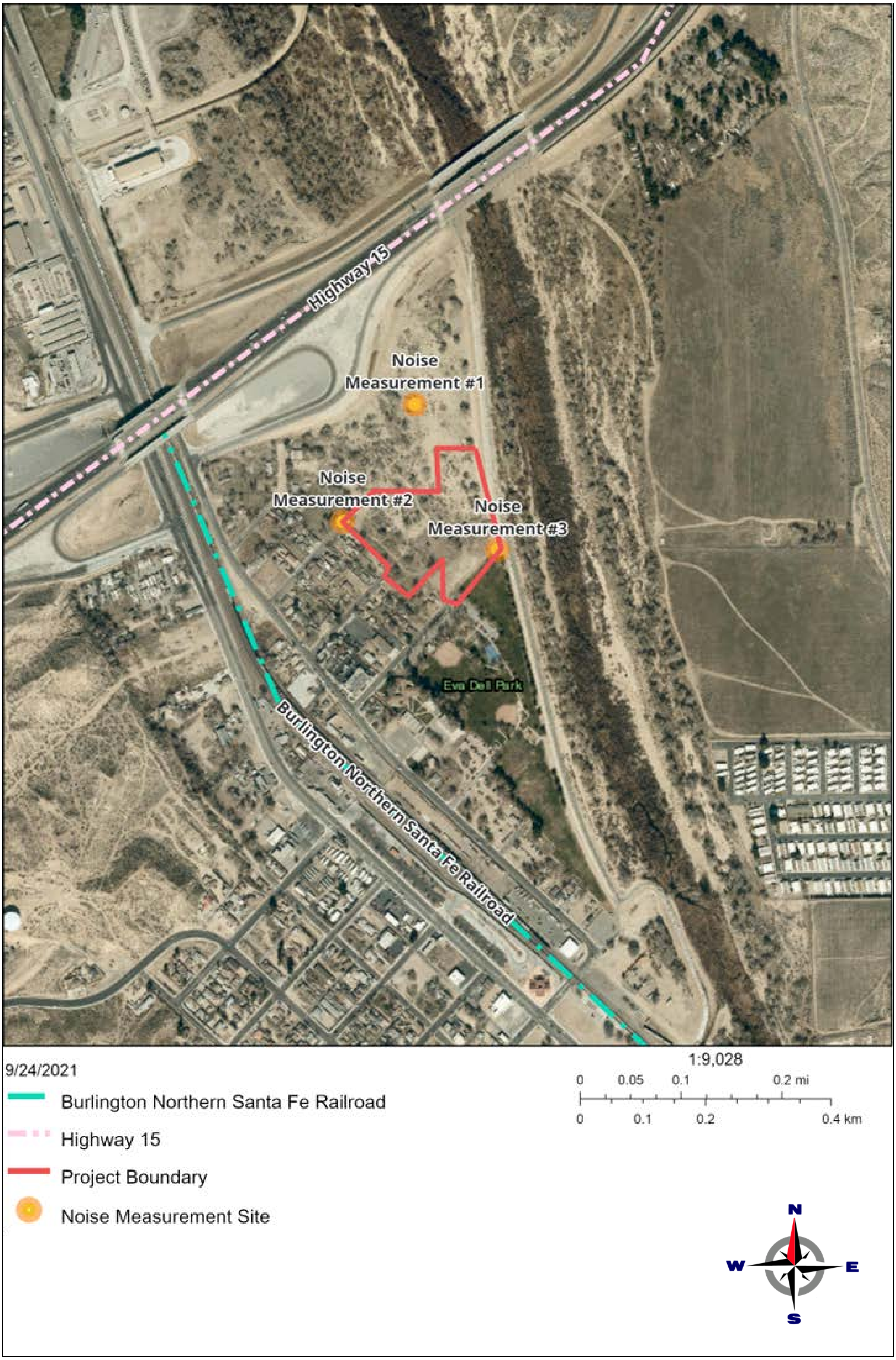
In order to quantify existing ambient noise levels in the Project vicinity, ECORP Consulting, Inc. conducted three short-term noise measurements on September 17, 2021. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project Site during the daytime (see Figure 3-1 for a visual depiction of the Noise Measurement Locations). The 15-minute measurements were taken between 10:53 a.m. and 11:55 a.m. Short-term (L_{eq}) measurements are considered representative of the noise levels throughout the daytime. The average noise levels and sources of noise measured at each location are listed in Table 3-1.

Table 3-1. Existing (Baseline) Noise Measurements

Location Number	Location	L_{eq} dBA	L_{min} dBA	L_{max} dBA	Time
1	Center of Vacant Lot North of Project Site	**47.0**	27.3	71.5	11:40 a.m.-11:55 a.m.
2	Westernmost Edge of Project Site; Cul-de-sac at End of Cottonwood Street	**47.8**	41.8	62.4	10:53 a.m.-11:08 a.m.
3	Easternmost Edge of Site; at Project Site/Walking Path/Eva Dell Park Boundary	**51.8**	38.0	75.0	11:19 a.m.-11:34 a.m.

Source: Measurements were taken by ECORP with a Larson Davis SoundExpert LxT precision sound level meter, which satisfies the American National Standards Institute for general environmental noise measurement instrumentation. Prior to the measurements, the SoundExpert LxT sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. See Attachment A for noise measurement outputs.

As shown in Table 3-1, the ambient recorded noise levels range from 47.0 to 51.8 dBA L_{eq} on and around the Project Site. The most common noise in the Project vicinity is produced by automotive vehicles on adjacent roadways (e.g., cars, trucks, buses, motorcycles), mainly I-15 north of the Site, and noise produced by the BNSFRR. Vehicular noise varies with the volume, speed, and type of traffic. Slower traffic



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 3-1. Baseline Noise Measurement Locations

Victorville Wellness Center

produces less noise than fast-moving traffic. Trucks typically generate more noise than cars. Infrequent or intermittent noise also is associated with vehicles including sirens, vehicle alarms, slamming of doors, garbage and construction vehicle activity, and honking of horns. These noises add to urban noise and are regulated by a variety of agencies.

4.0 REGULATORY FRAMEWORK

4.1 Federal

4.1.1 U.S. Environmental Protection Agency Office of Noise Abatement and Control

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate Federal noise control activities. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, documents and research completed by the EPA Office of Noise Abatement and Control continue to provide value in the analysis of noise effects

4.1.2 Occupational Safety and Health Act of 1970

OSHA regulates onsite noise levels and protects workers from occupational noise exposure. To protect hearing, worker noise exposure is limited to 90 decibels with A-weighting (dBA) over an eight-hour work shift (29 Code of Regulations 1910.95). Employers are required to develop a hearing conservation program when employees are exposed to noise levels exceeding 85 dBA. These programs include provisions of hearing protection devices and testing employees for hearing loss periodically.

4.1.3 National Institute of Occupational Safety and Health

A division of the US Department of Health and Human Services, the National Institute for Occupational Safety and Health (NIOSH) has established a construction-related noise level threshold as identified in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998. NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. The intention of these thresholds is to protect people from hearing losses resulting from occupational noise exposure.

4.2 State

4.2.1 State of California General Plan Guidelines

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

4.2.2 State Office of Planning and Research Noise Element Guidelines

The State OPR Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land-use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL.

4.2.3 California Department of Transportation

In 2020, the California Department of Transportation (Caltrans) published the Transportation and Construction Vibration Manual (Caltrans 2020b). The manual provides general guidance on vibration issues associated with the construction and operation of projects concerning human perception and structural damage. Table 2-2 presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

4.3 Local

4.3.1 City of Victorville General Plan Noise Element

The Noise Element of the General Plan provides policy direction for minimizing noise impacts on the community and for coordinating with surround jurisdictions and other entities regarding noise control. By identifying noise-sensitive land uses and establishing compatibility guidelines for land use and noises, noise considerations will influence the general distribution, location, and intensity of future land uses. The result is that effective land use planning and mitigation can alleviate the majority of noise problems.

The most basic planning strategy to minimize adverse impacts on new land uses due to noise is to avoid designating certain land uses at locations in the City of Victorville that would negatively affect noise-sensitive land uses. Uses such as schools, hospitals, childcare, senior care, congregate care, churches, and all types of residential use should be located outside of any area anticipated to exceed acceptable noise levels as defined by the Land Use Compatibility Standards or should be protected from noise through sound attenuation measures such as site and architectural design and sound walls. The City has adopted guidelines as a basis for planning decisions and these guidelines are shown in Table 4-1. In a case where the noise levels identified at a proposed project site fall within levels considered normally acceptable, the project is considered compatible with the existing noise environment.

Table 4-1. Land Use Compatibility Standards							
	Community Noise Exposure L_{dn} or CNEL, dB						
Land Use Categories	**55 dBA**	**60 dBA**	**65 dBA**	**70 dBA**	**75 dBA**	**80 dBA**	**+**
Residential- Low Density, Single Family, Duplex, Multi-family, Mobile Home	1	1	2	2	3	4	4
Transient Lodging- Motels, Hotels	1	1	2	2	3	3	4
Schools, Libraries, Churches, Hospitals, Nursing Homes	1	1	2	3	3	4	4
Auditoriums, Concert Halls, Amphitheaters	2	2	3	3	4	4	4
Sports Arena, Outdoor Spectator Sports	2	2	2	2	3	3	3
Playgrounds, Neighborhood Parks	1	1	1	2	3	3	3
Golf Courses, Riding Stables, Water Recreation, Cemeteries	1	1	1	2	2	4	4
Office Buildings, Business Commercial, Retail Commercial and Professional	1	1	1	2	2	3	3
Industrial, Manufacturing, Utilities	1	1	1	1	2	2	2
Agriculture	1	1	1	1	1	1	1

Source: City General Plan
Notes:

1. Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
2. Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and Schools, Libraries, Churches, Hospitals, Nursing Homes needed noise insulation features included in the design. Conventional construction, with closed windows and fresh air supply systems or air conditioning will normally suffice.
3. Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
4. Clearly Unacceptable: New construction or development should generally not be undertaken.

The Noise Element also includes goals, objectives, policies and implementations that are intended to achieve the vision of the Noise Element and guide the City's efforts to minimize noise-land use incompatibilities and support the health and serenity of its citizens. The goals, objectives, policies and implementations applicable to the Proposed Project are listed below.

Goal 1: Noise Sensitivity- Identify significant noise sources that could adversely affect the community.

- Objective 1.1: Locate noise sensitive land sues away from existing excessive noise sources and locate new excessive noise generators away from existing sensitive land users.
    - *Policy 1.1.1*: Implement Table 4-1 regarding the placement of new land uses.
        - *Implementation Measure 1.1.1.1*: Continue to assess projects through the subdivision, site plan, conditional use permit, and other development review processes and incorporate conditions of approval which ensure noise compatibility where appropriate.

        - *Implementation Measure 1.1.1.3*: Require a noise study to be performed and appropriate noise attenuation to be incorporated prior to approving any multifamily or mixed-use residential development in an area with CNEL of 65 dB or greater.

Goal 2: Noise Control- Manage the effects of noise emissions to help ensure reduction of adverse effects on the community.

- *Objective 2.1:* Ensure existing and future noise sources are properly attenuated.
    - *Policy 2.1.1:* Continue to implement acceptable standards for noise for various land uses.
        - *Implementation Measure 2.1.1.1*: Require a noise study to be performed and appropriate noise attenuation to be incorporated prior to approving any multifamily or mixed-use residential development in an area with a CNEL of 65 or greater.
        - *Implementation Measure 2.1.1.5*: Continue to restrict noise and require mitigation measures for any noise-emitting construction equipment or activity.

4.3.2 City of Victorville Municipal Code

The City regulations with respect to noise are also included in Chapter 13.01, *Noise Control*, of the Municipal Code. The Noise Regulations provide noise standards within the City. Section 13.01.040 limits noise at any location on a residential property at a maximum of 65 dBA from 7:00 a.m. to 10:00 p.m. and 55 dBA from 10:00 p.m. to 7:00 a.m. Section 13.01.040 also limits noise at any location on a commercial zone, such as the properties immediately to the south and west, at a maximum of 70 dBA. Additionally, Section 13.01.060 states that construction activity shall be exempt from noise standards provided that it takes place on private property and are determined by the director of building and safety to be essential to the completion of a project. Section 13.01.060 also states that all noise sources due to traffic on any roadway or railroad right-of-way shall be exempt from noise standards.

5.0 IMPACT ASSESSMENT

5.1 Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act Guidelines Appendix G thresholds of significance. The Project would result in a significant noise-related impact if it would produce the following:

1) Generation of 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.

2) Generation of excessive groundborne vibration or groundborne noise levels.

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.

For purposes of this analysis and where applicable, the City noise standards were used for evaluation of Project-related noise impacts.

5.2 Methodology

This analysis of the existing and future noise environments is based on noise-prediction modeling and empirical observations. In order to estimate the worst-case construction noise levels that may occur at the nearest noise-sensitive receptors in the Project vicinity, predicted construction noise levels were calculated utilizing the FHWA's Roadway Construction Noise Model (2006). 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 Caltrans guidelines set forth in Table 2-2. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, taking into account the distance from construction activities to nearby structures.

An assessment of the land use compatibility of the Project's proposal to locate sensitive residential noise receptors within the existing noise environment affecting the Project Site was completed by conducting existing ambient baseline noise measurements on and around the Project Site with the use of a Larson Davis SoundExpert LxT precision sound level meter, which satisfies the American National Standards Institute standard for general environmental noise measurement instrumentation. Prior to the measurements, the SoundExpert LxT sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. In order to quantify existing ambient noise levels on the Project Site, ECORP conducted three short-term noise measurements on the morning of September 17, 2021. Additionally, roadway noise levels were calculated for the roadway segments in the Project vicinity using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic volumes from the 2019 Caltrans Traffic Census Program (Caltrans 2020c).

5.3 Impact Analysis

5.3.1 Project Construction Noise

5.3.1.1 Would the Project Result in Short-Term Construction-Generated Noise in Excess of Standards?

Onsite Construction Noise

Construction noise associated with the Proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., grading, paving). Noise generated by construction equipment, particularly grading equipment such as earth movers and material handlers, can reach high levels making grading activities typically the loudest part of construction. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four 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). During construction, exterior noise levels could negatively affect sensitive receptors in the vicinity of the construction site. The nearest existing noise-sensitive land uses to the Project Site are a single-family residential neighborhood directly adjacent and southwest of the Project Site; and patrons utilizing the recreational areas within Eva Dell Park, directly adjacent to the Site to the southeast.

The City does not promulgate a numeric threshold pertaining to the noise associated with construction. This is due to the fact that construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. As previously described, the Victorville Municipal Code Section 13.01.060 exempts construction noise conducted on private property and is determined to be essential to the completion of a project by the director of building and safety. Therefore, noise generated during construction activities, as long as determined by the director of building and safety that the resultant Project noise is essential to the completion of the Project, would not exceed City noise standards.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptor in the Project vicinity and in order to evaluate the potential health-related effects (physical damage to the ear) from construction noise, the construction equipment noise levels were calculated using the Roadway Noise Construction Model and compared against the construction-related noise level threshold established in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998 by NIOSH. A division of the US Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. For the purposes of this analysis, the lowest, more conservative threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receptors.

The Project is proposed to be constructed in two phases. To estimate the worst-case construction noise levels that may occur during each phase at the nearest noise-sensitive receptors in the Project vicinity, the Roadway Construction Noise Model was employed to calculate the predicted noise levels of all construction activities. It is acknowledged that the majority of construction equipment is not situated at any one location during construction activities, but rather spread throughout the Project Site and at various distances from sensitive receptors. Therefore, this analysis employs FTA guidance for calculating construction noise, which recommends measuring construction noise produced by all construction equipment from the center of the Project Site (FTA 2018), which in this case is 280 and 135 feet from the nearest sensitive receptor to the southwest for Phase 1 and Phase 2, respectively.

The anticipated short-term construction noise levels generated for the necessary equipment during each phase and associated subphases are summarized in Table 5-1.

Table 5-1. Grading Average (dBA) Noise Levels at Nearest Receptor

Equipment	Estimated Exterior Grading Noise Level L_{eq} @ Nearest Residence
Phase 1 Demolition	
Concrete/Industrial Saw	67.6
Rubber Tired Dozer	62.7
Tractor/Loader/Backhoe (3)	65.1 (each)
Combined Demolition Equipment	**72.4**
Phase 1 Site Preparation	
Grader	66.1
Scraper	64.6
Tractor/Loader/Backhoe	65.1
Combined Site Preparation Equipment	**70.1**
Phase 1 Grading	
Grader	66.1
Rubber Tired Dozer	62.7
Tractor/Loader/Backhoe (2)	65.1 (each)
Combined Grading Equipment	**70.9**
Phase 1 Construction/Paving/Architectural Coating	
Air Compressor	58.7
Crane	57.6
Forklift (2)	64.5 (each)
Generator Set	62.7
Paver	59.2
Paving Equipment	67.5
Roller (2)	58.0 (each)
Tractor/Loader/Backhoe (2)	65.1 (each)
Welder (3)	55.1 (each)
Concrete Mixer	59.9
Combined Construction/Paving/Architectural Coating Equipment	**74.0**

Table 5-1. Grading Average (dBA) Noise Levels at Nearest Receptor	
Equipment	**Estimated Exterior Grading Noise Level L_{eq} @ Nearest Residence**
Phase 2 Demolition	
Concrete/Industrial Saw	74.0
Rubber Tired Dozer	69.1
Tractor/Loader/Backhoe (3)	71.4 (each)
Combined Demolition Equipment	**78.7**
Phase 2 Site Preparation	
Grader	72.4
Scraper	71.0
Tractor/Loader/Backhoe	71.4
Combined Site Preparation Equipment	**76.4**
Phase 2 Grading	
Grader	72.4
Rubber Tired Dozer	69.1
Tractor/Loader/Backhoe (2)	71.4 (each)
Combined Grading Equipment	**77.2**
Phase 2 Construction/Paving/Architectural Coating	
Air Compressor	65.1
Crane	64.0
Forklift (2)	70.8 (each)
Generator Set	69.0
Paver	65.6
Paving Equipment	73.9
Roller (2)	64.4 (each)
Tractor/Loader/Backhoe (2)	71.4 (each)
Welder (3)	61.4 (each)
Concrete Mixer	66.2

Table 5-1. Grading Average (dBA) Noise Levels at Nearest Receptor	
Equipment	**Estimated Exterior Grading Noise Level L_{eq} @ Nearest Residence**
Combined Construction/Paving/Architectural Coating Equipment	**80.3**

Source: Construction noise levels were calculated by ECORP Consulting, Inc. using the FHWA Roadway Noise Construction Model (FHWA 2008). Refer to Attachment B for Model Data Outputs.

Note: Construction equipment used during construction derived from CalEEMod 2020.4.0. CalEEMod is designed to calculate air pollutant emissions from construction activity and contains default construction equipment and usage parameters for typical construction projects based on several construction surveys conducted in order to identify such parameters. The distance to the nearest sensitive receptor was calculated from the center of the Project Site (approximately 280 feet for Phase 1 and 135 feet for Phase 2).

As shown, the maximum noise levels from combined construction equipment for Phase 1 and Phase 2, during the combined construction/paving/architectural coating components, would be approximately 74.0 and 80.3 dBA at the nearby sensitive receptors, respectively. No cumulative or individual piece of construction equipment would exceed 85 dBA NIOSH construction noise standard at the nearby noise-sensitive receptors. As such Project construction would not exceed NIOSH construction noise standards and therefore potential health-related effects (physical damage to the ear) from construction noise are unlikely.

Construction Traffic Noise

Project construction would result in minimal additional traffic on adjacent roadways over the time period that construction occurs. According to the California Emissions Estimator Model, which is used to predict air pollutant emissions associated with Project construction and contains default usage parameters for typical construction projects, including the number of worker commute trips and material haul truck trips, the maximum number of construction workers traveling to and from the Project Site on a single day would be during the building construction, paving and architectural coating stages of Phase 1, for a combined total of 179 total daily trips. The worker trips would largely occur within two distinct segments of the day, the morning and afternoon. According to the Caltrans *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013), doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). The Project Site is located in a populated area immediately surrounded by up to 15 single-family residences, Eva Dell Park, the Friendly Temple Church of God, and the Victor Valley Union High School District's Goodwill campus location (located directly adjacent to Eva Dell Park on 1st Street). Considering the amount of operational land uses in the Project vicinity, it can be expected that the maximum number of daily trips during construction would not result in a doubling of traffic, and therefore its contribution to existing traffic noise would not be perceptible. A less than significant impact would occur as a result of construction traffic noise.

5.3.2 Project Operational Noise

5.3.2.1 Would the Project Result in a Substantial Permanent Increase in Ambient Noise Levels in Excess of City Standards During Operations?

Project Land Use Compatibility

The City land use compatibility standards presented in the General Plan that provides the City with a tool to gauge the compatibility of new land users relative to existing noise levels. This table, presented as Table 4-1, identifies acceptable noise levels for various land uses, including residential land uses such as those proposed by the Project. In the case that the noise levels identified at the Proposed Project Site fall within levels presented in the General Plan, the Project is considered compatible with the existing noise environment. As previously stated, The Project Site was originally zoned for Open Space and Active Open Space in the 2018 OTSP. However, on June 16, 2021 the OTSP was amended to re-designate the Project Site to Medium Density Residential (Ordinance No. 2420). Homeless and emergency shelters are currently permitted in the Commercial (C-1 only) zone, and conditionally permitted within the Mixed Density, Medium Density and High-Density Residential zones. Land designated as *Medium Density Residential* is intended for multi-family development intended for townhouses and small condominiums. As shown in Table 4-1, a normally acceptable noise standard for residential land uses is 65 dBA CNEL or under.

In order to quantify existing ambient noise levels in the Project vicinity, ECORP conducted three short-term noise measurements on September 17, 2021. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project Site and are considered representative of the noise levels throughout the day. As shown in Table 3-1, the ambient noise level recorded on the Project Site ranges from 47.0 dBA to 51.8 dBA. These noise levels fall below the noise standard of 65 dBA CNEL. It is noted that the baseline measurements taken were short-term (15 minutes) and therefore measured in L_{eq}, defined as the average acoustic energy content of noise for a stated period of time, while the compatibility standards listed in Table 4-1 are in L_{dn}/CNEL. As previously described, L_{dn} and CNEL are community exposure noise metrics that are defined as 24-hour average L_{eq} noise measurement with weighting added during the certain nighttime hours to account for the increase noise sensitivity during nighttime. For a comparable representation of the ambient noise levels in the Project vicinity using a community exposure noise metric, traffic noise on I-15 was calculated in CNEL. This is appropriate since a predominate source of noise in the Project Site vicinity is I-15. According to Caltrans (2020c), the roadway segment of I-15 traversing the Project Site currently experiences approximately 69,000 to 79,000 average daily trips (ADT). Using the FHWA's Highway Noise Prediction Model (FHWA-RD-77-108), I-15 noise levels of 61.1 dBA CNEL would be experienced by future residents of the wellness center (the distance between I-15 and the Project site would be approximately 1,000 feet, see Attachment C). As this noise level falls below the noise/land use compatibility standard for Medium Density Residential land uses, the Project Site is considered an appropriate noise environment to locate the proposed land use.

In addition to ambient automobile traffic noise however, the BNSFRR, located approximately 800 feet southwest of the Project Site boundary, is a source of noise in the Project Area. As previously discussed, ECORP staff conducted baseline noise measurements at three locations within the Project vicinity. During all three measurements, ECORP staff noted every time a train traversed the Project vicinity (six times within one hour). The noise generated by these trains as they traversed the Project vicinity ranged from 36.0 to 63.0 dBA L_{eq} on the Project site. These noise levels attributable to the BNSRR are intermittent and below 65 dBA.

Lastly, it is noted that the Project Site is predominately surrounded by residential land uses and would be compatible with that existing noise environment. The most basic planning strategy to minimize adverse impacts on new land uses due to noise is to avoid designating certain land uses at locations within the community that would negatively affect noise sensitive land uses. The Project is consistent with the types, intensity, and patterns of land use envisioned for the Project vicinity.

Project Operations

In addition to an evaluation of Project noise/land use compatibility, this analysis also assesses the potential noise-related effects of the Project on surrounding noise-sensitive receptors. As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise sensitive and may warrant unique measures for protection from intruding noise. The nearest noise-sensitive land uses consist of residences directly adjacent to the Project Site boundary to the southwest. Operational noise sources associated with the Proposed Project include mobile and stationary (i.e., mechanical equipment, internal circulation, traffic) sources.

The main stationary operational noise associated with the Project would be activities occurring on the Project Site. Potential stationary noise sources related to long-term operation of residences on Site would include mechanical equipment and other typical sources specific to residential neighborhoods such as barking dogs, internal traffic circulation, radios, and people talking. According to field noise measurements conducted by ECORP, mechanical heating, ventilation, and air conditioning equipment generates noise levels less than 45 dBA at 20 feet, which is less than City's daytime (7:00 a.m. to 10:00 p.m.) or nighttime (10:00 p.m. to 7:00 a.m.) noise thresholds for protecting residential uses. Urban residential noise consisting of barking dogs, internal traffic circulation, radios, and people talking, generally registers at 55 to 60 dBA. The Project proposes to place residential uses adjacent to other residential uses. The most basic planning strategy to minimize adverse impacts on new land uses due to noise is to avoid designating certain land uses at locations within the community that would negatively affect noise sensitive land uses. The Project is consistent with the types, intensity, and patterns of land use envisioned for the Project vicinity, and as previously described, the Project is considered compatible with the existing noise environment. Operation of the Project would not result in a significant noise-related impact associated with onsite sources.

5.3.2.2 *Would the Project Result in the Generation of Excessive Groundborne Vibration or Groundborne Noise Levels?*

Construction-Generated Vibration

Excessive groundborne vibration impacts result from continuously occurring vibration levels. 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. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. It is not anticipated that pile drivers would be necessary during Project construction. Vibration decreases rapidly with distance and it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment at 25 feet distant are summarized in Table 5-3.

Table 5-3. Representative Vibration Source Levels for Construction Equipment

Equipment Type	PPV at 25 Feet (inches per second)
Large Bulldozer	0.089
Pile Driver	0.170
Caisson Drilling	0.089
Loaded Trucks	0.076
Rock Breaker	0.089
Jackhammer	0.035
Small Bulldozer/Tractor	0.003

Source: FTA 2018; Caltrans 2020b

The City does not regulate vibrations associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020b) recommended standard of 0.2 inch per second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. Consistent with FTA recommendations for calculating construction vibration, construction vibration was measured from the center of the Project Site (FTA 2018). The nearest structure of concern to the construction Site, with regard to groundborne vibrations, is an outbuilding associated with the nearest single-family residence to the southeast, located approximately 315 feet from the Proposed Project Site center.

Based on the representative vibration levels presented for various construction equipment types in Table 5-3 and the construction vibration assessment methodology published by the FTA (2018), it is possible to estimate the potential Project construction vibration levels. The FTA provides the following equation:

$$[PPVequip = PPVref \times (25/D)^{1.5}]$$

Table 5-4 presents the expected Project related vibration levels at a distance of 315 feet.

Table 5-4. Construction Vibration Levels at 315 Feet

Receiver PPV Levels (in/sec)[1]					Peak Vibration	Threshold	Exceed Threshold
Large Bulldozer, Caisson Drilling, & Hoe Ram	**Loaded Trucks**	**Jackhammer**	**Small Bulldozer**	**Vibratory Roller**			
0.002	0.002	0.001	0.000	0.005	**0.005**	*0.2*	**No**

Notes: [1]Based on the Vibration Source Levels of Construction Equipment included on Table 5-5 (FTA 2018). Distance to the nearest structure of concern is approximately 315 feet measured from Project Site center.

As shown in Table 5-4, vibration as a result of construction activities would not exceed 0.2 PPV at the nearest structure. Thus, Project construction would not exceed the recommended threshold.

<u>**Operational Groundborne Vibration**</u>

Project operations would not include the use of any stationary equipment that would result in excessive groundborne vibration levels.

5.3.3 Excess Airport Noise

5.3.3.1 Would the Project Expose People Residing or Working in the Project Area to Excessive Airport Noise?

The Project Site is located approximately 5.75 miles southeast of the Southern California Logistics Airport and 3.50 miles southwest of the private Osborne Airport. The Project Site is located outside the Long-Range Noise Contours of the 65 dBA CNEL noise impact zone for the Southern California Logistics Airport per the SCLA Specific Plan DRAFT (Michael Baker 2021). The City's General Plan does not identify the potential for noise impacts resulting from the Osborne Airport. Implementation of the Proposed Project would not affect airport operations nor result in increased exposure of noise-sensitive receptors to aircraft noise.

5.3.3.2 Would the Project Result in Cumulatively Considerable Noise Impacts?

Cumulative Construction Noise

Construction activities associated with the Proposed Project and other construction projects in the area may overlap, resulting in construction noise in the area. However, construction noise impacts primarily affect the areas immediately adjacent to the construction site. The limited construction noise for the Proposed Project was determined to be less than significant following compliance with the County construction noise threshold. Cumulative development in the vicinity of the Project Site could result in elevated construction noise levels at sensitive receptors in the Project vicinity. However, each project would be required to comply with the applicable noise limitations on construction. Therefore, the Project would not contribute to cumulative impacts during construction.

Cumulative Operational Noise Impacts

Noise associated with operational activity at the proposed facility, combined with other cumulative projects, could cause local noise level increases. Noise levels associated with the Proposed Project and related cumulative projects together could result in higher noise levels than considered separately. As previously described, onsite noise sources associated with the Proposed Project was found to not exceed City noise standards. Therefore, the Project would not contribute to cumulative impacts.

6.0 REFERENCES

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LIST OF ATTACHMENTS

ATTACHMENT A

Baseline (Existing) Noise Measurements – Project Site and Vicinity

Site Number: 1			
Recorded By: Lindsay Liegler			
Job Number: 2021-230 Victorville Wellness Center			
Date: 09/17/21			
Time: 11:40 a.m. – 11:55 a.m.			
Location: North-central portion of site; ~500 ft south of I-15			
Source of Peak Noise: Train Honking and Passing by; 1000 ft west of meter			
Noise Data			
L_{dn} (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
47.0	27.3	71.5	106.5

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2020**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2020**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2020**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2020**	

Weather Data			
Est.	**Duration:** 15 minute		**Sky:** Clear
	Note: dBA Offset = -0.23		**Sensor Height (ft):** 3.5
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	4	85	29.91

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.387.s	Computer's File Name	LxTse_0005120-20210917 114008-LxT_Data.387.ldbin
Meter	LxT SE 0005120		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-09-17 11:40:08	Duration	0:15:00.3		
End Time	2021-09-17 11:55:09	Run Time	0:15:00.3	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	47.0 dB		
LAE	76.5 dB	SEA	--- dB
EA	5.0 µPa²h		
LZ_{peak}	106.5 dB	2021-09-17 11:40:12	
LAS_{max}	71.5 dB	2021-09-17 11:40:12	
LAS_{min}	27.3 dB	2021-09-17 11:54:58	
LA_{eq}	47.0 dB		
LC_{eq}	60.3 dB	LC_{eq} - LA_{eq}	13.3 dB
LAI_{eq}	57.1 dB	LAI_{eq} - LA_{eq}	10.1 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	47.0 dB	47.0 dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	47.0 dB	47.0 dB	--- dB	--- dB

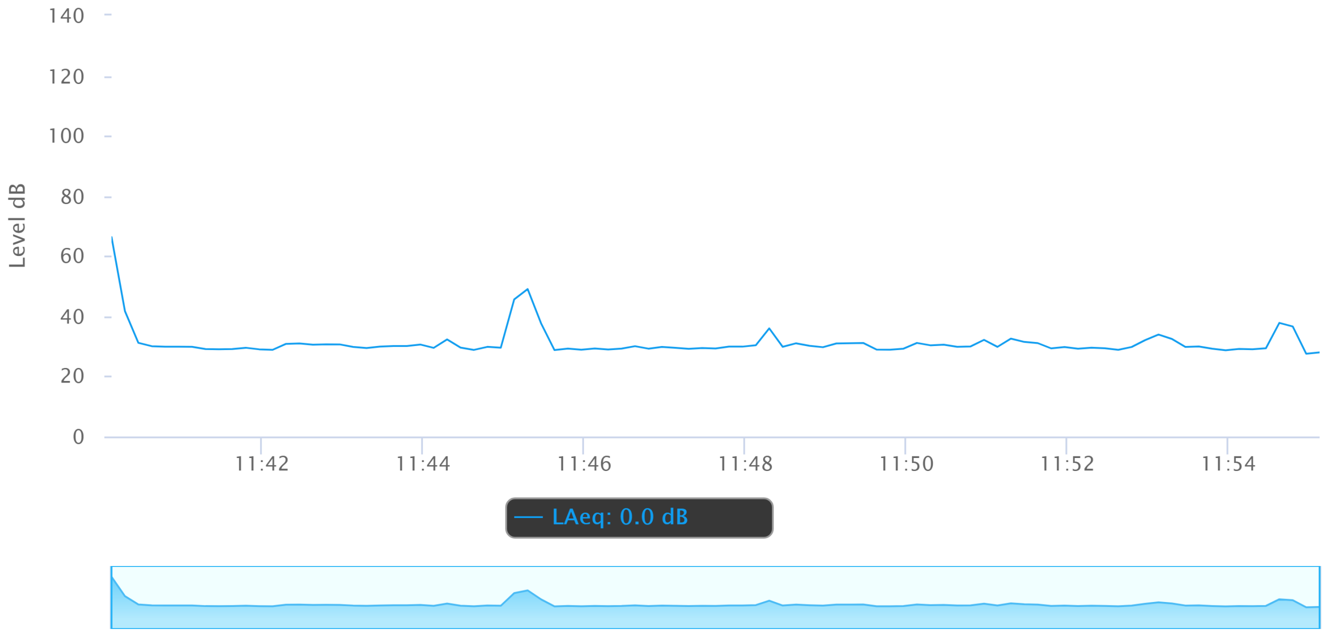
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	47.0 dB		60.3 dB		--- dB	
$Ls_{(max)}$	71.5 dB	2021-09-17 11:40:12	--- dB		--- dB	
$LS_{(min)}$	27.3 dB	2021-09-17 11:54:58	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		106.5 dB	2021-09-17 11:40:12

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	4	0:00:10.8

Statistics

LAS 5.0	35.5 dB
LAS 10.0	32.5 dB
LAS 33.3	30.1 dB
LAS 50.0	29.7 dB
LAS 66.6	29.3 dB
LAS 90.0	28.8 dB

Time History



Site Number: 2			
Recorded By: Lindsay Liegler			
Job Number: 2021-230 Victorville Wellness Center			
Date: 09/17/21			
Time: 10:52 a.m. – 11:07 a.m.			
Location: East end of Cottonwood Street			
Source of Peak Noise: I-15 freeway; train honking at 11:06			
Noise Data			
L_{dn} (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
47.8	41.8	62.4	82.6

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2020**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2020**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2020**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2020**	
Weather Data						
Est.	**Duration:** 15 minute		**Sky:** Clear			
	Note: dBA Offset = -0.23		**Sensor Height (ft):** 3.5			
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**			
	4	80	29.91			

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.385.s	Computer's File Name	LxTse_0005120-20210917 105301-LxT_Data.385.ldbin
Meter	LxT SE 0005120		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-09-17 10:53:01	Duration	0:15:00.2		
End Time	2021-09-17 11:08:01	Run Time	0:15:00.2	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	47.8 dB		
LAE	77.4 dB	SEA	--- dB
EA	6.0 µPa²h		
LZ_{peak}	82.6 dB	2021-09-17 10:53:04	
LAS_{max}	62.4 dB	2021-09-17 11:06:25	
LAS_{min}	41.8 dB	2021-09-17 10:57:44	
LA_{eq}	47.8 dB		
LC_{eq}	56.5 dB	LC_{eq} - LA_{eq}	8.7 dB
LAI_{eq}	50.2 dB	LAI_{eq} - LA_{eq}	2.4 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	47.8 dB	47.8 dB	0.0 dB	
	LDEN	**LDay**	**LEve**	**LNight**
	47.8 dB	47.8 dB	--- dB	--- dB

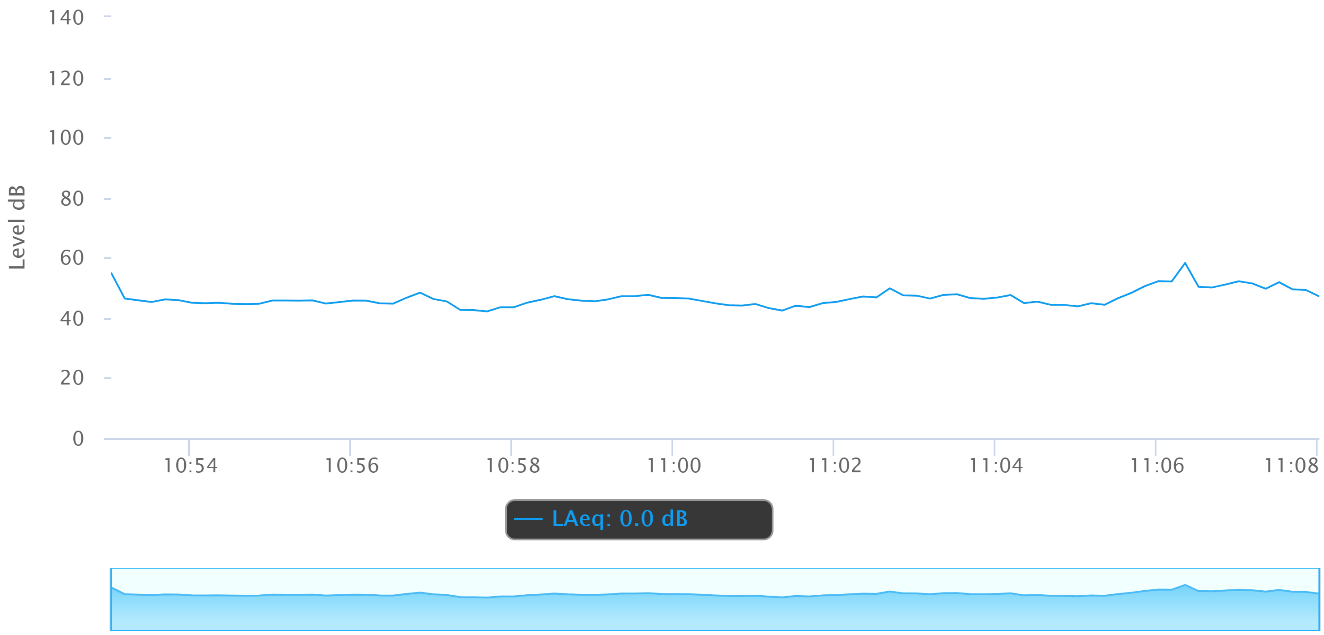
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	47.8 dB		56.5 dB		--- dB	
$Ls_{(max)}$	62.4 dB	2021-09-17 11:06:25	--- dB		--- dB	
$LS_{(min)}$	41.8 dB	2021-09-17 10:57:44	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		82.6 dB	2021-09-17 10:53:04

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	51.8 dB
LAS 10.0	50.1 dB
LAS 33.3	46.8 dB
LAS 50.0	45.9 dB
LAS 66.6	45.1 dB
LAS 90.0	43.9 dB

Time History



Site Number: 3			
Recorded By: Lindsay Liegler			
Job Number: 2021-230 Victorville Wellness Center			
Date: 09/17/21			
Time: 11:19 a.m. – 11:34 a.m.			
Location: Southwest corner of Project Site; 1500 ft south of I-15			
Source of Peak Noise: I-15 freeway; train honking at 11:20 and 11:26; trees rustling			
Noise Data			
L_{dn} (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
51.8	38.0	75.0	88.8

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2020**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2020**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2020**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2020**	
Weather Data						
Est.	**Duration:** 15 minute		**Sky:** Clear			
	Note: dBA Offset = -0.23		**Sensor Height (ft):** 3.5			
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**			
	6	82	29.91			

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.386.s	Computer's File Name	LxTse_0005120-20210917 111912-LxT_Data.386.ldbin
Meter	LxT SE 0005120		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-09-17 11:19:12	Duration	0:15:00.2		
End Time	2021-09-17 11:34:12	Run Time	0:15:00.2	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	51.8 dB		
LAE	81.3 dB	SEA	--- dB
EA	15.0 µPa²h		
LZ_{peak}	88.8 dB	2021-09-17 11:21:03	
LAS_{max}	75.0 dB	2021-09-17 11:21:03	
LAS_{min}	38.0 dB	2021-09-17 11:34:05	
LA_{eq}	51.8 dB		
LC_{eq}	57.9 dB	LC_{eq} - LA_{eq}	6.2 dB
LAI_{eq}	54.9 dB	LAI_{eq} - LA_{eq}	3.2 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	51.8 dB	51.8 dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	51.8 dB	51.8 dB	--- dB	--- dB

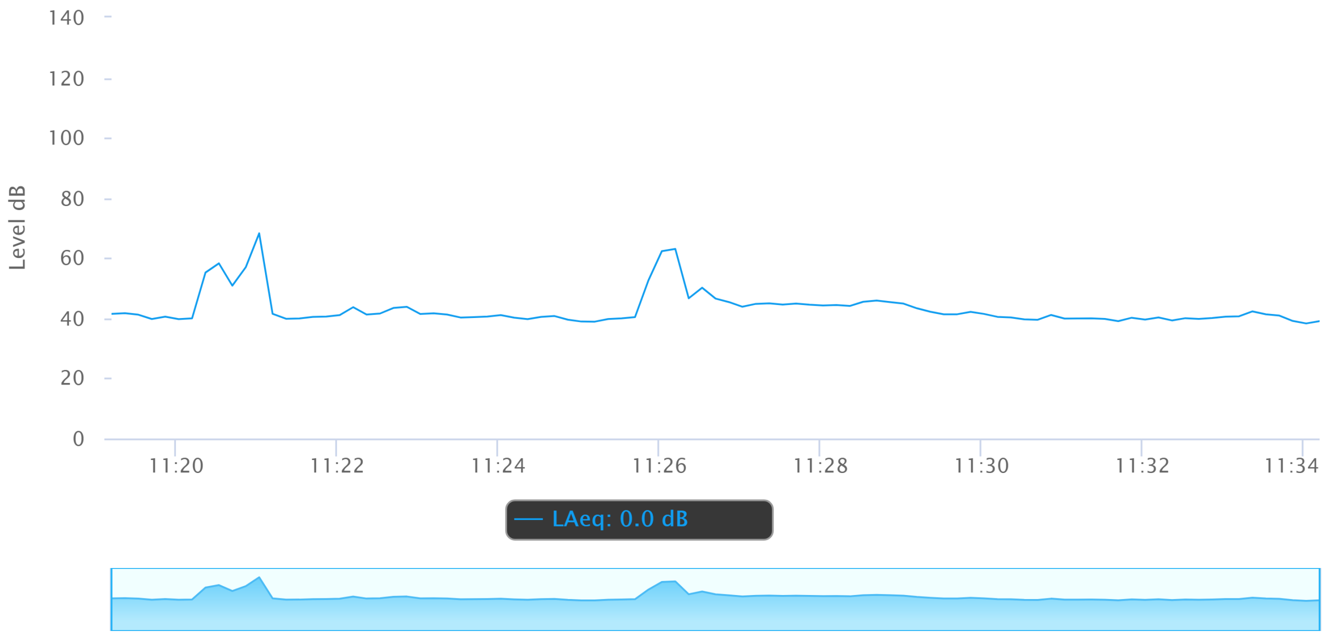
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	51.8 dB		57.9 dB		--- dB	
$Ls_{(max)}$	75.0 dB	2021-09-17 11:21:03	--- dB		--- dB	
$LS_{(min)}$	38.0 dB	2021-09-17 11:34:05	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		88.8 dB	2021-09-17 11:21:03

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	51.3 dB
LAS 10.0	45.9 dB
LAS 33.3	42.1 dB
LAS 50.0	41.0 dB
LAS 66.6	40.2 dB
LAS 90.0	39.4 dB

Time History



ATTACHMENT B

Roadway Construction Noise Model Outputs – Project Construction Noise

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021
Case Description: Phase 1 Site Prep

Description	**Affected Land Use**
Site Prep	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		280
Scraper	No	40		83.6	280
Tractor/Loader/Backhoe	No	40	84		280

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	70	66.1
Scraper	68.6	64.6
Tractor/Loader/Backhoe	69	65.1
Total	**70**	**70.1**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021
Case Description: Phase 1 Demolition

Description	**Affected Land Use**
Demolition	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Concrete/Industrial Saw	No	20		89.6	280
Rubber Tired Dozer	No	40		81.7	280
Tractor/Loader/Backhoe	No	40	84		280
Tractor/Loader/Backhoe	No	40	84		280
Tractor/Loader/Backhoe	No	40	84		280

	Calculated (dBA)	
Equipment	***Lmax**	**Leq**
Concrete/Industrial Saw	74.6	67.6
Rubber Tired Dozer	66.7	62.7
Tractor/Loader/Backhoe	69	65.1
Tractor/Loader/Backhoe	69	65.1
Tractor/Loader/Backhoe	69	65.1
Total	**74.6**	**72.4**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021
Case Description: Phase 1 Grading

Description	**Affected Land Use**
Grading	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		280
Dozer	No	40		81.7	280
Tractor/Loader/Backhoe	No	40	84		280
Tractor/Loader/Backhoe	No	40	84		280

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	70	66.1
Dozer	66.7	62.7
Tractor/Loader/Backhoe	69	65.1
Tractor/Loader/Backhoe	69	65.1
Total	**70**	**70.9**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021

Case Description: Phase 2 Construction/ Paving/ Painting

Description	**Affected Land Use**
Construction/ Paving/ Painting	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Compressor (air)	No	40		77.7	280
Crane	No	16		80.6	280
Forklift	No	40		83.4	280
Forklift	No	40		83.4	280
Generator	No	50		80.6	280
Paver	No	50		77.2	280
Paving Equipment	No	20		89.5	280
Roller	No	20		80	280
Roller	No	20		80	280
Tractor/Loader/Backhoe	No	40	84		280
Tractor/Loader/Backhoe	No	40	84		280
Welder	No	40		74	280
Welder	No	40		74	280
Welder	No	40		74	280
Concrete Mixer	No	40		78.8	280

	Calculated (dBA)	
Equipment	***Lmax**	**Leq**
Compressor (air)	62.7	58.7
Crane	65.6	57.6
Forklift	68.4	64.5
Forklift	68.4	64.5
Generator	65.7	62.7
Paver	62.3	59.2
Paving Equipment	74.5	67.5
Roller	65	58
Roller	65	58
Tractor/Loader/Backhoe	69	65.1
Tractor/Loader/Backhoe	69	65.1
Welder	59	55.1
Welder	59	55.1
Welder	59	55.1
Concrete Mixer	63.8	59.9
Total	**74.5**	**74**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date:	9/22/2021
Case Description:	Phase 2 Demo

Description	**Affected Land Use**
Demo	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Concrete Saw	No	20		89.6	135
Rubber Tired Dozer	No	40		81.7	135
Tractor/Loader/Backhoe	No	40	84		135
Tractor/Loader/Backhoe	No	40	84		135
Tractor/Loader/Backhoe	No	40	84		135

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Concrete Saw	81	74
Rubber Tired Dozer	73	69.1
Tractor/Loader/Backhoe	75.4	71.4
Tractor/Loader/Backhoe	75.4	71.4
Tractor/Loader/Backhoe	75.4	71.4
Total	**81**	**78.7**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021
Case Description: Phase 2 Site Prep

Description	**Affected Land Use**
Site Prep	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		135
Scraper	No	40		83.6	135
Tractor/Loader/Backhoe	No	40	84		135

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	76.4	72.4
Scraper	75	71
Tractor/Loader/Backhoe	75.4	71.4
Total	**76.4**	**76.4**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021
Case Description: Phase 2 Grading

Description	**Affected Land Use**
Grading	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		135
Rubber Tired Dozer	No	40		81.7	135
Tractor/Loader/Backhoe	No	40	84		135
Tractor/Loader/Backhoe	No	40	84		135

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	76.4	72.4
Rubber Tired Dozer	73	69.1
Tractor/Loader/Backhoe	75.4	71.4
Tractor/Loader/Backhoe	75.4	71.4
Total	**76.4**	**77.2**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/22/2021

Case Description: Phase 2 Construction/ Paving/ Painting

Description	**Affected Land Use**
Construction/ Paving/ Painting	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Compressor (air)	No	40		77.7	135
Crane	No	16		80.6	135
Forklift	No	40		83.4	135
Forklift	No	40		83.4	135
Generator Set	No	50		80.6	135
Paver	No	50		77.2	135
Paving Equipment	No	20		89.5	135
Roller	No	20		80	135
Roller	No	20		80	135
Tractor/Loader/Backhoe	No	40	84		135
Tractor/Loader/Backhoe	No	40	84		135
Welder	No	40		74	135
Welder	No	40		74	135
Welder	No	40		74	135
Concrete Mixer	No	40		78.8	135

	Calculated (dBA)	
Equipment	***Lmax**	**Leq**
Compressor (air)	69	65.1
Crane	71.9	64
Forklift	74.8	70.8
Forklift	74.8	70.8
Generator Set	72	69
Paver	68.6	65.6
Paving Equipment	80.9	73.9
Roller	71.4	64.4
Roller	71.4	64.4
Tractor/Loader/Backhoe	75.4	71.4
Tractor/Loader/Backhoe	75.4	71.4
Welder	65.4	61.4
Welder	65.4	61.4
Welder	65.4	61.4
Concrete Mixer	70.2	66.2
Total	**80.9**	**80.3**

*Calculated Lmax is the Loudest value.

ATTACHMENT C

Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108) Outputs – Project Traffic Noise

TRAFFIC NOISE LEVELS

Project Number: 2021-230
Project Name: **Victorville Wellness Center**

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s):	**Ambient Noise Environment**
Source of Traffic Volumes:	Caltrans
Community Noise Descriptor:	L_{dn}: ____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Traffic Noise Levels

Analysis Condition Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[1]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) CNEL
State Route 15 (SR 15)													
Traversing Project Site	Residential	6	22	8778	79,000	65	1,000	0.5	0	1.8%	0.7%	**62.3**	**61.1**