APPENDIX H

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Lake Elsinore General Plan Update

Noise Impact Analysis Report

DRAFT

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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
AB	Assembly Bill
APN	Assessor's Parcel Number
CalEEMod	California Emission Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D	Distance
dB	Decibel (unweighted)
dBA	Decibels, A-Weighted
DNL / L_{dn}	Day-Night Noise Level
DU	Dwelling Units
FAR	Floor Area Ratio
FHWA	Federal Highway Works Administration
FTA	Federal Transit Administration
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
I	Interstate
IID	Imperial Irrigation District
In/sec	Inches per Second
kH	Kilohertz
L_{eq}	Average / Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LT	Long-term
MPH	Miles per Hour
OITC	Outside-Indoor Transmission Class
LCI	Office of Land Use and Climate Innovation
PA	Planning Area
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
R	Receptor

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
RC	Regional Commercial
RCNM	Roadway Construction Noise Model
ROW	Right-of-Way
Report	Noise and Vibration Impact Analysis Report (this document)
SF	Square Footage
SPR	Site Preparation
ST	Short-term
STC	Sound Transmission Class
TIA	Traffic Impact Analysis
TNM	Traffic Noise Model
UPRR	Union Pacific Railroad
VdB	Velocity Decibels
§	Section

EXECUTIVE SUMMARY

This Noise Impact Analysis Report (Report) evaluates and documents the potential noise and vibration impacts with implementation of the proposed Lake Elsinore General Plan Update (proposed GPU) that would guide land use and development decisions for the City of Lake Elsinore, located in the southwestern region of Riverside County, California. The proposed GPU would support the sustainable development of both residential and non-residential land uses.

This Report is intended to assist the California Environmental Quality Act (CEQA) Lead Agency (the City of Lake Elsinore) with its review of the proposed project's potential noise and vibration impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROJECT DESCRIPTION

The City of Lake Elsinore and its adjacent unincorporated area within it's Sphere of Influence (SOI) (referred to as the "Planning Area") encompass 115 square miles in the southwestern portion of Riverside County, California. The City surrounds Lake Elsinore, a natural freshwater lake about 3,000 acres in size. The City is located east and west of the I-15 Freeway and north and south of the Ortega Highway (SR-74). Like many cities in the Inland Empire, large portions of Lake Elsinore are undeveloped. The developed parts of the Planning Area includes park/open space, residential, commercial, industrial, and agricultural/rural land uses.

The General Plan Update (GPU) serves as the guide for the City's future growth and development and allows for increased residential and non-residential development within the Planning Area.

S.2 POTENTIAL CONSTRUCTION NOISE AND VIBRATION IMPACTS

Future individual construction and development projects would occur throughout the Planning Area over the approximately 20-year span of the GPU. These projects could occur on any property (based on land uses allowed by the GPU) and could affect existing or future land uses, including areas near potentially noise-sensitive residential, commercial, park, or school land uses.

The concurrent operation of two or more pieces of construction equipment would result in noise levels of approximately 85 to 88 dBA at a distance of 50 feet from equipment operating areas . While not typical, noise levels for construction activities that require the use of an impact pile driver could reach 94 dBA at a distance of 50 feet from equipment operations. Construction as described above may exceed the daytime noise thresholds for mobile construction equipment established in Section 17.176.080(F)(2) of the Municipal Code for work areas within approximately 200 feet of single family residential uses, 110 feet of multifamily residential uses, and 65 feet of semi-residential-commercial land uses. The use of pile driving equipment, if necessary, could also exceed construction thresholds within approximately 500 feet of single family residential uses, 300 feet of multifamily residential uses, and 150 feet of semi-residential/commercial land uses. This is considered a **potentially significant impact.** To reduce construction noise levels, MIG recommends implementing Mitigation Measure NOI-1, which requires a project-level construction noise assessment to ensure activities do not generate noise levels that exceed the City's municipal code or General Plan requirements at the time of project implementation. This impact would be **significant and unavoidable.**

The use of specific vibration-generating equipment such as a vibratory roller would exceed the Caltrans' standards for structural damage within approximately 25 feet of historic buildings and within approximately 50 feet of fragile buildings, and an impact pile driver would exceed the Caltrans' standards for structural damage within approximately 50 feet of any building, 60 feet of historic buildings, and 140 feet of fragile buildings. For human annoyance and interference responses, the use of typical equipment (e.g., bulldozer, jack hammer, trucks, etc.) during construction could produce vibration levels that could exceed Caltrans' barely perceptible and distinctly perceptible vibration detection thresholds at distances within approximately 175 feet and 50 feet, respectively, from work areas. Standard equipment at 50 feet would also exceed the 0.04 PPV threshold set in Section 17.176.080(G) of the Municipal Code. Caltrans' distinctly perceptible vibration threshold and the vibration threshold set in Section 17.176.080(G) of the Municipal Code would be exceeded with the operation of specific vibration-generating equipment such as a vibratory roller at approximately 120 feet and with the operation of an impact pile driver at approximately 320 feet. This is considered a **potentially significant impact.** To reduce vibration from construction activities, MIG recommends the proposed GPU incorporate Mitigation Measures NOI-2, which places restrictions on where vibration-generating construction equipment may be used. With the implementation of Mitigation Measure NOI-2, construction vibration would be a **less than significant impact with mitigation.**

S.3 POTENTIAL OPERATIONAL NOISE AND VIBRATION IMPACTS

Once constructed, the project would generate noise from the operation of new residential and nonresidential land uses. These land uses would include on-site noise sources and activities and off-site traffic noise. In regard to traffic noise levels, MIG modeled existing, future baseline, and future project condition traffic noise levels using the Traffic Noise Model (TNM). The proposed GPU would result in an increase in traffic noise levels on segments that already exceed the City's land use compatibility guidelines under existing conditions, and that would exceed the significance thresholds established in Section 5.1. This impact would be **potentially significant**. No feasible mitigation is available, and this impact would remain **significant and unavoidable**.

Development under the GPU could increase noise levels from stationary and other sources of noise in the Planning Area which include, but are not limited to, landscape and building maintenance activities, stationary mechanical equipment (e.g., pumps, generators, HVAC units), garbage collection activities, commercial and industrial activities, and other stationary and area sources such as people's voices, amplified music, and public address systems. Future stationary sources would comply with City Municipal Code requirements and proposed GPU policies that would reduce noise exposure, and therefore would not expose people to a substantial permanent increase in noise levels.

The GPU does not include plans for the introduction or expansion of vibration-generating operational sources (e.g., rail lines, mining operations, etc.), and is not anticipated to increase vibration levels from these sources. This impact would be **less than significant.**

S.4 AIRPORT NOISE-RELATED IMPACTS

The Skylark airport is located on approximately 150 acres in the southeast portion of the City. Based on noise monitoring conducted in December 2016 for the City's East Lake Specific Plan Amendment No. 11, the largest lateral distance from the runway centerline to the 60 dB Ldn contour was approximately 500 feet (City of Lake Elsinore 2017, Figure 5.10-4). The 60 dB Ldn contour would be within the GPU's East Lake Community Plan, which would include a mix of residential neighborhoods, commercial centers, recreational activities, floodplain, and open space. While the Planning Area may include residential uses, the GPU policies have been designed to minimize noise exposure and ensure noise compatibility, such as

Policy EL 1.1 which requires a noise barrier between residential uses and the airstrip and Policy PSNAQ-71, which requires the minimization of residential land use development in noise impacted areas unless mitigation measures can reduce noise levels to acceptable levels. The project, therefore, would not expose people to excessive airport-related noise levels. This impact would be **less than significant.**

S.5 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it is not considered an impact under CEQA. Furthermore, the City's General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

The existing ambient noise levels vary depending on location. The Planning Area contains road segments also exceed the 70 DNL Normally Compatible land use condition for residential land uses and 65 DNL Normally Compatible land use condition for institutional land uses, which has the potential to result in an exceedance of exterior and interior noise standards. Although the project includes residential and non-residential development that may be exposed to traffic noise levels above acceptable and conditionally acceptable levels; the General Plan includes policies and programs to protect existing and future land uses from excessive noise levels by ensuring new development projects meet City noise standards through appropriate evaluation and design considerations. For this reason, the project would not expose existing or future noise sensitive land uses to unacceptable traffic noise levels.

In regards to noise levels from mining operations, the GPU proposes to undergo a reclamation process in Alberhill and phase out existing mining operations. While mining would occur in the interim, mining operations would be subject to the mitigation measures in the Alberhill Villages Specific Plan that sets noise standards at residential properties and require projects demonstrate compliance with noise standards, as well as GPU implementation measures that require buffers from industrial and trucking-related uses. With compliance to City requirements, the GPU would not expose existing or future noise sensitive land uses to unacceptable noise levels from mining operations.

S.6 RECOMMENDED NOISE CONTROL MEASURES

MIG recommends the following mitigation measures be incorporated into the GPU to reduce the potential for the project's construction and operational activities to result in a substantial temporary and permanent increase in noise levels in the vicinity of the Project.

Mitigation Measure NOI-1: Require a Project-level Construction Noise Assessment for New Discretionary Development Projects. Prior to the start of any specific construction project lasting 12 months or more, the City shall review and approve a project-specific construction noise evaluation prepared by a qualified acoustical consultant that: A) Identifies the planned project construction sequence and equipment usage; B) Identifies typical hourly average construction noise levels for project construction equipment; C) Compares hourly average construction noise levels to ambient noise levels at residential and commercial land uses near work areas (ambient noise levels may be newly measured or presumed to be consistent with those levels shown in Tables 4-1 and 4-2 of this report, the Lake Elsinore General Plan Update Noise Impact Analysis);

and D) Identifies construction noise control measures incorporated into the project that ensure activities do not generate noise levels that exceed the City's municipal code or General Plan requirements at the time of project implementation. Potential actions to reduce construction-related noise may include, but are not limited to:

1) *Notify Residential and Commercial Land Uses of Planned Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the project, and include the name and phone number of the designated contact for the applicant/project representative and the City of Lake Elsinore responsible for handling construction-related noise complaints. This notice shall be provided to: A) The owner/occupants of residential dwelling units within 500 feet of construction work areas; and B) The owner/occupants of commercial buildings (including institutional buildings) within 200 feet of construction work areas.
2) *Restrict Work Hours*. All construction-related work activities, including material deliveries, shall be subject to the requirements of City Municipal Code Section 17.176.080(F)(1). Construction activities, including deliveries, shall occur only during the hours of 7:00 AM to 7:00 PM, Monday through Saturday, unless otherwise authorized by City permit. The applicant/project representative and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement.
3) *Control Construction Traffic and Site Access*. Construction traffic, including soil and debris hauling, shall follow City-designated truck routes and shall avoid routes (including local roads in the Planning Area) that contain residential dwelling units to the maximum extent feasible given specific project location and access needs.
4) Construction Staging and Equipment Noise Control Measures:
    a. Construction site access and staging activities such as receipt of deliveries, equipment and material storage, etc., shall occur as far away from adjacent residential land uses as possible given site and active work constraints.
    b. All stationary noise generating equipment shall be shielded and located as far as possible from residential land uses given site and active work constraints. Shielding may consist of trailers, stored materials, or a three- or four-sided enclosure provided the structure/barrier breaks the line of sight between the equipment and the receptor, provides for proper equipment ventilation and operations, and complies with all other applicable occupational safety and health requirements.
    c. Heavy equipment shall include standard noise suppression devices such as mullers, engine covers, and engine/mechanical isolators, mounts, etc. Equipment and noise suppression devices shall be maintained in accordance with manufacturer's recommendations while on-site.
    d. Pneumatic tools shall include a suppression device on the compressed air exhaust.
    e. Connect to existing electrical service to power stationary and portable equipment (e.g., pumps, generators, compressors, and welding sets). This measure shall be subject to the approval of the local electric utility.
    f. Physical noise barrier capable of achieving the construction noise level standards set by the City at the time of project implementation shall, if required to achieve construction noise standards, be installed and maintained around the site perimeter to the maximum extent feasible given site constraints and access requirements.

Mitigation Measure NOI-2: Reduce Potential Construction Vibration Levels. To reduce potential excessive vibration levels from construction activities associated with development projects under the GPU, the City shall restrict the use of large vibratory rollers, hydraulic breakers, and, and other potential large vibration-generating equipment within 120 feet of any building façade and impact pile drivers shall be prohibited within 320 feet of any building façade during construction activities. Plate compactors and compactor rollers are acceptable, and deep foundation piers or caissons shall be auger drilled.

If it is not feasible to restrict the use of vibratory equipment, the construction contractor shall, in consultation with a licensed structural engineer, develop a project-specific construction vibration plan that identifies planned vibration-generating construction activities and potential ground-borne vibration levels (given specific equipment and soil conditions) at the nearest receiving land uses and the vibration control measures that will be employed to ensure equipment and work activities would not damage buildings or result in vibrations that exceed a threshold for peak particle velocity (PPV) of 0.04 inches/second (in/sec). Such measures may include but are not limited to the use of vibration monitoring to measure actual vibration levels, the use of photo monitoring or documentation of building conditions prior to, during, and after construction activities, and/or the use of trenches or barriers that attenuate ground-borne vibration.

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1 INTRODUCTION

The City of Lake Elsinore (City) proposes to adopt and implement the General Plan Update (GPU). The GPU would guide land use and development decisions for the Planning Area, which encompasses all properties within the incorporated City limits, as well as unincorporated properties within the City's sphere of influence (the Planning Area). The GPU would support the sustainable development of both residential and non-residential land uses.

MIG, Inc. (MIG) has prepared this Noise Impact Analysis Report (Report) to evaluate the potential construction- and operations-related noise and vibration impacts of the proposed Project. MIG has prepared this Report using project-specific information contained in the GPU, as well as supplemental materials prepared in support of the GPU (e.g., land use buildout, transportation study, etc.).

This Report is intended for use by the City to assess the potential noise and vibration impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- **Chapter 1, Introduction,** explains the contents of this Report and its intended use.
- **Chapter 2, Proposed Project Description**, provides an overview of construction and operational activities associated with the GPU
- **Chapter 3, Noise Fundamentals**, provides pertinent background information on the measurement, propagation, and characterization of noise and vibration levels.
- **Chapter 4, Environmental and Regulatory Setting,** describes the existing noise and vibration setting of the proposed GPU and provides information on the federal, state, and local regulations that govern the GPU's setting and its potential noise and vibration impacts.
- **Chapter 5, CEQA Noise and Vibration Impact Analysis,** identifies the methods used to estimate the proposed Project's potential construction and operational noise and vibration levels and evaluates the Project's noise and vibration impacts in accordance with Appendix G of the State CEQA Guidelines.
- **Chapter 6, Other Noise and Vibration Considerations,** discloses other potential noise and vibration issues that have been adjudicated outside the scope of CEQA but which may nonetheless be disclosed by a lead agency for information and/or disclosure purposes.
- **Chapter 7, Report Preparers and References,** list the individuals involved, and the references used, in the preparation of this Report.

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2 PROJECT DESCRIPTION

The comprehensive update of the Lake Elsinore General Plan serves as the guide for the City's future growth and development. The proposed GPU succeeds the last comprehensive general plan adopted in 2011 and coordinates future development and policies with regional planning efforts and serves as the city's fundamental guide in developing strategies to address greenhouse gas reduction, climate change, and climate planning. The proposed GPU's characteristics that are relevant to the evaluation of potential noise and vibration impacts are described in detail below.

2.1 PROJECT LOCATION

The City is located east and west of the I-15 Freeway and north and south of the Ortega Highway (SR-74). Located in southwest Riverside County, approximately 24 miles south of downtown Riverside, the City is bordered by the City of Wildomar to the south and east, the City of Menifee to the East, the City of Canyon Lake to the east and north, and unincorporated portions of Riverside County to the north, west and south.

2.2 EXISTING PLANNING AREA DESCRIPTION AND OPERATIONS

The Planning Area includes a mix of undeveloped/vacant land, park and open space, residential (mostly single-family residential), commercial, industrial, and agricultural/rural land uses.

2.3 PROPOSED PROJECT CHARACTERISTICS

The proposed GPU may result in changes to land use and increases in housing, population, and employment as outlined in Table 2-1, which shows the GPU's 2045 growth projections.

Table 2-1
General Plan Update 2045 Growth Projection

Area	Residential		Non-Residential	
	Units	Population	Square Feet	Jobs
City of Lake Elsinore (City)	40,623	132,382	21,219,257	32,741
Sphere of Influence (SOI)	5,987	19,509	5,166,522	8,054
Planning Area (City + SOI)	46,610	151,891	26,385,778	40,795

The changes in land uses anticipated under the GPU are shown in Table 2-2.

Table 2-2
Proposed GPU Land Uses

Development Indicators	Existing (2025)			Future (2045)			Difference (2025-2045)			
	City	SOI	Total	City	SOI	Total	City	SOI	Total	%
Dwelling Units	18,946[(A)]	N/A	18,946	40,623	5,987	46,610	21,677	5,987	27,664	+146
Population	70,435[(B)]	N/A	70,435	132,382	19,509	151,891	61,947	19,509	81,456	+116
Non-Residential Building (SF)[(C)]	9.5M	0.8M	10.3M	21.2M	5.2M	26.4M	11.7M	4.4M	16.1M	+156
Employees	33,800	N/A	33,800	32,741	8,054	40,795	-1,059	8,054	6,995	+21

Notes: M = million, N/A = Not Applicable, SF = square feet, SOI = sphere of influence

(A) City of Lake Elsinore Housing Element 2024-2029
(B) Zoom Prospector.com/communities/ca/city/Lake-Elsinore, 7.24.25
(C) MIG Urban Footprint 2025. Non-Residential Building Square Feet rounded to nearest 100,000.

2.4 GENERAL PLAN COMPONENTS THAT REDUCE NOISE AND VIBRATION EFFECTS

The project includes goals, policies, and implementation measures that would reduce potential noise and vibration effects. Please see Appendix A of the EIR for a complete list of GPU goals and policies .

3 NOISE AND VIBRATION FUNDAMENTALS

3.1 DEFINING NOISE

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. "Noise" may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area.

3.1.1 SOUND PRODUCTION

Sound has three properties: frequency (or pitch), amplitude (or intensity or loudness), and duration. Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor.

The frequency, amplitude, and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as "noisy" or annoying. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

3.1.2 MEASURING SOUND

Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear. Since decibels are logarithmic units, an increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50\ decibels + 50\ decibels\ \neq 100\ decibels$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 * \ 10\, log\left(10^{\left(\frac{50}{10}\right)} + \ 10^{\left(\frac{50}{10}\right)}\right) = 53\ decibels$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

For an ideal point source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. The change in noise levels between two distances can be calculated according to Equation 1 as follows:

Equation 1

$$dBA2 = dBA1 + 20\log (D1/D2)$$

Where:

dBA1 = Known noise level, such as a reference noise level

D1 = Distance associated with dBA1

dBA2 = Noise level at distance 2

D2 = Distance associated with dBA2

For an ideal line source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a cylindrical pattern from the source. Theoretically, the sound level attenuates, or decreases, by 3 dB with each doubling of distance from the line source. The change in noise levels between two distances can be calculated according to Equation 2 as follows:

Equation 2

$$dBA2 = dBA1 + 10\log (D1/D2)$$

Where:

dBA1 = Known noise level, such as a reference noise level

D1 = Distance associated with dBA1

dBA2 = Noise level at distance 2

D2 = Distance associated with dBA2

For noise sources that do not operate continuously (e.g., vehicles and trucks that travel on-site, park, and then cease to generate noise),the average, hourly noise level associated with variable (i.e., non-steady) noise source can be calculated using Equation 3 as follows:

Equation 3

$$\text{Hourly } L_{eq} = 10 * \text{Log } (P_h) * 10^{(Lp/10)}$$

Where:

P_h = Percentage or fraction of hour the noise is generated

L_p = The noise level generated during the partial hour (P_h)

Finally, the total combined sound pressure level from multiple, identical sources of noise at a receptor location can be calculated using Equation 4 as follows:

Equation 4

$$SPL_{Total} = SPL_1 + 10 * \text{Log } (N)$$

Where:

SPL_1 = Sound pressure level of one source

N = Number of identical sources to be added

3.1.3 CHARACTERIZING SOUND

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz most of the sound humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter known as the "A-weighting" or "A-weighted sound level" filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. A list of common noise sources and their associated A-weighted noise level is provided in Table 3-1. Other weightings include the B-, C-, and D-weighting, but these scales are not commonly used for environmental noise because human annoyance correlates well with the A-weighting and these weighting scales are not incorporated in typical environmental noise descriptors.

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (L_{eq}) descriptor is used to represent the average character of the sound over a period of time. The L_{eq} represents the level of steady-state noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. L_{eq} is useful for evaluating shorter time periods over the course of a day. The most common L_{eq} averaging period is hourly, but L_{eq} can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L_{01}, L_{05}, L_{25}, L_{50}, and L_{90} descriptors represent the sound levels exceeded 1%, 5%, 25%, 50%, and 90% of the time the measurement was performed. The L_{90} value usually corresponds to the background sound level at the measurement location.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable because household noise decreases as people begin to retire and sleep. Accordingly, a variety of methods for measuring noise have been developed. The California General Plan Guidelines for Noise Elements identifies the following common metrics for measuring noise (LCI, 2017):

- **L_{dn} or DNL (Day-Night Average Level):** The average equivalent A-weighted sound level during a 24-hour day, divided into a 15-hour daytime period (7:00 AM to 10:00 PM) and a 9-hour nighttime period (10:00 PM to 7:00 AM). A 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level (e.g., at 2:00 AM) would contribute as much to the overall day-night average as a 55-dBA daytime sound level (e.g., at 7:00 AM).
- **CNEL (Community Noise Equivalent Level):** The CNEL descriptor is similar to DNL, except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7:00 PM to 10:00 PM). For example, a 45-dBA evening sound level (e.g., at 8:00 PM) would contribute as much to the overall day-night average as a 50-dBA daytime sound level (e.g. at 8:00 AM).

Table 3-1
Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet flyover at 1,000 feet	105	
	100	
Gas lawn mower at 3 feet	95	
	90	
Diesel truck at 50 feet at 50 mph	85	Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noise urban area, daytime	75	
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	65	Normal speech at 3 feet
Heavy traffic at 300 feet	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher next room
	45	
Quiet urban nighttime	40	Theater, large conference room
Quiet suburban nighttime	35	
	30	Library
Quite rural nighttime	25	Bedroom at night
	20	
	15	Broadcast/recording studio
	10	
	5	
Typical threshold of human hearing	0	Typical threshold of human hearing

Source: Caltrans, 2013

The artificial penalties imposed during DNL and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods. As such, the DNL and CNEL metrics are usually applied when describing longer-term ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. In contrast, the L_{eq} metric is usually applied to shorter reference periods where sensitivity is presumed to remain generally the same.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL for evaluating community noise exposure levels.

3.1.4 SOUND PROPAGATION

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. The strength of the source is often characterized by its "sound power level." Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, sound pressure level at the receiver point can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal "point" source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. In contrast, a "line" source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source; however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors affecting the predicted sound pressure level are often lumped together into a term called "excess attenuation." Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

3.1.5 NOISE EFFECTS ON HUMANS

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports.

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are

generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

When exposed to high noise levels, humans may suffer hearing damage. Sustained exposure to high noise levels (e.g., 90 dBs for hours at a time) can cause gradual hearing loss, which is usually temporary, whereas sudden exposure to a very high noise level (e.g., 130 to 140 dBs) can cause sudden and permanent hearing loss. In addition to hearing loss, noise can cause stress in humans and may contribute to stress-related diseases, such as hypertension, anxiety, and heart disease (Caltrans, 2013).

3.1.6 GROUND-BORNE VIBRATION AND NOISE

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or humans (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources are usually characterized as continuous, such as factory machinery, or transient, such as explosions.

As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency; however, unlike airborne sound, there is no standard way of measuring and reporting amplitude. Vibration amplitudes can be expressed in terms of velocity (inches per second) or discussed in dB units to compress the range of numbers required to describe vibration. Vibration impacts to buildings are usually discussed in terms of peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Vibration can impact people, structures, and sensitive equipment. The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Ground-borne vibration can also disrupt the use of sensitive medical and scientific instruments, such as electron microscopes. Potential human annoyance associated with ground-borne velocity is typically assessed using velocity decibel (VdB) notation.

Ground-borne noise is noise generated by vibrating building surfaces such as floors, walls, and ceilings that radiate noise inside buildings subjected to an external source of vibration. The vibration level, the acoustic radiation of the vibrating element, and the acoustical absorption of the room are all factors that affect potential ground-borne noise generation.

4 ENVIRONMENTAL AND REGULATORY SETTING

This chapter provides information on the environmental and regulatory noise and vibration setting of the proposed GPU.

4.1 PROJECT LOCATION

The City is located east and west of the I-15 Freeway and north and south of the Ortega Highway (SR-74). Located in southwest Riverside County, approximately 24 miles south of downtown Riverside, the City is bordered by the City of Wildomar to the south and east, the City of Menifee to the East, the City of Canyon Lake to the east and north, and unincorporated portions of Riverside County to the north, west and south.

4.2 EXISTING NOISE ENVIRONMENT

The City's existing General Plan Public Safety and Welfare Element identifies roadway traffic as a major source of noise in the City. It also lists other sources that contribute to the City's noise environment, including industrial and manufacturing facilities, Skylark Airport, schools, construction activities, and recreational activities associated with the lake, the motocross park, and Diamond Stadium. This description is still accurate; Interstate 15 (I-15) runs from the northwest portion of the Planning Area to the center-east portion of the Planning Area, and roadways run in the north-south (e.g., Lake Street, Central Avenue, Railroad Canyon Road) and east-west direction (e.g., Grand Avenue) throughout the Planning Area. Skylark Airport is a private airport located in the southeast portion of the City. The closest airport outside the City is Perris Valley Airport, located approximately 5.3 miles east of the City.[1] The City is not located in any noise contour zone associated with this airport.

4.2.1 AMBIENT NOISE LEVELS AT PLANNING AREA

MIG conducted ambient noise level monitoring within the Planning Area from approximately 7 PM January 30, 2023 to approximately 6:30 PM on February 1, 2023, (see Attachment 1). The ambient noise levels were digitally measured and stored using three Larson Davis SoundTrack LxT sound level meters that meet American National Standards Institute requirements for a Type 1 integrating sound level meter. Each sound meter was calibrated immediately before and after the monitoring period using a reference one kilohertz (1kH) check frequency and 114 dB sound pressure level and found to be operating within normal parameters for sensitivity. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture short-term noise events and increases in noise levels above typical background conditions. Weather conditions during the monitoring were generally clear and sunny during the daytime and clear and cool during the nighttime, with daytime temperatures ranging from the mid-50 to mid-60 degrees Fahrenheit. Winds reached approximately 5 to 15 miles per hour (mph) during the daytime.

The ambient noise monitoring conducted for this Report included two long-term (LT) and 11 short-term (ST) measurements at locations selected to:

- Provide direct observations of existing noise sources throughout the City;

[1] This distance is as measured from the City's northeastern boundary to the airport's closest runway centerline.

- Determine ambient noise levels at and near areas changing land use designations; and
- Evaluate potential changes in noise levels at sensitive receptors locations

The ambient noise monitoring locations are described below and shown on Figure 4-1 Ambient Noise Monitoring Locations.

- **LT-01** was located in the northwest portion of Yarborough Park, approximately 320 feet west of North Poe Street. Ambient noise levels at this location were measured from approximately 8:00 PM on January 30, 2023 to 8:00 PM on January 31, 2023. The ambient noise levels measured at LT-01 are representative of park and residential uses in the central portion of the Planning Area.
- **LT-02** was located at the western portion of Sunshine Park, approximately 25 feet southeast of the centerline of Village Parkway Loop. Ambient noise levels at this location were measured from approximately 7:00 PM on January 30, 2023 to 7:00 PM on January 31, 2023. The ambient noise levels measured at LT-02 are representative of park and residential uses in the eastern portion of the Planning Area.
- **ST-01** was located at Creekside Park, along the corner of Lost Road and Baywood Street, approximately 35 feet northwest from the Centerline of Lost Road. Ambient noise levels at this location were measured from approximately 10:00 AM to 10:30 AM on January 31, 3023. The ambient noise levels measured at ST-01 are representative of daytime park, school, and residential uses in the eastern portion of the Planning Area.
- **ST-02** was located in the eastern portion of the Planning Area, approximately 20 feet north of the centerline of Stoneman Street, and approximately 60 feet south of the intersection of Palomar Street and Peppertree RV Park Road. Ambient noise levels at this location were measured from approximately 11:10 AM to 11:40 AM on January 31, 3023. The ambient noise levels measured at ST-02 are representative of typical daytime noise levels for residential uses in the eastern portion of the Planning Area.
- **ST-03** was located in the southern portion of the Planning Area at the intersection of Grand Avenue and Walls Street, approximately 40 feet south of the centerline of Grand Avenue. Ambient noise levels at this location were measured from approximately 11:56 AM to 12:25 PM on January 31, 3023. The ambient noise levels measured at ST-X are representative of typical daytime noise levels along Grand Avenue.
- **ST-04** was located in the northwest portion of the Planning Area, approximately 50 feet from the intersection of Lake Street and Temescal Canyon Road. Ambient noise levels at this location were measured from approximately 1:03 PM to 1:32 PM on January 31, 3023. The ambient noise levels measured at ST-09 are representative of typical daytime noise levels along Lake Avenue near industrial uses in the northern portion of the Planning Area.
- **ST-05** was located in the central portion of the Planning Area, approximately 25 feet north of the intersection of Lewis Street and Sumner Avenue. Ambient noise levels at this location were measured from approximately 2:30 PM to 3:00 PM on January 31, 3023. The ambient noise levels measured at ST-05 are representative of typical daytime residential uses in the central portion of the Planning Area.

- **ST-06** was located in the central portion of the Planning Area at the intersection of West Graham Avenue and Kellogg Street, approximately 35 feet north of the centerline of Graham Avenue. Ambient noise levels at this location were measured from approximately 3:05 PM to 3:34 PM on January 31, 3023. The ambient noise levels measured at ST-06 are representative of typical daytime noise levels along West Graham Avenue and of residential uses in the central portion of the Planning Area.
- **ST-07** was located in the north-central portion of the Planning Area at Rosetta Canyon Community Park, approximately 60 feet west of the centerline of Rosetta Canyon Drive and 60 feet south of the centerline of Ardenwood Way. Ambient noise levels at this location were measured from approximately 3:55 PM to 4:24 PM on January 31, 3023. The ambient noise levels measured at ST-10 are representative of typical daytime noise levels along Rosetta Canyon Drive and of residential, park, and fire department uses in the north-central portion of the Planning Area.
- **ST-08** was located in the central-west portion of the Planning Area at the intersection of Lakeshore Drive and Lake Street, approximately 65 feet east of the centerline of Lake Street. Ambient noise levels at this location were measured from approximately 11:04 AM to 11:33 AM on February 1, 2023. The ambient noise levels measured at ST-03 are representative of typical daytime noise levels along Lake Street and of residential and school uses in the central-west portion of the Planning Area.
- **ST-09** was located at McVicker Canyon Park in the western portion of the Planning Area, approximately 50 feet west of the centerline of Grand Avenue. Ambient noise levels at this location were measured from approximately 12:00 PM to 8:00 PM on February 1, 2023. The ambient noise levels measured at ST-09 are representative of park uses and noise levels along Grand Avenue.
- **ST-10** was located in the southern portion of the Planning Area at the intersection of Grand Avenue and Riverside Drive, approximately 60 feet west of the centerline of Riverside Drive. Ambient noise levels at this location were measured from approximately 11:04 AM to 11:33 AM on February 1, 2023. The ambient noise levels measured at ST-07 are representative of typical daytime noise levels of traffic along Riverside Drive in the southern portion of the Planning Area.
- **ST-11** was located in the northeast portion of the Planning Area near the intersection of Ponte Carlo and Bella Vista, approximately 30 feet west of the centerline of Bella Vista. Ambient noise levels at this location were measured from approximately 5:35 PM to 6:35 PM on February 1, 2023. The ambient noise levels measured at ST-11 are representative of residential uses in the northeastern portion of the Planning Area.

Figure 4-1
Ambient Noise Monitoring Locations

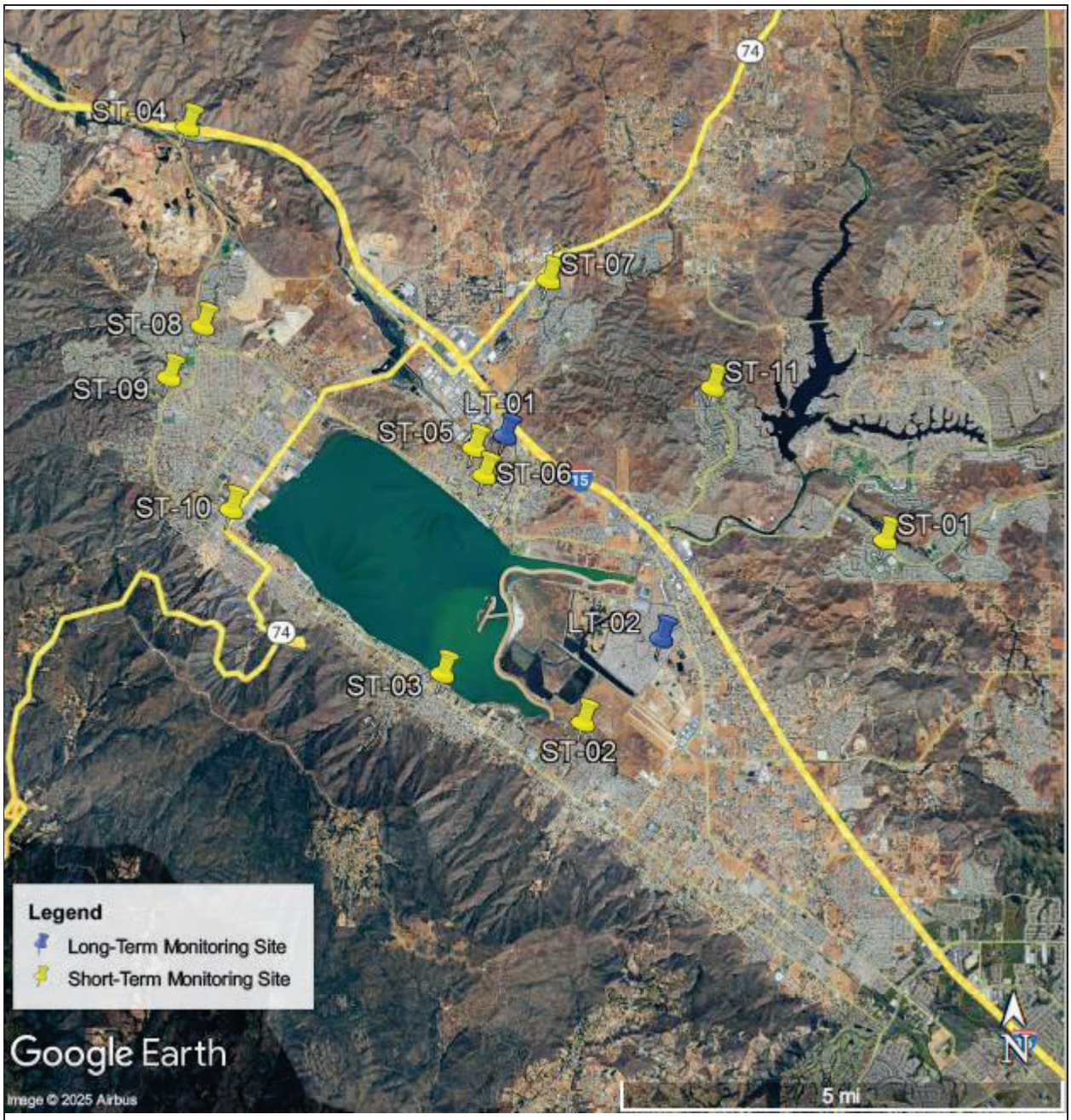

Table 4-1 and Table 4-2 summarize the results of the LT and ST ambient noise monitoring conducted for this Report. Refer to Attachment 1 for detailed ambient noise monitoring results.

Table 4-1
Measured Long-Term Ambient Noise Levels (dBA) in the Project Area

Site	L_{min}	L_{max}	Measured L_{eq} Range (dBA)[A]			24-Hour CNEL
			Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM)	
LT-01	51.2	60.9	53.5 – 60.9	53.6 – 56.7	51.2 – 59.0	62.6
LT-02	40.3	52.4	43.5 – 45.4	46.2 – 52.4	40.3 – 47.5	51.9

Source: MIG (see Attachment 1)

(A) Values are the lowest and highest measured average hourly values during the listed time. Monitoring occurred over a 24-hour period beginning on January 30, 2023 and ending on January 31, 2023.

Table 4-2
Measured Short-Term Ambient Noise Levels (dBA) in the Project Area

Site	Start Time[A]	Duration	Measured Noise Level (dBA)							
			L_{eq}[B]	L_{min}[C]	L_{90}[D]	L_{50}[D]	L_{25}[D]	$L_{8.3}$[D]	$L_{1.6}$[D]	L_{max}[C]
ST-01	10:00 AM	30 minutes	59.5	41.9	50.2	55.2	59.8	64.1	68.3	74.6
ST-02	11:10 AM	30 minutes	65.9	39.3	45.8	50.1	54.9	70.1	78.9	94.6
ST-03	11:56 PM	30 minutes	68.8	46.7	58.4	66.7	70.0	73.1	75.9	83.7
ST-04	1:03 PM	30 minutes	72.3	57.5	63.8	69.1	72.9	76.9	80.3	90.0
ST-05	2:30 PM	30 minutes	62.9	41.0	52.0	59.1	63.7	67.8	71.1	78.4
ST-06	3:05 PM	30 minutes	65.7	46.1	57.7	63.2	65.4	69.2	74.6	83.0
ST-07	3:55 PM	30 minutes	65.5	43.4	51.8	58.0	64.8	70.8	75.2	79.4
ST-08	11:04 AM	30 minutes	66.5	49.4	58.8	63.8	66.5	70.8	75.1	83.7
ST-09	12:00 PM	8 hours	65.9	37.1	52.1	60.7	66.6	72.0	78.5	94.4
ST-10	12:07 PM	30 minutes	63.7	48.2	57.0	61.8	64.4	67.8	70.1	78.7
ST-11	5:35 PM	60 minutes	47.7	31.8	36.9	41.1	46.2	53.1	57.2	68.8

Source: MIG (See Attachment 1)

(A) Monitoring occurred on January 31, 2023 (ST-01, ST-02, ST-03, ST-04. ST-05, ST-06, ST-07,) and February 1, 2023 (ST-08, ST-09, ST-10, ST-11).

(B) The L_{eq} value represents the equivalent steady-state noise level that would contain the same amount of acoustical energy as the time-varying noise level during the listed period.

(C) The L_{min} and L_{max} represent the lowest and highest instantaneous noise levels measured during the listed period, respectively.

(D) Values represent the noise level exceed a certain percentage of the period, e.g., L_{90} is the noise level that was exceeded 90% of the time for the listed period.

As shown in Table 4-1 and Table 4-2, daytime noise levels were generally lowest near park and residential areas away from major roadways (e.g., LT-02, ST-01, and ST-11), and highest near major roads (e.g., ST-03 and ST-04). Based on observations made during the ambient noise monitoring, the existing noise environment in the Planning Area consists primarily of vehicle traffic, with other sources such as planes, school and park uses, and equipment also contributing to the noise environment.

4.2.1.1 Existing (2018) and Future (2045) Baseline Traffic Noise Levels

Existing (Year 2018) traffic noise levels were computed using the U.S. Department of Transportation Federal Highway Administration's (FHWA) Traffic Noise Model (TNM), Version 3.2. The model uses traffic volume, vehicle mix, vehicle speed, roadway geometry, and other variables to compute 24-hour traffic noise levels at user-defined receptor distances from the roadway center. The TNM modeling conducted for this EIR incorporates worst-case assumptions about motor vehicle traffic and noise levels; specifically, calculations are based on "hard" site conditions and do not incorporate any natural or artificial shielding.

Information on existing average daily traffic volumes and the mix of automobiles, medium trucks, and heavy-duty trucks were obtained for a subset of roadway segments from the transportation analysis prepared for the project by the traffic consultant Fehr and Peers. Traffic noise levels were estimated for typical daytime (7 AM to 10 PM) and nighttime (10 PM to 7 AM) hours using distributions modeled by Fehr and Peers. Roadway segments were modeled as straight-line segments without any flow controls. Modeled noise levels, therefore, represent free-flow traffic conditions. Vehicles were assumed to travel the posted speed limit on each modeled roadway segment.

The traffic analysis prepared for the GPU also includes an analysis of future traffic conditions that would occur in Year 2045 based on continued implementation of the City's current General Plan at the land use development intensities permitted by the current General Plan. The future baseline Year 2045 traffic noise levels were estimated using the same methodology as described for the existing year 2018 traffic noise analysis. Traffic noise levels were computed using TNM, Version 3.2 and the same roadway geometry factors assumed for 2018 traffic noise levels; however, traffic volumes and fleet mix percentages were updated based on road segment volumes and vehicle populations provided by Fehr and Peers for Year 2045.

Modeled traffic noise levels for existing (Year 2018) and future (Year 2045) baseline traffic noise levels are shown in Table 4-3. Please refer to Attachment 1 for detailed information on existing 2018 and future 2045 traffic noise modeling assumptions.

Table 4-3
City of Lake Elsinore Existing and Future Baseline Traffic Noise Levels

Road / Segment	Year 2018		Year 2045		Net Change	
	ADT	dBA LDN(A)	ADT	dBA LDN(A)	ADT	dBA LDN(A)
Temescal Canyon Road						
Horsethief Canyon Road to I-15	7,667	66.9	8,628	67.4	961	0.5
Bernard Street to Lake Street	7,654	66.6	8,743	67.3	1,089	0.7
Lake Street						
I-15 to Nichols Road	17,011	68.8	30,875	71.4	13,864	2.6
Nichols Rd to Alberhill Ranch Road	17,075	68.5	57,900	73.9	40,825	5.4
Alberhill Ranch Road to Mountain Street	15,612	68.8	57,000	74.5	41,388	5.7
Mountain Street to Lakeshore Drive	15,030	69.1	26,900	71.7	11,870	2.6
Grand Avenue						

Lakeshore to Alvarado Street	11,489	65.8	17,240	67.6	5,751	1.8
Alvarado Street to Machoado	7,701	64.7	14,100	67.3	6,399	2.6
Machoado to Riverside Drive	9,263	65.2	15,000	67.3	5,737	2.1
Riverside Drive to SR-74	18,560	66.8	28,300	68.6	9,740	1.8
SR-74 to Deeble Entrance	11,767	66.5	18,425	68.3	6,658	1.8
Deeble Entrance to Corydon Road	13,357	66.8	19,829	68.4	6,472	1.6
Lakeshore Drive						
Lake Street/Grand Avenue to Terra Cotta	7,550	64.4	13,167	67.1	5,617	2.7
Terra Cotta to Machado Street	6,510	63.6	12,550	66.6	6,040	3
Machado Street to SR 74	6,862	62.1	13,000	64.9	6,138	2.8
SR 74 to Chaney Street	8,864	62.9	11,867	64.0	3,003	1.1
Chaney Street to W Graham Avenue	7,443	62.2	8,157	62.5	714	0.3
W Graham Avenue to Poe Street	3,951	56.3	4,377	56.8	426	0.5
E Lakeshore Drive						
Short Street to Diamond Drive	7,187	63.8	9,235	64.8	2,048	1.0
Chaney Street						
Lakeshore Drive to W Pottery Street	2,410	56.4	3,611	57.7	1,201	1.3
W Pottery Street to Collier Avenue	4,190	61.9	7,578	64	3,388	2.1
Collier Ave						
Nichols Road to Riverside Drive	3,086	66.1	5,278	67.8	2,192	1.7
Riverside Drive to Central Avenue	22,817	69.6	38,200	71.7	15,383	2.1
Central Avenue to 3rd Street	8,955	68.2	18,600	70.7	9,645	2.5
3rd Street to Minthorn Street	3,428	74.1	9,090	75.3	5,662	1.2
Nichols Rd						
Lake Street to Alberhill Ranch Road	4,079	63.2	8,560	66.6	4,481	3.4
Aberhill Ranch Rd to Terra Cotta	4,130	62.9	9,276	66.5	5,146	3.6
Terra Cotta Road to Collier Avenue	7,616	62.5	13,950	65.3	6,334	2.8
Collier Avenue to I-15 EB Ramp	7,165	64.1	18,350	68	11,185	3.9
EB Ramp to El Toro Road	1,517	57.5	19,500	63.6	17,983	6.1
Terra Cotta Road						
Nichols Avenue to Terracina Lane	5,959	59.7	8,145	61.5	2,186	1.8
Terracina Lane to Lakeshore Drive	5,714	61	7,468	62.4	1,754	1.4
Machado Street						
Lakeshore Dr to Lincoln Street	4,711	60.6	8,730	63.5	4,019	2.9
Lincoln Street to Grand Avenue	2,920	58.4	2,308	57.5	-612	-0.9
Central Ave						

Riverside Street to Rosetta Canyon Drive	34,288	71.2	51,760	72.9	17,472	1.7
Rosetta Canyon Drive to Cambern Avenue	35,767	73.8	41,967	74.4	6,200	0.6
Cambern Avenue to I-15 SB Ramp	36,871	71.9	43,925	72.7	7,054	0.8
I15 SB Ramp to Collier Avenue	30,113	71.3	51,400	73.4	21,287	2.1
Auto Center Dr						
Bancroft Way to Diamond Drive	3,626	61.8	5,587	63.5	1,961	1.7
Diamond Drive						
I-15 SB Ramp to E. Lakeshore Drive	27,464	65.0	33,367	66.0	5,903	1.0
E. Lakeshore Drive to Malaga Road	230	51.9	1,471	55.1	1,241	3.2
Railroad Canyon Road						
Skylink Drive to Canyon Hills Road	39,014	73.3	50,450	74.2	11,436	0.9
Canyon Hills Rd to Summerhill Drive/Grape	42,030	73.2	52,540	74.2	10,510	1.0
Summerhill Drive						
Villa Ravenna to Bella Lucia	7,147	63.5	8,526	64.3	1,379	0.8
Bella Lucia to Railroad Canyon Road	9,221	64.6	9,488	64.7	267	0.1
Canyon Hills Road						
Railroad Canyon Road to Lost Road	10,665	65.7	13,900	67	3,235	1.3
Lost Road and Kalanchoe Road	7,091	63.4	11,218	65.5	4,127	2.1
Mission Trail						
Diamond Drive to Malaga Road	19,257	68.6	24,350	69.7	5,093	1.1
Malaga Road to Vine Street	16,159	69.3	21,725	70.8	5,566	1.5
Vine Street to Corydon Road	17,059	69.1	25,400	71	8,341	1.9
Corydon Road to Canyon Drive	11,921	67.7	17,400	69.3	5,479	1.6
Bundy Canyon Road						
Mission Trail to Orchard Street	8,931	63.5	13,700	65.4	4,769	1.9
Orchard Street to Orange Street	9,921	64.5	15,500	66.5	5,579	2.0
Lincoln Street						
Grand Avenue to Machado Street	5,108	60.8	4,612	60.2	-496	-0.6
Machado Street to Riverside Drive/SR-74	4,468	58.8	7,243	60.9	2,775	2.1
Greenwald Avenue						
SR-74 to Longhorn Drive	7,229	65.0	10,048	66.4	2,819	1.4
E Franklin Street						
N Main Street to Avenue 6	2,764	55.7	12,400	60.8	9,636	5.1

Graham Ave						
Lakeshore Dr to Lindsay St	2,531	55.6	2,279	54.9	-252	-0.7
Lindsay St to Main Street	1,767	54.6	2,470	55.8	703	1.2
Main Street						
I-15 to Pottery St	8,532	63.0	11,818	64	3,286	1.0
Pottery St to Heald St	3,582	59.4	7,944	62.2	4,362	2.8
Heald St to Graham Ave	1,064	53.6	1,354	54.9	290	1.3
Graham Ave Library St	2,115	53.4	3,505	55.1	1,390	1.7
SR-74/Ortega Highway						
West of Grand Avenue	15,302	65.4	23,600	67.4	8,298	2.0
Riverside Drive						
Grand Avenue to Lincoln Street	14,263	65.9	23,333	68	9,070	2.1
Lincoln Street to Lakeshore Drive	16,652	66.4	28,667	68.6	12,015	2.2
Lakeshore Drive to Collier Drive	18,105	66.3	34,467	69	16,362	2.7
Corydon Road						
Mission Trail to Grand Avenue	13,308	66.6	12,024	66.1	-1,284	-0.5
Malaga Road						
Diamond Drive to Mission Trail	83	53.8	616	55.9	533	2.1
I-15						
Indian Truck Trail Exit to Lake St	111,246	75.1	159,100	76.7	47,854	1.6
Lake St to Nichols Road	104,387	74.7	140,954	76	36,567	1.3
Nichols Road to SR 74	108,239	74.6	134,854	75.6	26,615	1.0
SR 74 to Main St	117,423	75.3	142,400	76.2	24,977	0.9
Main St to Railroad Canyon Rd	118,717	75.2	141,000	76.1	22,283	0.9
Railroad Canyon to Bundy Canyon	101,696	74.5	123,400	75.4	21,704	0.9
Bundy Canyon to Wildomar Trail	108,584	75.0	132,000	75.9	23,416	0.9
Wildomar Trail to Clinton Keith Rd	109,190	75.2	133,200	76.1	24,010	0.9

Source: MIG, 2025 (see Attachment 2)
(A) LDN values for road segments were estimated 50 feet from the center of the nearest travel direction except for the I-15, which was estimated 150 feet from the center of the right-of-way.

The results of the traffic noise modeling indicate that existing traffic noise levels within the City are highest (i.e., 70 CNEL or higher) along the I-15, Central Avenue, Railroad Canyon Road, and portions of Collier Avenue.[2] Other roadways have noise levels in the range of approximately 51 DNL to 69 DNL. Specifically, the modeling shows:

- Year 2018 traffic noise levels along the modeled segments of Temescal Canyon Road are approximately 67 DNL at a distance of 50 feet from the center of the roadway. Commercial, industrial,

[2] Noise from the I-15 contributes to the high noise levels for Collier Avenue.

open space, and residential land uses are present along Temescal Canyon Road. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for single family uses and open space) and Clearly Compatible land use compatibility condition (70 DNL for general commercial and industrial) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 0.5 dBA to 0.7 dBA, due to a predicted increase in traffic volumes.

- Year 2018 traffic noise levels along the modeled segments of Lake Street are approximately 69 DNL at a distance of 50 feet from the center of the roadway. Residential and park land uses are present along Lake Street. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for single family residential and park uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 2.6 dBA to 5.7 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Grand Avenue are approximately 65 to 67 DNL at a distance of 50 feet from the center of the roadway. Residential, school, agriculture/natural resources, retail, and park land uses are present along Grand Avenue. The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility condition (70 DNL for school uses), Normally Compatible land use compatibility condition (70 DNL for single family residential and park uses) and Clearly Compatible land use compatibility (80> DNL for agricultural uses, 70 DNL for commercial retail) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.6 dBA to 2.6 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Lakeshore Drive are approximately 56 to 64 DNL at a distance of 50 feet from the center of the roadway. Residential, industrial, retail, office, school, and park land uses are present along Lakeshore Drive. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (65 DNL for school uses) and Clearly Compatible land use compatibility (60 DNL for residential uses and 65 DNL for park uses and office uses, 70 DNL for commercial retail and industrial uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 0.3 dBA to 2.8 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of East Lakeshore Drive are approximately 64 DNL at a distance of 50 feet from the center of the roadway. Residential, agriculture/natural resources, and religious institution, and retail land uses are present along East Lakeshore Drive. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for single family residential and 65 DNL for religious institutions) and Clearly Compatible land use compatibility (80> DNL for agricultural uses and 70 DNL for commercial retail) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase of approximately 1.0 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Chaney Street are approximately 56 to 62 DNL at a distance of 50 feet from the center of the roadway. Residential, school, retail, office, and industrial, uses are present along Lakeshore Drive. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for residential uses, 65 DNL for school uses) and Clearly Compatible land use compatibility (60 DNL for residential uses, 65 DNL for office uses, 70 DNL for commercial retail and industrial uses) identified in the City's existing

General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.3 dBA to 2.1 dBA, due to a predicted increase in traffic volumes.

- Year 2018 traffic noise levels along the modeled segments of Collier Avenue are approximately 66 to 74 DNL at a distance of 50 feet from the center of the roadway. Cemetery, office, retail, residential, commercial recreation, and industrial uses are present along Collier Avenue. The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility condition (75 DNL for residential uses), Normally Compatible land use compatibility condition (70 DNL for office and commercial recreation uses) and Clearly Compatible land use compatibility (70 DNL for cemeteries, retail, and industrial) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.2 dBA to 2.5 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Nichols Road are approximately 58 to 64 DNL at a distance of 50 feet from the center of the roadway. Parks, agriculture/natural resources, retail, and residential uses are present along Nichols Avenue. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for residential uses) and Clearly Compatible land use compatibility (80> DNL for agricultural uses, 70 DNL for retail uses, 65 DNL for park uses, and 60 DNL for residential uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 2.8 dBA to 6.1 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Terra Cotta Road are approximately 60 to 61 DNL at a distance of 50 feet from the center of the roadway. Parks, industrial, and residential land uses are present along Terra Cotta Road. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for residential uses) and Clearly Compatible land use compatibility (70 DNL for industrial uses, 65 DNL for park uses, and 60 DNL for residential uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.4 dBA to 1.8 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Machado Street are approximately 58 to 61 DNL at a distance of 50 feet from the center of the roadway. Single family and multifamily residential, mobile homes, educational, religious institutions, and retail uses are present along Machado Street. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for single family and multifamily residential uses, 65 DNL for mobile homes, school uses, and religious institutions) and Clearly Compatible land use compatibility (70 DNL for retail uses and 60 DNL for single family and multifamily residential uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to change between approximately a 0.9 dBA decrease to a 2.9 dBA increase, due to a predicted decrease and increase, respectively, in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Central Avenue are approximately 71 to 74 DNL at a distance of 50 feet from the center of the roadway. Residential, agriculture/natural resources, and retail uses are present along Central Avenue. The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility condition (75 DNL for residential uses), and Clearly Compatible land use compatibility (80> DNL for agricultural uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately a 0.6 dBA and 2.1 dBA, due to a predicted increase in traffic volumes.

- Year 2018 traffic noise levels along the modeled segments of Auto Center Drive are approximately 62 DNL at a distance of 50 feet from the center of the roadway. Residential, office, hotel/motel uses, religious institutions, and retail uses are present along Auto Center Drive. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for residential uses and hotel/motel uses and 65 DNL for religious institutions), and Clearly Compatible land use compatibility (60 DNL for residential uses and 65 DNL for office uses, 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to change by approximately 1.7 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Diamond Drive are approximately 52 to 65 DNL at a distance of 50 feet from the center of the roadway. Retail, office, and commercial recreation facility uses are present along Diamond Drive. The estimated Year 2018 traffic noise levels are within the Clearly Compatible land use compatibility (65 DNL for office uses and commercial recreation uses, 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to change by approximately 1.0 dBA to 3.2 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Railroad Canyon Road are approximately 73 DNL at a distance of 50 feet from the center of the roadway. Residential, agriculture/natural resources, religious institutions, and retail uses are present along Railroad Canyon Road. The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility condition (75 DNL for residential uses and religious uses), Normally Compatible land use compatibility (80 DNL for retail) and Clearly Compatible land use compatibility (80> DNL for agricultural uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 0.9 dBA and 1.0 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Summerhill Drive are approximately 64 to 65 DNL at a distance of 50 feet from the center of the roadway. Residential, park, commercial recreation, and retail uses are present along Summerhill Drive. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility (70 DNL for residential uses) and Clearly Compatible land use compatibility (65 DNL for park and commercial recreation uses, 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 0.1 dBA and 0.8 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Canyon Hills Road are approximately 64 to 66 DNL at a distance of 50 feet from the center of the roadway. Residential, park, commercial recreation, office, education, and retail uses are present along Canyon Hills Road. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility (75 DNL for commercial recreation uses and office uses, 70 DNL for residential uses, and 65 DNL for educational uses) and Clearly Compatible land use compatibility (65 DNL for park uses and 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.3 dBA and 2.1 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Mission Trail are approximately 68 to 69 DNL at a distance of 50 feet from the center of the roadway. Residential, commercial recreation,

and retail uses in the City of Lake Elsinore are present along Mission Trail. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility (75 DNL for commercial recreation uses and 70 DNL for residential uses) and Clearly Compatible land use compatibility (70 DNL for commercial retail uses) identified in the City's existing General Plan. Additionally, light industrial and retail land uses in the City of Wildomar are present along Mission Trail. The estimated Year 2018 traffic noise levels are within the Normally Acceptable land use compatibility (70 CNEL for industrial uses) and Conditionally Acceptable land use compatibility (75 CNEL for commercial uses) for the City of Wildomar. Year 2045 traffic noise levels are estimated to increase between approximately 1.1 dBA and 1.9 dBA, due to a predicted increase in traffic volumes.

- Year 2018 traffic noise levels along the modeled segments of Bundy Canyon Road are approximately 64 to 65 DNL at a distance of 50 feet from the center of the roadway. Residential, light industrial, public facility, and retail uses in the City of Wildomar are present along Bundy Canyon Road. The estimated Year 2018 traffic noise levels are within the Normally Acceptable land use compatibility (70 CNEL for industrial uses, 65 CNEL for commercial uses) and Conditionally Acceptable land use compatibility (70 CNEL for public facilities and 65 CNEL for residential uses) for the City of Wildomar. Year 2045 traffic noise levels are estimated to increase between approximately 1.9 dBA and 2.0 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Lincoln Street are approximately 59 to 61 DNL at a distance of 50 feet from the center of the roadway. Residential, park, commercial recreation, and retail uses are present along Lincoln Street. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility (70 DNL for residential uses) and Clearly Compatible land use compatibility (60 DNL for residential uses, 65 DNL for park and commercial recreation uses, and 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to change between approximately a 0.6 dBA decrease to a 2.1 dBA increase, due to a predicted decrease and increase, respectively, in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Greenwald Avenue are approximately 65 DNL at a distance of 50 feet from the center of the roadway. Residential, commercial, and industrial, uses are present along Greenwald Avenue. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility condition (70 DNL for residential uses) and Clearly Compatible land use compatibility (70 DNL for retail and industrial uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.4 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of East Franklin street are approximately 56 DNL at a distance of 50 feet from the center of the roadway. Residential and retail uses are present along East Franklin Street. The estimated Year 2018 traffic noise levels are within the Clearly Compatible land use compatibility (60 DNL for residential uses and 70 DNL for retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 5.1 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Graham Avenue are approximately 55 to 56 DNL at a distance of 50 feet from the center of the roadway. Residential, educational, office, and retail uses are present along Graham Avenue. The estimated Year 2018 traffic noise levels are within the Clearly Compatible land use compatibility (60 DNL for residential and

educational uses, 65 DNL for office uses, and 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to change between approximately a 0.7 dBA decrease to a 1.2 dBA increase, due to a predicted decrease and increase, respectively, in traffic volumes.

- Year 2018 traffic noise levels along the modeled segments of Main Street are approximately 53 to 63 DNL at a distance of 50 feet from the center of the roadway. Residential, commercial recreation, office, and retail uses are present along Main Street. The estimated Year 2018 traffic noise levels are within the Normally Compatible land use compatibility (70 DNL for residential uses) and Clearly Compatible land use compatibility (60 DNL for residential uses, 65 DNL for commercial recreation uses and office, and 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase between approximately 1.0 dBA and 2.8 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of SR-74 (west of Grand Avenue) are approximately 65 DNL at a distance of 50 feet from the center of the roadway. Residential, park, open space, agriculture/natural resources, religious institutions, and retail uses are present along SR-74 (west of Grand Avenue). The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility (75 DNL for religious institutions), Normally Compatible land use compatibility (70 DNL for residential uses and parks) and Clearly Compatible land use compatibility (70 DNL for commercial retail uses and open space, 80> DNL for agricultural uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase by approximately 2.0 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Riverside Drive are approximately 66 DNL at a distance of 50 feet from the center of the roadway. Single family and multifamily residential, mobile home, park, educational, commercial recreation, and retail uses are present along Riverside Drive. The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility (70 DNL for mobile homes and educational uses), Normally Compatible land use compatibility (70 DNL for single family uses, multifamily residential uses, and parks, and 75 DNL for commercial recreation) and Clearly Compatible land use compatibility (70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase by approximately 2.1 dBA to 2.7 dBA, due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of Corydon Road are approximately 67 DNL at a distance of 50 feet from the center of the roadway. Single family residential, mobile home, park, industrial, and retail uses are present along Corydon Road in the City of Lake Elsinore. The estimated Year 2018 traffic noise levels are within the Normally Incompatible land use compatibility (70 DNL for mobile homes), Normally Compatible land use compatibility (70 DNL for single family uses and parks) and Clearly Compatible land use compatibility (70 DNL for industrial and commercial retail uses) identified in the City's existing General Plan. Additionally, residential, light industrial, and retail uses in the City of Wildomar are present along Corydon Road. The estimated Year 2018 traffic noise levels are within the Normally Unacceptable land use compatibility (70 CNEL for residential uses), Conditionally Acceptable land use compatibility (75 CNEL for commercial uses), and Normally Acceptable land use compatibility (70 CNEL for industrial uses) for the City of Wildomar. Year 2045 traffic noise levels are estimated to decrease by approximately 0.5 dBA due to a predicted decrease in traffic volumes.

- Year 2018 traffic noise levels along the modeled segments of Malaga Road are approximately 54 DNL at a distance of 50 feet from the center of the roadway. Residential and retail uses are present along Malaga Road. The estimated Year 2018 traffic noise levels are within the Clearly Compatible land use compatibility (60 DNL for residential and 70 DNL for commercial retail uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase by approximately 2.1 dBA due to a predicted increase in traffic volumes.
- Year 2018 traffic noise levels along the modeled segments of the I-15 are approximately 75 DNL at a distance of 150 feet from the center of the roadway. Single family and multifamily residential, mobile home, hotel/motel, office, park, open space, agriculture/natural resources, cemetery, educational, commercial recreation, industrial, and retail uses are present along the I-15. The estimated Year 2018 traffic noise levels are within the Clearly Incompatible land use compatibility (80> DNL for single family residential, multifamily residential, mobile homes, parks, and commercial recreation uses), Normally Incompatible land use compatibility (75 DNL for single family residential, multifamily residential, and park uses, and 80 DNL for open space and hotel/motel uses, commercial retail, and office uses), Normally Compatible land use compatibility (75 DNL for cemetery and open space uses and 80> DNL for industrial uses) and Clearly Compatible land use compatibility (80> DNL for agricultural uses) identified in the City's existing General Plan. Year 2045 traffic noise levels are estimated to increase by approximately 0.9 dBA to 1.6 dBA, due to a predicted increase in traffic volumes.

4.2.1.2 Other Non-Transportation Noise Sources

Non-transportation sources also contribute to the City's existing noise environment. Industrial land uses produce noise levels from stationary sources (e.g., mining operations and manufacturing), recreational uses (e.g., parks, boating), schools which generate noise from sources including children playing and loudspeakers, and commercial and residential land uses which generate noise from daily operations of landscaping equipment, stationary sources such as heating, ventilation, and air conditioning (HVAC) equipment, deliveries, solid waste pickup services, etc.

4.2.1.3 Rail Noise Levels

The City of Lake Elsinore does not contain freight or metro rail lines. The closest rail line to the City of Lake Elsinore would be the Perris South Metrolink Station, approximately six miles northeast of the City boundary. Noise from the Metrolink would not be audible in the Planning Area.

4.2.1.4 Airport Noise Levels

The Skylark Airport is located on approximately 150 acres in the southeast portion of the city. It is a private airport that operates seven days a week and supports smaller aircraft used for activities such as skydiving. The airport supports approximately five flights per weekday and approximately 25 to 40 flights per weekend day (City of Lake Elsinore 2017). Noise monitoring at Skylark Airport was conducted in December 2016 for the City's East Lake Specific Plan Amendment No. 11. Based on this monitoring, the study concluded that the largest lateral distance from the runway centerline to the 60 dB L_{dn} contour was approximately 500 feet (City of Lake Elsinore 2017, Figure 5.10-4).

4.2.2 NOISE SENSITIVE RECEPTORS

Noise sensitive land uses and receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's 2011 General Plan identifies schools, hospitals, residences, libraries, and recreation areas to be sensitive noise receptors and

requires that they are protected from excessive noise levels through land use compatibility and interior and exterior noise standards. In addition to the existing receptors, the project would also result in new noise-sensitive receptors, such as residential receptors, within the Planning Area.

4.3 FEDERAL, STATE, AND LOCAL NOISE REGULATIONS

4.3.1 FEDERAL NOISE AND VIBRATION REGULATIONS

There are no federal noise and vibration regulations that directly apply to the proposed Project; however, the Federal Transit Administration (FTA) has published guidance on predicting and assessing the noise and vibration impacts of proposed transit projects, including guidance for assessing noise and vibration during construction of such projects. This guidance is summarized below.

4.3.1.1 Federal Transit Administration

the FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual* document sets ground-borne vibration annoyance criteria for general assessments. The criteria vary by the type of building being subjected to the vibrations, and the overall number of vibration events occurring each day. Category 1 buildings are considered buildings where vibration would interfere with operation, even at levels that are below human detection. These include buildings with sensitive equipment, such as research facilities and recording studios. Category 2 buildings include residential lands and buildings where people sleep, such as hotels and hospitals. Category 3 buildings consist of institutional land uses with primarily daytime uses. The FTA standards vary for "frequent" events (occurring more than 70 times per day, such as a rapid transit project), "occasional" events (occurring between 30 to 70 times per day), and "infrequent" events (occurring less than 30 times per day). The FTA's vibration annoyance criteria are summarized in Table 4-4.

Table 4-4:
FTA Ground-Borne Vibration Impact Criteria for General Assessment

Land Use Category/Type	Impact Level (Velocity Decibels)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1 – Buildings with sensitive equipment	65 VdB	65 VdB	65 VdB
Category 2 – Buildings where people sleep	72 VdB	75 VdB	80 VdB
Category 3 – Institutional buildings	75 VdB	78 VdB	83 VdB

Source: FTA 2018

4.3.2 STATE NOISE AND VIBRATION REGULATIONS

4.3.2.1 Assembly Bill 1307

Assembly Bill (AB) 1307 was signed into law in September 2023. The bill adds new Section 20185 to the Public Resources Code, establishing that, for the purposes of CEQA, for residential projects, "the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment." AB 1307 defines residential or mixed-use housing projects to mean a project

consisting of residential uses only or a mix of residential and non-residential uses, with at least two-thirds of the square footage of the development designated for residential uses.

4.3.2.2 California Building Standards Code

The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that set various construction and building requirements. Part 2, California Building Code, Section 1206, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies between adjacent dwelling units and sleeping units and between dwelling units and sleeping units and adjacent public areas. In summary, this code section requires:

- **Airborne Sound:** Walls, partitions, and floor-ceiling assemblies separating dwelling units and sleeping units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 if laboratory tested or have a Normalized Isolation Class of not less than 45 if field tested (Section 1206.2).
- **Structure-borne Sound:** Floor-ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public or service area within the structure shall have an impact insulation class rating of not less than 50 if laboratory tested or have a Normalized Impact Sound Rating of not less than 45 if field tested. Impact sound insulation is not required for floor-ceiling assemblies over nonhabitable rooms or spaces not designed to be occupied such as garages, mechanical rooms, and storage areas (Section 1206.3).
- **Allowable Interior Noise Levels:** Interior noise levels attributable to exterior noise sources shall not exceed 45 DNL or CNEL (as set by the local General Plan) in any habitable room.[3].

The California Green Building Standards (CALGreen) Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes acoustical control requirements for non-residential buildings.[4] In summary, this code section requires:

- **Prescriptive Exterior Noise Transmission Control:** Wall and roof-ceiling assemblies that are part of the building envelope within the 65 CNEL noise contour of an airport or within the 65 DNL or 65 CNEL noise contour of a freeway, expressway, railroad, industrial source, or fixed-guideway source, shall meet a composite STC rating of at least 50 (with exterior windows a minimum STC of 40) or a composite Outdoor-Indoor Sound Transmission Class (OITC) of no less than 40 (with exterior windows a minimum OITC of 30) (Section 5.507.4.1). Buildings exposed to a noise of 65 dB L_{eq} (1-hour) during any hour of operation shall have wall and roof-ceiling assemblies meeting a composite STC of at least 45 (or OITC of at least 35), with exterior windows a minimum STC of 40 (or OITC 30) (Section 5.507.4.1.1).
- **Performance Method Exterior Noise Transmission Control:** For buildings located within the 65 DNL, 65 CNEL, or 65 db L_{eq} (1-hour) areas described above, wall and roof-ceiling assemblies shall be constructed to provide an interior noise environment attributable to exterior sources that

[3] Title 24, Part 2, Section 202, Definitions, defines "habitable space" to be "space for living, sleeping, eating, or cooking." Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

[4] Section 5.507.4 excepts buildings with few or no occupants or where occupants are not likely to be affected by exterior noise from the non-residential acoustical control requirements, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures, and utilities buildings.

does not exceed an L_{eq} (1-hour) of 50 dBA in occupied areas during any hour of operation (Section 5.507.4.2). This requirement shall be documented by preparing an acoustical analysis documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

- **Interior Sound Transmission:** Wall and floor assemblies separating tenant spaces and tenant spaces and public spaces shall have an STC of at least 40 (Section 5.507.4.3).

4.3.3 CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual provides a summary of vibration criteria that have been reported by researchers, organizations, and governmental agencies and provides recommended guidelines for evaluating potential vibration impacts on buildings (i.e., structural damage) and humans (i.e., annoyance) from transportation and construction projects. These thresholds are summarized in Table 4-5 and Table 4-6. The thresholds vary depending on whether the vibration source is continuous or transient in nature. A transient source creates an isolated vibration event, such as blasting. Continuous sources could also include sources with intermittent but frequent vibration events, such as impact pile drivers and compactors. While vehicle traffic is considered a continuous vibration source, many types of construction activities fall between continuous and transient in nature.

Table 4-5:
Caltrans' Vibration Threshold Criteria for Building Damage

Structural and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some older buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial and commercial structures	2.0	0.5
Source: Caltrans, 2020		

Table 4-6
Caltrans' Vibration Threshold Criteria for Human Response

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4
Source: Caltrans, 2020		

4.3.4 LOCAL NOISE REGULATIONS

4.3.4.1 City of Lake Elsinore 2011 General Plan

The City's existing General Plan contains noise land use compatibility guidelines and noise standards shown below in Table 4-7 and Table 4-8 respectively.

Table 4-7
Lake Elsinore 2011 General Plan Noise/Land Use Compatibility Guidelines

Land Use Category	Community Noise Exposure Limit (DNL)						
	<55	55-60	60-65	65-70	70-75	75-80	80>
Residential: Single-family, Duplex, Multi-family	A	A	B	B	C	D	D
Residential: Mobile Homes	A	A	B	C	C	D	D
Commercial Regional District: Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional Village, District Special: Commercial Retail, Bank, Restaurant, Movie Theater	A	A	A	A	B	B	C
Commercial, Industrial Institutional: Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Regional, Institutional Civic Center: Amphitheater, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation: Children's Amusement Park, Miniature Golf Course, Go-Cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special Industrial, Institutional: Automobile, Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional General: Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
Open Space: Parks	A	A	A	B	C	D	D
Open Space: Golf Course, Cemeteries, Nature Centers, Wildlife Reserves Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	A	A	A	A	A	A	A
Key:							
A – Clearly Compatible	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.						
B – Normally Compatible	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed nose insulation features in the design are						

	determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
C – Normally Incompatible	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.
D – Clearly Incompatible	New construction or development should generally not be undertaken.
Source: City of Lake Elsinore General Plan, 2011, Table 3-1	

Table 4-8
Lake Elsinore General Plan Noise Standards

Land Use Category		Energy Average LDN	
Categories	**Uses**	**Interior(A)**	**Exterior(B)**
Residential	Single Family, Duplex, Multiple Family	45(C), (E)	60
	Mobile Homes	-	60(D)
Commercial, Institutional	Hotel, Motel, Transient Lodging	45(E)	
	Hospital, School's classroom	45	
	Church, Library	45	

Source: City of Lake Elsinore General Plan, 2011, Table 3-2
(A) Indoor environment excluding: Bathrooms, toilets, closets, corridors.
(B) Outdoor environment limited to: Private yard of single family, multi-family private patio or balcony which is served by a means of exit from inside, Mobile Home Park.
(C) Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.
(D) Exterior noise level should be such that interior noise level will not exceed 45 CNEL.
(E) As per California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Section T25-28.

4.3.4.2 City of Lake Elsinore Municipal Code

Municipal Code Chapter 17.176 (Noise Control) establishes that it is the policy of the City to prohibit unnecessary, excessive and annoying noises from all sources subject to Chapter 17.176. Additionally, Section 17.176.040 (General Noise Regulations) establishes that it is unlawful for any person to create any loud, unnecessary or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. Factors such as the level, intensity, origin, content, and duration of the noise, its proximity to sleeping facilities, number of people affected, and the time of day it occurs are considered in evaluating a violation.

The municipal code sets the following noise limits:

- Section 17.176.060 Exterior Noise Limits: The noise standards in Table 4-9 unless otherwise specifically indicated, apply to all such property within a designated zone.

Table 4-9
Exterior Noise Limits (Levels Not to Be Exceeded More Than 30 Minutes in Any Hour)

Receiving Land Use Category	Time Period	Noise Level (dBA)(A, B, C, D)
Single-Family Residential	10:00 p.m. – 7:00 a.m.	40
	7:00 a.m. – 10:00 p.m.	50
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m.	45
	7:00 a.m. – 10:00 p.m.	50
Limited Commercial and Office	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
General Commercial	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65
Heavy Industrial	Anytime	70
Light Industrial	Anytime	75

(A) No person shall operate, or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, either incorporated or unincorporated, to exceed the above noise standards for a cumulative period of more than 30 minutes in any hour; or the noise standard plus five dB for a cumulative period of more than 15 minutes in any hour; or the noise standard plus 10 dB for a cumulative period of more than five minutes in any hour; or the noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or the noise standard plus 20 dB or the maximum measured ambient level, for any period of time.

(B) If the measured ambient level differs from that permissible within any of the first four noise limit categories above, the allowable noise exposure standard shall be adjusted in five dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(C) If the measurement location is on a boundary between two different zones, the noise level limit applicable to the lower noise zone plus six dB shall apply.

(D) In the event the alleged offensive noise, as judged by the Noise Control Officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits shall be reduced by five dB.

- Section 17.176.060 Interior Noise Limits prohibits noise created within a multi-family residential dwelling unit that causes the neighboring receiving dwelling unit to exceed 35 dBA between 10 p.m. and 7 a.m. and 45 dBA between 7 a.m. and 10 p.m.

Additionally, the Municipal Code restricts certain sources of noise, including

- Section 17.176.080 (A-F) sets restrictions on radios, television sets, phonographs, drums, musical instruments, or similar device which produces or reproduces sound, loudspeakers, loudspeaker systems, or similar devices, shouting or outcry within any residential or commercial area or noise sensitive zone for selling or advertising purposes, and animals or birds.
- Section 17.176.080(E) prohibits the loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions replicated in Table 4-9: Exterior Noise Limits.

- Section 17.176.080(F) prohibits operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the City.

  When technically and economically feasible, noise levels during construction shall not exceed the following levels at affected properties:

Table 4-10
Construction Noise Restrictions on Affected Properties

Time	Type I Areas Single-Family Residential	Type II Areas Multifamily Residential	Type III Areas Semi-Residential/ Commercial
Receiving Land Use- Residential Properties: Mobile Equipment (Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment)			
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA
Receiving Land Use- Residential Properties: Stationary Equipment (Maximum noise levels for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment)			
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA
Time	**Business Properties**		
Receiving Land Uses: Business Properties: Mobile Equipment (Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment)			
Daily, including Sundays and Legal Holidays, all hours	85 dBA		
Receiving Land Uses: Business Properties: Stationary Equipment (Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment)			
Daily, including Sundays and Legal Holidays, all hours	75 dBA		

  Section 17.176.080(F) also requires all mobile or stationary internal combustion engine powered equipment or machinery to be equipped with suitable exhaust and air intake silencers in proper working order.
- Section 17.176.080(G) prohibits perating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold[5] of any individual at or beyond the

[5] The vibration perception threshold is 0.04 PPV (inches/second) consistent with Municipal Code Section 17.176.020 (Definitions).

property boundary of the source if on private property or at 150 feet (46 meters) from the source if on a public space or public right-of-way.

- Section 17.176.080(H-J, L, N) restricts noise levels from powered motor vehicles, stationary nonemergency and emergency signaling devices, domestic power tools and machinery, and places of public entertainment.
- Section 17.176.080(K) prohibits creating or causing the creation of any sound within any noise sensitive zone, so as to exceed the specified land use noise standards replicated above in Table 4-9 Exterior Noise Limits, provided that conspicuous signs are displayed indicating the zone; or creating any sound within or adjacent to any noise sensitive zone, containing a hospital, nursing home, school, court or other designated area, so as to interfere with the functions of such activity or annoy the occupants in the activity.
- Section 17.176.080(M) sets noise limits for air conditioning units that range from 50 dBA to 60 dBA depending on measurement location and the age of the air conditioning unit. Units installed after January 1, 1980 shall not exceed 55 dBA at any point on a neighboring property.
- Section 17.176.090 places limits on the operation of refuse collection vehicles, motor vehicle horns motorized recreational vehicles operating outside of the public right-of-way, repairing or testing vehicles, motorboats, and aircraft, and idling motor vehicles.

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5 NOISE IMPACT ANALYSIS

This chapter evaluates the potential for the proposed GPU to result in direct and indirect changes to the existing noise and vibration environment in the vicinity of the Planning Area. Refer to Chapter 6 for information and disclosures about the existing noise and vibration environment's potential effects on the proposed GPU.

5.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to noise and vibration if it would:

(A) Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of applicable standards.

(B) Generate excessive ground-borne vibration or ground-borne noise levels.

(C) Expose people residing or working in the Project area to excessive airport-related noise levels.

With regard to criterion (A), the proposed Project would result in a significant construction noise impact if it would:

- Conflict with or violate any applicable provision of Municipal Code Chapter 17.176;
- Conflict with or violate any applicable standard or policy in the City's General Plan Noise Element;
- Generate operational traffic noise levels that increase ambient noise levels at off-site noise sensitive locations by:
    - 5 dBA or more where the ambient noise level with the project would be below 60 DNL; or
    - 3 dBA or more where the ambient noise level with the project would between 60 DNL and 65 DNL; or
    - 1 dBA or more where the existing ambient noise level would increase to levels above 65 DNL.

With regard to criterion (B), the proposed project would result in a significant vibration impact if it would:

- Generate construction-related vibration levels that exceed Caltrans' guidance for potential building damage (see Table 4-5); or
- Generate construction-related vibration levels that exceed FTA or Caltrans' criteria for human annoyance (see Table 4-4 and 4-6, respectively).
- Generate vibration levels that exceed the City's Municipal Code Section 17.176.080(G)

With regard to criterion (C), the project would expose people living or working in the Project area to excessive airport-related noise levels if it would conflict with an applicable airport land use compatibility plan or otherwise expose people to excessive airport-related noise levels from a public or private air facility.

5.2 NOISE AND VIBRATION IMPACTS

5.2.1 TEMPORARY CONSTRUCTION NOISE

5.2.1.1 Construction Noise Impact Analysis

Project implementation would involve construction that would result in temporary noise generation, primarily from the use of heavy-duty construction equipment.

The project allows for more residential and nonresidential development (i.e., residential dwelling units and commercial and industrial building square footage) within the Planning Area than existing development conditions (see Table 3-1 and Table 3-2 of the EIR). The proposed GPU is estimated to increase residential dwelling units (+27,664 units) and non-residential land uses (+16.1 million square feet), in the Planning Area compared to existing conditions. The proposed change in land uses, which would occur over an approximately 20-year period, is expected to increase population (+81,456 residents) and jobs (+6,995 jobs) in the Planning Area.

Future individual construction and development projects would occur throughout the Planning Area over the approximately 20-year span of the GPU. These projects could occur on any property (based on land uses allowed by the GPU) and could affect existing or future land uses, including areas near potentially sensitive residential, commercial, park, or school land uses. The specific timing, location and scale of future development is unknown but would include the full range of construction activities including: staging, demolition, site preparation (e.g., land clearing), fine and mass grading, utility trenching, foundation work (e.g., excavation, pouring concrete pads, drilling for piers), material deliveries (requiring travel along City roads), building construction (e.g., framing, concrete pouring, welding), paving, coating application, and site finishing work. In general, these activities would involve the use of worker vehicles, delivery trucks, dump trucks, and heavy-duty construction equipment such as backhoes, tractors, loaders, graders, excavators, rollers, cranes, material lifts, generators, and air compressors. These types of construction activities would generate noise and vibration from the following sources:

- Heavy equipment operations at different work areas. Some heavy equipment would consist of mobile equipment such as a loader and excavator that would move around work areas; other equipment would consist of stationary equipment (e.g., cranes or material hoists/lifts) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems, and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produces higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.
- Vehicle trips, including worker, vendor, and haul truck trips. These trips are likely to primarily occur on key roadways like I-15, SR-74, Riverside Drive, Lakeshore Drive, Grand Avenue, and Railroad Canyon Road.

Table 5-1 presents the typical noise levels associated with the typical types of construction equipment that could be used in the Planning Area for future individual projects.

Table 5-1
Typical Construction Equipment Noise Levels (dBA)

Equipment	Reference Noise Level at 50 Feet (L_{max})(A)	Percent Usage Factor(B)	Predicted Noise Levels (L_{eq}) at Distance(C)					
			50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	500 Feet
Auger Drill Rig	85	0.2	78	72	66	62	60	58
Backhoe	80	0.4	76	70	64	60	58	56
Boring Jack Power Unit	80	0.5	77	71	65	61	59	57
Bulldozer	85	0.4	81	75	69	65	63	61
Compact roller	80	0.2	73	67	61	57	55	53
Compressor	80	0.4	76	70	64	60	58	56
Concrete Mixer	85	0.4	81	75	69	65	63	61
Crane	85	0.16	77	71	65	61	59	57
Delivery Truck	84	0.4	80	74	68	64	62	60
Excavator	85	0.4	81	75	69	65	63	61
Front End Loader	80	0.4	76	70	64	60	58	56
Generator	82	0.5	79	73	67	63	61	59
Horizontal Boring Hydraulic Jack	80	0.25	74	68	62	58	56	54
Impact Pile Driver (low)	95	0.2	88	82	76	72	70	68
Impact Pile Driver (high)	101	0.2	94	88	82	78	76	74
Man Lift	85	0.2	78	72	66	62	60	58
Paver	85	0.5	82	76	70	66	64	62
Pneumatic tools	85	0.5	82	76	70	66	64	62
Pumps	77	0.5	74	68	62	58	56	54
Roller	85	0.2	78	72	66	62	60	58
Scraper	85	0.4	81	75	69	65	63	61
Tractor	84	0.4	80	74	68	64	62	60
Vacuum Truck	85	0.4	81	75	69	65	63	61

Sources: Caltrans 2013 and FHWA 2017

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) *Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans, 2009: L_{eq} (hourly) = L_{max} at 50 feet – 20log (D/50) + 10log (UF), where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.*

Construction noise impacts generally occur when construction activities occur in areas immediately adjoining noise sensitive land uses, during noise sensitive times of the day, or when construction durations last over extended periods of time. Demolition, site preparation, and grading phases typically result in the highest temporary noise levels due to the use of heavy-duty equipment such as bulldozers, excavators, graders, loaders, scrapers, and trucks. As shown in Table 5-1, the worst-case L_{eq} and L_{max} noise levels associated with the operation of typical construction equipment are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate at the same time and in close proximity. The concurrent operation of two or more pieces of construction equipment would result in noise

levels of approximately 85 to 88 dBA at a distance of 50 feet from equipment operating areas[6]. While not typical, noise levels for construction activities that require the use of an impact pile driver could reach 94 dBA at a distance of 50 feet from equipment operations.

The magnitude of each individual future project's temporary and periodic increase in ambient noise levels would be dependent upon a number of project-specific factors that are not known at this time, including: the amount and type of equipment being used; the distance between the area where equipment is being operated and the location of the specific land use or receptor where noise levels are being evaluated; the time of day construction activities are occurring; the presence or absence of any walls, buildings, or other barriers that may absorb or reflect sound waves; the total duration of the construction activities; and the existing ambient noise levels near construction areas. For example, a noise level of 85 dBA L_{max} would be similar to typical L_{max} levels measured at certain points throughout the Planning Area, such as along key roadways (ST-3, ST-4, ST-6, ST-8, see Table 4-2), but would be approximately 10 dBA higher than L_{max} levels at ST-01 and approximately 16 dBA higher than L_{max} levels at ST-11, at parks and residential areas along lower volume streets. Additionally, the sustained L_{eq} levels of 85 dBA would be approximately 13 to 41 dBA above daytime ambient conditions throughout the Planning Area (see Table 4-1 and Table 4-2). Typically, sustained construction noise levels of 80 to 85 dBA or higher would require the implementation of construction noise control practices such as staging area restrictions (e.g., siting staging areas away from sensitive receptors), equipment controls (e.g., covered engines and use of electrical hook-ups instead of generators), and/or the installation of temporary noise barriers of sufficient height, size (length or width), and density to achieve targeted noise reductions. Construction noise controls, however, would be dependent on project-specific equipment characteristics and the extent to which construction activities would occur near noise-sensitive receptors and land uses.

Construction as described above may exceed the daytime noise thresholds for mobile construction equipment established in Section 17.176.080(F)(2) of the Municipal Code of 75 dBA at single family residential land uses, 80 dBA at multifamily residential land uses, and 85 dBA at semi-residential/commercial land uses[7] for work areas within approximately 200 feet of single family residential uses, 110 feet of multifamily residential uses, and 65 feet of semi-residential-commercial land uses. The use of pile driving equipment, if necessary, could also exceed construction thresholds within approximately 500 feet of single family residential uses, 300 feet of multifamily residential uses, and 150 feet of semi-residential/commercial land uses. Therefore, future development under the GPU would result in construction activities that could temporarily increase ambient noise levels near sensitive receptors to levels that exceed the City's Municipal Code requirements. This is considered a **potentially significant impact.**

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[6] As shown in Table 5-1, a single bulldozer provides a sound level of 81 dBA Leq at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA Leq and when three identical sound levels are combined, the noise level increases to 86 dBA Leq. These estimates assume no shielding or other noise control measures are in place at or near the work areas.

[7] The 75 dBA at single family residential land uses, 80 dBA at multifamily residential land uses, and 85 dBA at semi-residential/commercial land uses are applicable between 7:00 a.m. and 7:00 p.m. except on Sundays and legal holidays. The threshold is reduced to 60 dBA at single family residential land uses and 65 dBA at multifamily residential land uses, and 70 dBA at semi-residential/commercial land uses between 7:00 p.m. and 7:00 a.m. and at all times on Sundays and legal holidays. Construction is generally expected to occur during daytime hours, and so the thresholds for 7:00 a.m. to 7:00 p.m. are discussed in the analysis above. Construction activities would be required to comply with Section 17.176.080(F)(1), which prohibits construction work that creates a disturbance across a residential or commercial property lines between the weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays.

5.2.1.2 Construction Noise Mitigation Measures

To reduce noise levels from temporary construction activities associated with future development projects under the proposed GPU, Mitigation Measure NOI-1 is recommended. Mitigation Measure NOI-1 requires the preparation of a project-specific noise study for discretionary development project prior to future development activities and, if noise levels are shown to be above the City standards, require project specific mitigation to lower noise levels. These City standards at the time of project implementation may be less stringent than the current Municipal Code standards, as the GPU includes policies that would allow higher construction noise levels. GPU Policy PRO-PSNAQ-127 includes using the FTA's construction noise thresholds and mitigation, as appropriate, during the project approval process. The FTA sets guidelines for evaluating construction noise that, depending on the type of project and analysis, may result in a less stringent construction noise threshold than the threshold in existing Section 17.176.080(F)(2) of the Municipal Code discussed above (e.g., the FTA's general assessment using a 90 dBA L_{eq} daytime threshold at residential uses and 100 dBA L_{eq} daytime threshold at commercial and industrial uses). Additionally, GPU Policy PRO-PSNAQ-121 would involve updating the Municipal Code to allow for temporary noise increases in construction zones. See DEIR Appendix A for General Plan goals and policies.

Mitigation Measure NOI-1: Require a Project-level Construction Noise Assessment for New Discretionary Development Projects. Prior to the start of any specific construction project lasting 12 months or more, the City shall review and approve a project-specific construction noise evaluation prepared by a qualified acoustical consultant that: A) Identifies the planned project construction sequence and equipment usage; B) Identifies typical hourly average construction noise levels for project construction equipment; C) Compares hourly average construction noise levels to ambient noise levels at residential and commercial land uses near work areas (ambient noise levels may be newly measured or presumed to be consistent with those levels shown in Tables 4-1 and 4-2 of this report, the Lake Elsinore General Plan Update Noise Impact Analysis); and D) Identifies construction noise control measures incorporated into the project that ensure activities do not generate noise levels that exceed the City's municipal code or General Plan requirements at the time of project implementation. Potential strategies to reduce construction-related noise may include, but are not limited to:

1) *Notify Residential and Commercial Land Uses of Planned Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the project, and include the name and phone number of the designated contact for the applicant/project representative and the City of Lake Elsinore responsible for handling construction-related noise complaints. This notice shall be provided to: A) The owner/occupants of residential dwelling units within 500 feet of construction work areas; and B) The owner/occupants of commercial buildings (including institutional buildings) within 200 feet of construction work areas.
2) *Restrict Work Hours*. All construction-related work activities, including material deliveries, shall be subject to the requirements of City Municipal Code Section 17.176.080(F)(1). Construction activities, including deliveries, shall occur only during the hours of 7:00 AM to 7:00 PM, Monday through Saturday, unless otherwise authorized by City permit. The applicant/project representative and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement.
3) *Control Construction Traffic and Site Access*. Construction traffic, including soil and debris

hauling, shall follow City-designated truck routes and shall avoid routes (including local roads in the Planning Area) that contain residential dwelling units to the maximum extent feasible given specific project location and access needs.

4) Construction Staging and Equipment Noise Control Measures:
   a. Construction site access and staging activities such as receipt of deliveries, equipment and material storage, etc., shall occur as far away from adjacent residential land uses as possible given site and active work constraints.
   b. All stationary noise generating equipment shall be shielded and located as far as possible from residential land uses given site and active work constraints. Shielding may consist of trailers, stored materials, or a three- or four-sided enclosure provided the structure/barrier breaks the line of sight between the equipment and the receptor, provides for proper equipment ventilation and operations, and complies with all other applicable occupational safety and health requirements.
   c. Heavy equipment shall include standard noise suppression devices such as mullers, engine covers, and engine/mechanical isolators, mounts, etc. Equipment and noise suppression devices shall be maintained in accordance with manufacturer's recommendations while on-site.
   d. Pneumatic tools shall include a suppression device on the compressed air exhaust.
   e. Connect to existing electrical service to power stationary and portable equipment (e.g., pumps, generators, compressors, and welding sets). This measure shall be subject to the approval of the local electric utility.
   f. Physical noise barrier capable of achieving the construction noise level standards set by the City at the time of project implementation shall, if required to achieve construction noise standards, be installed and maintained around the site perimeter to the maximum extent feasible given site constraints and access requirements.

5.2.1.3 Construction Noise Impact Conclusion

As described above, there is uncertainty regarding the specific nature of construction activities that would be facilitated under implementation of the proposed GPU. Despite the implementation of Mitigation Measure NOI-1, which requires the preparation of project-specific construction noise impact analysis prior to the construction of any new development and incorporation of mitigation if construction noise levels are shown to be above City standards, it cannot be definitively known or stated at this time that all future development projects occurring under implementation of the proposed GPU would be able to reduce construction noise levels to levels that are below City standards and that would not substantially exceed the existing ambient noise environment. Therefore, with regard to noise levels generated during construction activities, this impact would be **significant and unavoidable** even with the incorporation of feasible mitigation measures.

5.2.2 TEMPORARY CONSTRUCTION VIBRATION

5.2.2.1 Construction Noise Impact Conclusion

Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Vibration generated by construction equipment spreads through the ground and diminishes with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, result in low rumbling sounds and detectable vibrations at moderate levels, and at high levels can cause sleep disturbance in places where people normally sleep or annoyance in buildings that are primarily used for daytime functions and sleeping (e.g., a

hospital). Ground vibration can also potentially damage the foundations and exteriors of existing structures even if it does not result in a negative human response. Pile drivers and other pieces of high-impact construction equipment are generally the primary cause of construction-related vibration impacts. The use of such equipment is generally limited to sites where there are extensive layers of very hard materials (e.g., compacted soils, bedrock) that must be loosened or penetrated to achieve grading and foundation design requirements. The need for such methods is usually determined through site-specific geotechnical investigations that identify the subsurface materials within the grading envelope, along with foundation design recommendations and the construction methods needed to safely permit development of a site.

Construction equipment and activities are categorized by the nature of the vibration they produce. Equipment or activities typical of continuous vibration include excavation equipment, static compaction equipment, vibratory pile drivers, and pile-extraction equipment. Equipment or activities typical of transient (single-impact) or low-rate, repeated impact vibration include impact pile drivers, and crack-and-seat equipment. Pile driving and blasting activities produce the highest levels of ground vibration and can result in structural damage to existing buildings while standard construction equipment (e.g., bulldozers, trucks, jackhammers) generally do not cause vibration that could cause structural or cosmetic damage but may be felt by nearby receptors.

Since individual project-specific information is not available at this time, potential short-term construction-related vibration impacts can only be evaluated based on the typical construction activities associated with residential, commercial, and industrial development. Table 5-2 presents the typical types of equipment that could be used for future development activities in the Planning Area.

Table 5-2
Ground-Borne Vibration and Noise from Typical Construction Equipment

Equipment	Peak Particle Velocity (in/sec) (A)			Velocity Decibels (VdB) (B)		
	25 feet	50 feet	100 feet	25 feet	50 feet	100 feet
Small bulldozer	0.003	0.001	0.001	58	49	40
Jackhammer	0.035	0.016	0.008	79	70	61
Rock Breaker	0.059	0.028	0.013	83	74	65
Loaded truck	0.076	0.035	0.017	86	77	68
Auger Drill Rig	0.089	0.042	0.019	87	78	69
Large bulldozer	0.089	0.042	0.019	87	78	69
Vibratory Roller	0.210	0.098	0.046	94	85	76
Impact Pile Driver (typical)	0.644	0.300	0.140	104	95	86
Sonic Pile Driver (typical)	0.170	0.079	0.037	93	84	75

Sources: Caltrans 2020 and FTA 2018
(A) Estimated PPV calculated as: PPV(D)=PPV(ref)(25/D)^1.1 where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.1 for dense compacted hard soils).*
(B) Estimated Lv calculated as: Lv(D)=Lv(25 feet)-30Log(D/25) where Lv(D)= estimated velocity level in decibels at distance, Lv(25 feet)= RMS velocity amplitude at 25 ft; and D= distance from equipment to receiver.

As shown in Table 5-2, specific vibration levels associated with typical construction equipment are highly dependent on the type of equipment used. For structural damage, the use of typical equipment

during construction activities (e.g., bulldozer, jack hammer, trucks etc.) would produce PPV levels up to 0.042 in/sec at 50 feet. These PPV values are well below Caltrans' guidelines standards for potential structural damage for continuous vibration sources near the types of buildings in and adjacent to the Planning Area, (0.1 PPV for fragile buildings, 0.25 for historic buildings, 0.3 for older residential buildings; and 0.5 for modern residential, commercial, and industrial buildings, see Table 4-5). However, the use of specific vibration-generating equipment such as a vibratory roller would exceed the Caltrans' standards for structural damage within approximately 25 feet of historic buildings and within approximately 50 feet of fragile buildings, and an impact pile driver would exceed the Caltrans' standards for structural damage within approximately 50 feet of any building, 60 feet of historic buildings, and 140 feet of fragile buildings. This is considered to have a **potentially significant impact.**

For human annoyance and interference responses, the use of typical equipment (e.g., bulldozer, jack hammer, trucks, etc.) during construction could produce vibration levels that could exceed Caltrans' barely perceptible and distinctly perceptible vibration detection thresholds (0.01 PPV and 0.04 PPV, respectively, for continuous/frequent intermittent sources, see Table 4-6), at distances within approximately 175 feet and 50 feet, respectively, from work areas. Standard equipment at 50 feet would also exceed the 0.04 PPV threshold set in Section 17.176.080(G) of the Municipal Code. Standard equipment would not exceed Caltrans' strongly perceptible threshold (0.1 PPV for continuous/frequent intermittent sources, see Table 4-6).

Although typical construction activities may generate perceptible ground-borne vibration levels at structures within approximately 175 feet of work areas, these levels would not be excessive because they would be intermittent (not occur every day), limited in duration (equipment would move throughout work areas and not operate in the same location for a prolonged amount of time), occur during the daytime only (when receptors would not be sleeping and, therefore, are considered less sensitive to vibration levels). For these reasons, the proposed project's typical construction activities would have a less than significant impact on human annoyance and responses. However, pile driving and other specific vibration-generating equipment could result in excessive ground-borne vibration levels to human receptors. Caltrans' distinctly perceptible vibration threshold and the vibration threshold set in Section 17.176.080(G) of the Municipal Code (i.e., 0.04 PPV) would be exceeded with the operation of specific vibration-generating equipment such as a vibratory roller at approximately 120 feet and with the operation of an impact pile driver at approximately 320 feet. Additionally, Caltrans' strongly perceptible vibration threshold (i.e., 0.1 PPV) would be exceeded with the operation of specific vibration-generating equipment such as a vibratory roller at approximately 50 feet and with the operation of an impact pile driver at approximately 140 feet. This is considered to have a **potentially significant impact.**

5.2.2.2 Construction Vibration Mitigation Measures

To reduce potential vibration-related structural damage and annoyance from excessive vibration levels from temporary construction activities associated with future development projects under the proposed GPU, MIG recommends incorporating Mitigation Measure NOI-2.

Mitigation Measure NOI-2: Reduce Potential Construction Vibration Levels. To reduce potential excessive vibration levels from construction activities associated with development projects under the GPU, the City shall restrict the use of large vibratory rollers, hydraulic breakers, and, and other potential large vibration-generating equipment within 120 feet of any building façade and impact pile drivers shall be prohibited within 320 feet of any building façade during construction activities. Plate compactors and compactor rollers are acceptable, and deep foundation piers or caissons shall be auger drilled.

If it is not feasible to restrict the use of vibratory equipment, the construction contractor shall, in consultation with a licensed structural engineer, develop a project-specific construction vibration plan that identifies planned vibration-generating construction activities and potential ground-borne vibration levels (given specific equipment and soil conditions) at the nearest receiving land uses and the vibration control measures that will be employed to ensure equipment and work activities would not damage buildings or result in vibrations that exceed a threshold for peak particle velocity (PPV) of 0.04 inches/second (in/sec). Such measures may include but are not limited to the use of vibration monitoring to measure actual vibration levels, the use of photo monitoring or documentation of building conditions prior to, during, and after construction activities, and/or the use of trenches or barriers that attenuate ground-borne vibration.

5.2.2.3 Construction Vibration Mitigation Measures

The above analysis indicates that development under the GPU would have the potential to generate construction vibration levels that exceed Caltrans' structural damage threshold for fragile buildings and Caltrans' strongly perceptible vibration threshold (0.1 in/sec PPV) when specific vibration-generating equipment such as a vibratory roller is operated within 50 feet of an occupied building or when pile drivers are operated within 140 feet of an occupied building. Mitigation measure NOI-2 requires projects under the GPU to prohibit the use of vibratory equipment and pile drivers within 50 feet and 140 feet, respectively, of the nearest building structures or, if such prohibition is not feasible, to prepare a project-specific vibration plan that ensures equipment and work activities would not result in vibrations that exceed Caltrans' structural threshold (0.1 PPV for fragile buildings, 0.25 for historic buildings, 0.3 for older residential buildings; and 0.5 for modern residential, commercial, and industrial buildings) or Caltrans' strongly perceptible human annoyance criterion of 0.1 in/sec PPV. Construction vibration levels associated with development under the proposed GPU would have a **less than significant impact with mitigation.**

5.3 OPERATIONAL NOISE AND VIBRATION IMPACTS

Implementation of the GPU could have the potential to change the existing types and intensity of land uses within the Planning Area, which could increase the number of residents and employees. This possible increase in population and employment could lead to increased vehicle traffic on the local roadway system, which could result in traffic-related noise levels that pose land use compatibility issues or result in a substantial permanent increase in traffic-related noise levels throughout the Planning Area. Project implementation could also involve increases in stationary noise and other sources of noise within the Planning Area. These potential effects are evaluated below.

5.3.1 -TRAFFIC NOISE ANALYSIS

The City contracted with a professional transportation engineering firm (Fehr & Peers) to conduct travel demand modeling associated with the proposed GPU land use changes (Fehr & Peers 2025). The

travel demand modeling prepared for the GPU provides a sufficient level of detail to generally evaluate the potential future increases in traffic-related noise levels associated with projected growth.

Future 2045 GPU traffic noise levels were computed using the same methodology (TNM Version 3.2) and data sources used to calculate existing (Year 2018) and future (Year 2045) baseline traffic noise levels without the GPU (see Section 4.2), but with the traffic data for the Year 2045 with GPU condition.

Table 5-3 summarizes the net change in Year 2045 ADT and traffic noise levels that would occur with implementation of the GPU. Refer to Attachment 2 for detailed transportation noise modeling results.

Table 5-3
City of Lake Elsinore With GPU Transportation Noise Contour Distances (2045)

Road / Segment	Estimated dBA LDN 50 Feet from Road Center Line[(A)]	Estimated Distance from Road Center to Noise Contour (in Feet)			
		75 dBA LDN	70 dBA LDN	65 dBA LDN	60 dBA LDN
Temescal Canyon					
Horsethief Canyon Road to I-15	69.5	14	45	141	446
Bernard St to Lake St	69.6	14	46	144	456
Lake Street					
I-15 to Nichols Rd	72.3	27	85	269	849
Nichols Rd to Alberhill Ranch Rd	71.7	23	74	234	740
Alberhill Ranch Rd to Mountain Street	71.6	23	72	229	723
Mountain Street to Lakeshore	72.0	25	79	251	792
Grand Avenue					
Lakeshore to Alvarado Street	68.0	10	32	100	315
Alvarado Street to Machoado	68.2	10	33	104	330
Machoado to Riverside	68.3	11	34	107	338
Riverside to SR-74	69.6	14	46	144	456
SR74 to Deeble Entrance	69.4	14	44	138	435
Deeble Entrance to Corydon Road	69.9	15	49	155	489
Lakeshore Drive					
Lake St/Grand Ave to Terra Cotta	67.0	8	25	79	251
Terra Cotta to Machado St	67.3	8	27	85	269
Machado St to SR 74/Riverside Dr	65.4	5	17	55	173
SR 74 to Chaney St	64.0	4	13	40	126
Chaney St to W Graham Ave	62.1	3	8	26	81
W Graham Ave to Poe Street	57.1	1	3	8	26
East Lakeshore Drive					
Short Street to Diamond Drive	65.2	5	17	52	166

Chaney Street					
Lakeshore Dr to W Pottery St	57.9	1	3	10	31
W Pottery St to Collier Ave	63.5	4	11	35	112
Collier Avenue					
Nichols Rd to Riverside Dr	68.2	10	33	104	330
Riverside Drive to Central Ave	72.4	27	87	275	869
Central Ave to 3rd St	70.0	16	50	158	500
3rd St to Minthorn St	75.5	56	177	561	1,774
Nichols Rd					
Lake St to Alberhill Ranch Rd	69.1	13	41	129	406
Aberhill Ranch Rd to Terra Cotta	69.1	13	41	129	406
Terra Cotta Rd to Collier	67.4	9	27	87	275
Coller to I-15 EB Ramp	69.1	13	41	129	406
EB Ramp to El Toro Road	64.0	4	13	40	126
Terra Cotta Road					
Nichols Ave to Terracina Lane	62.3	3	8	27	85
Terracina Lane to Lakeshore Drive	63.2	3	10	33	104
Machado Street					
Lakeshore Dr to Lincoln Street	63.1	3	10	32	102
Lincoln Street to Grand Avenue	57.8	1	3	10	30
Central Ave					
Riverside St to Rosetta Canyon Dr	72.6	29	91	288	910
Rosetta Canyon Dr to Cambern Ave	75.2	52	166	524	1,656
Cambern Ave to I-15 SB Ramp	73.4	35	109	346	1,094
I15 SB Ramp to Collier Ave	73.4	69	219	692	2,188
Auto Center Dr					
Bancroft Way to Diamond Dr	62.7	3	9	29	93
Diamond Drive					
I-15 SB Ramp to E. Lakeshore Dr	66.5	7	22	71	223
E. Lakeshore Dr to Malaga Rd	59.6	1	5	14	46
Railroad Canyon Road					
Skylink Drive to Canyon Hills Rd	74.4	44	138	435	1,377
Canyon Hills Rd to Summerhill Drive/Grape	74.4	44	138	435	1,377
Summerhill Road					
Via Ravenna to Bella Lucia	64.1	4	13	41	129
Bella Lucia to Railroad Canyon Rd	64.7	5	15	47	148

Canyon Hills Road					
Railroad Canyon Rd to Lost Rd	66.7	7	23	74	234
Lost Rd and Kalanchoe Rd	65.6	6	18	57	182
Mission Trail					
Diamond Dr to Malaga Rd/Lakeshore Dr to Malaga Road	69.1	13	41	129	406
Malaga to Vine St	70.4	17	55	173	548
Vine to Corydon	70.9	19	62	195	615
Corydon to Canyon Dr	69.3	13	43	135	426
Bundy Canyon Road					
Mission Trail to Orchard St	65.4	5	17	55	173
Orchard St to Orange St	66.5	7	22	71	223
Lincoln Street					
Grand Ave to Machado St	57.5	1	3	9	28
Machado St to Riverside Drive/SR-74	60.4	2	5	17	55
Greenwald Avenue					
SR74 to Longhorn Drive	66.7	7	23	74	234
E Franklin Street					
N Main St to Ave 6	59.3	1	4	13	43
Graham Ave					
Lakeshore Dr to Lindsay St	53.8	0	1	4	12
Lindsay St to Main Street	54.9	0	2	5	15
Main Street					
I-15 to Pottery St	63.9	4	12	39	123
Pottery St to Heald St	61.0	2	6	20	63
Heald St to Graham Ave	54.4	0	1	4	14
Graham Ave Library St	54.3	0	1	4	13
SR 74/Ortega Highway					
West of Grand Ave	68.1	10	32	102	323
Riverside Drive					
Grand Ave to Lincoln St	68.7	12	37	117	371
Lincoln Street to Lakeshore Dr	69.3	13	43	135	426
Lakeshore Dr to Collier Dr	69.4	14	44	138	435
I-15					
Indian Truck Trail Exit to Lake St	76.7	222	702	2,219	7,016
Lake St to Nichols Road	76.1	193	611	1,932	6,111
Nichols Road to SR 74	75.8	180	570	1,803	5,703

SR 74 to Main St	76.4	207	655	2,071	6,548
Main St to Railroad Canyon Rd	76.4	207	655	2,071	6,548
Railroad Canyon to Bundy Canyon	75.5	168	532	1,683	5,322
Bundy Canyon to Wildomar Trail	75.9	185	584	1,845	5,836
Wildomar Trail to Clinton Keith Rd	76.2	198	625	1,977	6,253
Corydon Road					
Mission Trail to Grand Ave	66.7	7	23	74	234
Malaga Rd					
Diamond Drive to Mission Trail	58.6	1	4	11	36

Table 5-4
Future (2045) Traffic Noise Levels With and Without the GPU

Road / Segment[A]	Year 2045 No GPU		Year 2045 With GPU		Net Change	
	ADT	dBA LDN[B]	ADT	dBA LDN[A]	ADT	dBA LDN[A]
Temescal Canyon Road						
Horsethief Canyon Road to I-15	*8,628*	*67.4*	*12,977*	*69.5*	*4,349*	*2.1*
Bernard Street to Lake Street	*8,743*	*67.3*	*13,846*	*69.6*	*5,103*	*2.3*
Lake Street						
I-15 to Nichols Road	30,875	71.4	35,770	72.3	4,895	0.9
Nichols Rd to Alberhill Ranch Road	57,900	73.9	31,897	71.7	-26,003	-2.2
Alberhill Ranch Road to Mountain Street	57,000	74.5	29,110	71.6	-27,890	-2.9
Mountain Street to Lakeshore Drive	26,900	71.7	28,962	72.0	2,062	0.3
Grand Avenue						
Lakeshore to Alvarado Street	17,240	67.6	19,063	68.0	1,823	0.4
Alvarado Street to Machoado	14,100	67.3	16,849	68.2	2,749	0.9
Machoado to Riverside Drive	*15,000*	*67.3*	*17,992*	*68.3*	*2,992*	*1.0*
Riverside Drive to SR-74	*28,300*	*68.6*	*34,623*	*69.6*	*6,323*	*1.0*
SR-74 to Deeble Entrance	*18,425*	*68.3*	*23,312*	*69.4*	*4,887*	*1.1*
Deeble Entrance to Corydon Road	*19,829*	*68.4*	*27,366*	*69.9*	*7,537*	*1.5*
Lakeshore Drive						
Lake Street/Grand Avenue to Terra Cotta	13,167	67.1	13,104	67.0	-63	-0.1
Terra Cotta to Machado Street	12,550	66.6	14,660	67.3	2,110	0.7
Machado Street to SR 74	13,000	64.9	14,385	65.4	1,385	0.5
SR 74 to Chaney Street	11,867	64.0	11,597	64.0	-270	0

Chaney Street to W Graham Avenue	8,157	62.5	7,559	62.1	-598	-0.4
W Graham Avenue to Poe Street	4,377	56.8	4,746	57.1	369	0.3
E Lakeshore Drive						
Short Street to Diamond Drive	9,235	64.8	10,214	65.2	979	0.4
Chaney Street						
Lakeshore Drive to W Pottery Street	3,611	57.7	3,660	57.9	49	0.2
W Pottery Street to Collier Avenue	7,578	64.0	7,030	63.5	-548	-0.5
Collier Ave						
Nichols Road to Riverside Drive	5,278	67.8	5,654	68.2	376	0.4
Riverside Drive to Central Avenue	38,200	71.7	43,416	72.4	5,216	0.7
Central Avenue to 3rd Street	18,600	70.7	17,188	70.0	-1,412	-0.7
3rd Street to Minthorn Street	9,090	75.3	9,647	75.5	557	0.2
Nichols Rd						
Lake Street to Alberhill Ranch Road	*8,560*	*66.6*	*14,261*	*69.1*	*5,701*	*2.5*
Aberhill Ranch Rd to Terra Cotta	*9,276*	*66.5*	*15,509*	*69.1*	*6,233*	*2.6*
Terra Cotta Road to Collier Avenue	*13,950*	*65.3*	*21,122*	*67.4*	*7,172*	*2.1*
Collier Avenue to I-15 EB Ramp	*18,350*	*68.0*	*23,443*	*69.1*	*5,093*	*1.1*
EB Ramp to El Toro Road	19,500	63.6	19,888	64.0	388	0.4
Terra Cotta Road						
Nichols Avenue to Terracina Lane	8,145	61.5	10,010	62.3	1,865	0.8
Terracina Lane to Lakeshore Drive	7,468	62.4	9,436	63.2	1,968	0.8
Machado Street						
Lakeshore Dr to Lincoln Street	8,730	63.5	8,477	63.1	-253	-0.4
Lincoln Street to Grand Avenue	2,308	57.5	2,428	57.8	120	0.3
Central Ave						
Riverside Street to Rosetta Canyon Drive	51,760	72.9	47,584	72.6	-4,176	-0.3
Rosetta Canyon Drive to Cambern Avenue	41,967	74.4	49,275	75.2	7,308	0.8
Cambern Avenue to I-15 SB Ramp	43,925	72.7	50,301	73.4	6,376	0.7
I15 SB Ramp to Collier Avenue	51,400	73.4	52,566	73.4	1,166	0
Auto Center Dr						
Bancroft Way to Diamond Drive	5,587	63.5	4,582	62.7	-1,005	-0.8
Diamond Drive						
I-15 SB Ramp to E. Lakeshore Drive	33,367	66.0	37,007	66.5	3,640	0.5
E. Lakeshore Drive to Malaga Road	1,471	55.1	5,853	59.6	4,382	4.5

Railroad Canyon Road						
Skylink Drive to Canyon Hills Road	50,450	74.2	52,187	74.4	1,737	0.2
Canyon Hills Rd to Summerhill Drive/Grape	52,540	74.2	54,523	74.4	1,983	0.2
Summerhill Road						
Via Ravenna to Bella Lucia	8,526	64.3	8,389	64.1	-137	-0.2
Bella Lucia to Railroad Canyon Road	9,488	64.7	9,414	64.7	-74	0
Canyon Hills Road						
Railroad Canyon Road to Lost Road	13,900	67.0	13,195	66.7	-705	-0.3
Lost Road and Kalanchoe Road	11,218	65.5	11,574	65.6	356	0.1
Mission Trail						
Diamond Drive to Malaga Road	24,350	69.7	20,813	69.1	-3,537	-0.6
Malaga Road to Vine Street	21,725	70.8	20,622	70.4	-1,103	-0.4
Vine Street to Corydon Road	25,400	71.0	25,104	70.9	-296	-0.1
Corydon Road to Canyon Drive	17,400	69.3	17,868	69.3	468	0
Bundy Canyon Road						
Mission Trail to Orchard Street	13,700	65.4	14,060	65.4	360	0.0
Orchard Street to Orange Street	15,500	66.5	15,986	66.5	486	0.0
Lincoln Street						
Grand Avenue to Machado Street	4,612	60.2	3,214	58.4	-1,398	-1.8
Machado Street to Riverside Drive/SR-74	7,243	60.9	6,630	60.4	-613	-0.5
Greenwald Avenue						
SR-74 to Longhorn Drive	10,048	66.4	10,737	66.7	689	0.3
E Franklin Street						
N Main Street to Avenue 6	12,400	60.8	9,645	59.3	-2,755	-1.5
Graham Ave						
Lakeshore Dr to Lindsay St	2,279	54.9	1,641	53.8	-638	-1.1
Lindsay St to Main Street	2,470	55.8	1,953	54.9	517	-0.9
Main Street						
I-15 to Pottery St	11,818	64.0	12,482	63.9	664	-0.1
Pottery St to Heald St	7,944	62.2	6,445	61.0	-1,499	-1.2
Heald St to Graham Ave	1,354	54.9	1,172	54.4	-182	-0.5
Graham Ave Library St	3,505	55.1	2,958	54.3	-547	-0.8
SR-74/Ortega Highway						
West of Grand Avenue	23,600	67.4	27,408	68.1	3,808	0.7

Riverside Drive						
Grand Avenue to Lincoln Street	23,333	68.0	26,757	68.7	3,424	0.7
Lincoln Street to Lakeshore Drive	28,667	68.6	32,481	69.3	3,814	0.7
Lakeshore Drive to Collier Drive	34,467	69.0	37,649	69.4	3,182	0.4
Corydon Road						
Mission Trail to Grand Avenue	12,024	66.1	14,135	66.7	2,111	0.6
Malaga Road						
Diamond Drive to Mission Trail	616	55.9	2,581	58.6	1,965	2.7
I-15						
Indian Truck Trail Exit to Lake St	159,100	76.7	160,034	76.7	934	0.0
Lake St to Nichols Road	140,954	76.0	142,982	76.1	2,028	0.1
Nichols Road to SR 74	134,854	75.6	142,548	75.8	7,694	0.2
SR 74 to Main St	142,400	76.2	147,342	76.4	4,942	0.2
Main St to Railroad Canyon Rd	141,000	76.1	151,503	76.4	10,503	0.3
Railroad Canyon to Bundy Canyon	123,400	75.4	126,363	75.5	2,963	0.1
Bundy Canyon to Wildomar Trail	132,000	75.9	131,719	75.9	-281	0.0
Wildomar Trail to Clinton Keith Rd	133,200	76.1	133,482	76.2	282	0.1

Source: MIG, 2025 (see Attachment 2)
(A) Roadways are italicized to indicate that they have exceeded the thresholds established in Section 5.1.
(B) LDN values for road segments were estimated 50 feet from the center of the nearest travel direction except for the I-15, which was estimated 150 feet from the center of the right-of-way.

The results of the traffic noise modeling indicate that future traffic noise levels within the City are highest (i.e., 70 CNEL or higher) along the I-15, Central Avenue, Railroad Canyon Road, Lake Street, and portions of Collier Avenue and Mission Trail. Other roadways have noise levels in the range of approximately 51 DNL to 69 DNL.

The majority of modeled road segments would exceed the 60 DNL Clearly Compatible land use compatibility level established in the proposed GPU for residential uses and schools, libraries, religious institutions, and hospitals, and well as the 65 DNL Clearly Compatible land use compatibility level for parks and commercial recreation.

Traffic noise modeling indicates the GPU would not increase traffic noise levels by more than 1.0 dBA, as compared to future 2045 baseline conditions on the majority of modeled roadway segments and that approximately 30% of segments would have lower traffic noise level due to a lower projected traffic volume under the GPU than under future baseline conditions or a decrease in the percent of truck traffic along certain roadway segments. However, under the proposed GPU several roadways would increase noise levels by more than 1.0 dBA on roadways with an ambient noise level above 65 DNL, including Temescal Canyon Road which would increase by 2.1 to 2.3 dBA, Grand Avenue, which would increase between 1.0 to 1.5 dBA, and Nichols Road, which would increase between 1.1 and 2.6 dBA. Temescal Canyon Road, Grand Avenue, and Nichols Road are all adjacent to sensitive residential receptors and Grand Avenue is adjacent to school receptors.

As described above, the proposed Project would result in an increase in traffic noise levels that would increase noise levels on segments that already exceed the City's land use compatibility guidelines under existing conditions, and that would exceed the significance thresholds established in Section 5.1.

This impact would be **potentially significant**. While the GPU contains policies to reduce exposure to roadway noise (see Policies PSNAQ-72 and PRO-PSNAQ-128), and to reduce single-occupancy vehicles (see PRO-COSP-51, Policy PSNAQ-66, PRO-PSNAQ-109, PRO-PSNAQ-109) a reduction in vehicle trips on specific, impacted roadway segments cannot be guaranteed .

Another approach to reducing roadway noise would be to reduce vehicle miles travelled (VMT) within the Planning Area. The City's GPU incorporates policies to multi-modal transportation (e.g., PRO-PSNAQ-109, which includes investment in bike-sharing programs and PRO-PSNAQ-117, which ensures planning efforts include improvements to bike and pedestrian infrastructure). Additionally, the CAAP includes an extensive list of feasible VMT reduction measures that were analyzed by Fehr & Peers (Ascent 2025, see Attachment C) The VMT measures are listed below:

- Measure AT.1: End of Trip Bike Facilities
- Measure LU.1: Increase Residential Density
- Measure LU.2: Increase Job Density
- Measure LU.4: Integrate Affordable Housing Development
- Measure RD.2: Improved Pedestrian Network
- Measure CM.1: Commute Trip Reduction Program (Voluntary)
- Measure CM.3: Commute Trip Reduction Marketing
- Measure CM.4: Employee Ridesharing Program
- Measure CM.5: Employee Vanpool
- Measure PT.1: Subsidized Transit Pass Program
- Measure PT.2: Expanded Local Transit Coverage
- Measure PT.3: Expanded Local Transit Frequency
- Measure ND.1: Community-Based Travel Planning
- Measure PT.6: Provide Transit Shelters
- Measure PT.7: Park and Ride Expansion
- Measure RD.1: Improve Bike Facilities

The above VMT measures have the potential to reduce VMT by approximately 16,447 to 32,881 VMT/day by 2030 and by approximately 25,897 to 51,889 VMT/day by 2045, which would reduce noise from mobile source emissions. Additional feasible mitigation is not available, and this impact would remain **significant and unavoidable**.

5.3.2 INCREASES IN STATIONARY AND OTHER SOURCES OF NOISE

Stationary and other sources of noise in the Planning Area include, but are not limited to, landscape and building maintenance activities, stationary mechanical equipment (e.g., pumps, generators, HVAC units), garbage collection activities, commercial and industrial activities, and other stationary and area sources such as people's voices, amplified music, and public address systems.

The GPU would increase residential dwelling units and nonresidential buildings square footage. Noise generated by residential or commercial uses is generally short-term and intermittent. Industrial uses may generate noise on a more continual basis due to the types of their activities. Future planned development could result in new stationary and area sources as well as the exposure of new sensitive land uses to existing stationary and area sources.

The City's Municipal Code regulates stationary sources through Section 17.176.060 (Exterior Noise Limits) by setting exterior noise limits[8] at residential, commercial, office, and industrial properties (see Table 4-9). Section 17.176.080(K) additionally prohibits creating sound within noise-sensitive zones (e.g., hospital, nursing home, school, court) that exceed exterior noise limits or interferes with facility functions, or annoys occupants. Section 17.176.080(F) reduces noise levels from stationary sources by requiring all internal combustion engine powered equipment or machinery be equipped with suitable exhaust and air intake silencers in proper working order. The Municipal Code also regulates noise from HVAC equipment through Section 17.176.080(M), sets noise limits for air conditioning units that range from 50 dBA to 60 dBA depending on measurement location and the age of the air conditioning unit. Municipal Cdoe Section 17.176.090 places limits on the operation of refuse collection vehicles, motor vehicle horns motorized recreational vehicles operating outside of the public right-of-way, repairing or testing vehicles, motorboats, and aircraft, and idling motor vehicles to 7:00 a.m. to 7:00 p.m., when receptors are less sensitive to noise.

Furthermore, the proposed GPU contains policies that would reduce exposure from stationary noise sources through buffering and noise control requirements (see Policies PSNAQ-72, PSNAQ-73, PRO-PSNAQ-124). Future stationary sources would comply with City standards and therefore would not expose people to a substantial permanent increase in noise levels.

In addition to more typical sources of stationary noise, mining operations occurring in the Planning Area could also contribute to noise levels. However, the GPU is proposing to phase out mining operations. Noise levels due to mining operations would not increase due to implementation of the GPU.

5.3.3 OPERATIONAL VIBRATION ANALYSIS

The GPU does not include plans for the introduction or expansion vibration-generating operational sources (e.g., rail lines, mining operation), and is not anticipated to increase vibration levels these sources. This impact would be **less than significant.**

5.4 AIRPORT-RELATED NOISE

As described in Section 4.2.1.3, the Skylark airport is located on approximately 150 acres in the southeast portion of the city. The airport is a private airport that operates seven days a week and supports smaller aircraft used for activities such as skydiving. The airport supports approximately five flights per weekday and approximately 25 to 40 flights per weekend day (City of Lake Elsinore 2017). Noise monitoring at Skylark Airport was conducted in December 2016 for the City's East Lake Specific Plan Amendment No. 11. Based on this monitoring, the study concluded that the largest lateral distance from the runway centerline to the 60 dB Ldn contour was approximately 500 feet (City of Lake Elsinore 2017, Figure 5.10-4).

Additionally, the 60 dB Ldn contour would be within the GPU's East Lake Community Plan, which would include a mix of residential neighborhoods, commercial centers, recreational activities, floodplain, and open space. While the planning area may include residential uses, the GPU policies have been designed to minimize noise exposure and ensure noise compatibility, such as Policy EL 1.1 which requires

[8] These standards include a 40 dBA L_{eq} from 10 p.m. to 7 a.m. and a 50 dBA L_{eq} from 10 a.m. to 7 p.m. for single-family residential, a 45 dBA L_{eq} from 10 p.m. to 7 a.m. and a 50 dBA L_{eq} from 10 a.m. to 7 p.m. for multi-family residential, a 55 dBA L_{eq} from 10 p.m. to 7 a.m. and a 60 dBA L_{eq} from 10 a.m. to 7 p.m. for limited commercial and office, a 60 dBA L_{eq} from 10 p.m. to 7 a.m. and a 65 dBA L_{eq} from 10 a.m. to 7 p.m. for general commercial, a 70 dBA L_{eq} for heavy industrial uses and a 75 dBA L_{eq} for light industrial uses.

a noise barrier between residential uses and the airstrip and Policy PSNAQ-71, which requires the minimization of residential land use development in noise impacted areas unless mitigation measures can reduce noise levels to acceptable levels. The Project, therefore, would not expose people to excessive airport-related noise levels. This impact would be **less than significant.**

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6 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it is not considered an impact under CEQA. Furthermore, the City's General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

This chapter discusses the existing noise environment and the degree to which the existing environment is compatible and consistent with City goals, policies, and standards for the proposed GPU.

6.1 TRAFFIC NOISE AND LAND USE COMPATIBILITY

As explained in Section 2.3, the City's General Plan establishes land use compatibility standards with regard to determining the appropriate type of new development in relation to the existing transportation noise environment.

The existing ambient noise levels vary depending on location. As described in Section 4.2, the majority of residential and institutional land uses along arterial roadways currently have noise levels greater than 60 DNL, the Clearly Compatible land use compatibility level for residential uses, schools, libraries, religious institutions, and hospitals. Several road segments also exceed the 70 DNL Normally Compatible land use condition for residential land uses and 65 DNL Normally Compatible land use condition for institutional land uses. Roadways within the Normally Incompatible condition for residential and institutional uses include Grand Avenue, Collier Avenue, Central Avenue, Railroad Canyon Road, SR-74, Riverside Drive, Corydon Road, and the I-15 (see Section 4.2). Roadways in the Planning Area would continue to exceed the proposed compatibility standard under 2045 Project conditions, as the GPU has the potential to site new residential and mixed-use projects in the vicinity of roadways with high traffic noise levels.

However, the GPU contains policies that seek to incorporate land use compatibility considerations into project development and to reduce noise exposure from vehicle traffic near sensitive noise receptors. Policy PSNAQ-71 aims to minimize new noise-sensitive land use development in noise-impacted areas unless mitigation measures can reduce noise levels to a Normally Acceptable condition. Policy PSNAQ-72 would separate and buffer noise sensitive uses from major roadways and stationary sources. Policy PSNAQ-73 would control the source of incompatible noises. Policy PSNAQ-74 plans for locating new noise-generating land uses in compatible areas. Implementation measures PRO-PSNAQ-121 and PRO-PSNAQ-122 involve updating the municipal code and would include incorporating buffers around industrial and truck-related uses, including design measures that would reduce noise, and identifying mitigation measures for noise-generating community uses. PRO-PSNAQ-123, PRO-PSNAQ-124, PRO-PSNAQ-125, and PRO-PSNAQ-126 place requirements on development projects and development review, including to require that development projects reduce noise exceeding normally acceptable levels.

Furthermore, as described in Section 4.3, pursuant to the State noise standards, California Building Code, Section 1207.4, new residential structures would be required to be constructed such that interior noise levels do not exceed 45 dBA CNEL. Standard construction techniques and materials are commonly accepted to provide a minimum exterior to interior noise attenuation (i.e., reduction) of 22–25 dBA with all

windows and doors closed (HUD 2009a and 2009b).[9] These interior noise reductions would be adequate for some developments occurring under the GPU to meet the State's and City's interior noise standards, which area set at 45 CNEL (see Table 4-8). New developments along major roadways, such as Lake Street, Central Avenue, or Railroad Canyon Road, could require additional noise attenuation design features since traffic noise levels along these roadways are estimated to exceed 70 DNL under future conditions with and without the GPU. Adherence to the State's mandatory noise standards would ensure residential and mixed-use structures within the Planning Area meet or exceed the 45 dBA CNEL standard.

As discussed above, the GPU includes residential land uses that may be exposed to traffic noise levels above acceptable levels; however, the GPU establishes City policies and implementation measures to provide protection from excessive noise levels and ensure that transportation activities do not create noise levels that impair human health or quality of life. For these reasons, the GPU would not expose existing or future noise sensitive land uses to unacceptable noise levels from vehicle traffic.

6.2 MINING NOISE AND LAND USE COMPATIBILITY

Existing mining operations occurring in Alberhill produce noise and vibration in areas that may be developed into residential uses under the GPU. The GPU proposes to undergo a reclamation process in Alberhill and phase out mining operations. While mining would occur in the interim, mining operations would be subject to the mitigation measures in the Alberhill Villages Specific Plan (i.e., Mitigation Measure NSE-8 and NSE-10) that set noise standards at residential properties and require projects demonstrate compliance with noise standards. Finally, GPU implementation measures such as PRO-PSNAQ-121 and PRO-PSNAQ-124 require buffers from industrial and trucking-related uses that would reduce potential noise levels from mining operations and their associated haul truck trips. Based on compliance with City requirements, the GPU would not expose existing or future noise sensitive land uses to unacceptable noise levels from mining operations.

[9] The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 35 dBs of attenuation between exterior and interior noise levels. This reduction may be slightly lower (2-3 dBs) for traffic noise due to the specific frequencies associated with traffic noise. Increasing window space may also decrease attenuation, with a reduction of 10 dBs possible if windows occupy 30% of the exterior wall façade.

7 REPORT PREPARERS AND REFERENCES

This Report was prepared by MIG under contract to the City of Lake Elsinore. This report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation of this Report:

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Attachment A: Ambient Noise Monitoring Data

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Insert Attachment A (Ambient Noise Monitoring Data)

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Attachment B: Transportation Noise

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