Appendix G:
Noise Impact Analysis Report

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Noise Impact Analysis Report
Ramona Expressway and Brennan Avenue Warehouse Project
City of Perris, California

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Date: May 17, 2022
Revised: October 12, 2022

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ACRONYMS AND ABBREVIATIONS

ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
DNL	Day-Night Level
EPA	United States Environmental Protection Agency
FCS	FirstCarbon Solutions
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
in/sec	inch per second
L_{dn}	day-night average sound level
L_{eq}	equivalent continuous sound level
L_{max}	maximum noise/sound level
PPV	peak particle velocity
PVCCSP	Perris Valley Commerce Center Specific Plan
rms	root mean square
VdB	vibration in decibels

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SECTION 1: INTRODUCTION

1.1 - Purpose of Analysis and Study Objectives

This Noise Impact Analysis Report has been prepared by FirstCarbon Solutions (FCS) to determine and document the off-site and on-site noise impacts associated with the proposed Ramona Expressway and Brennan Warehouse Project (proposed project). The following is provided in this report:

- A description of the study area, project site, and proposed project.
- Information regarding the fundamentals of noise and vibration.
- A description of the local noise guidelines and standards.
- A description of the existing noise environment.
- An analysis of the potential short-term, construction-related noise and vibration impacts from the proposed project.
- An analysis of long-term, operations-related noise and vibration impacts from the proposed project.

1.2 - Project Summary

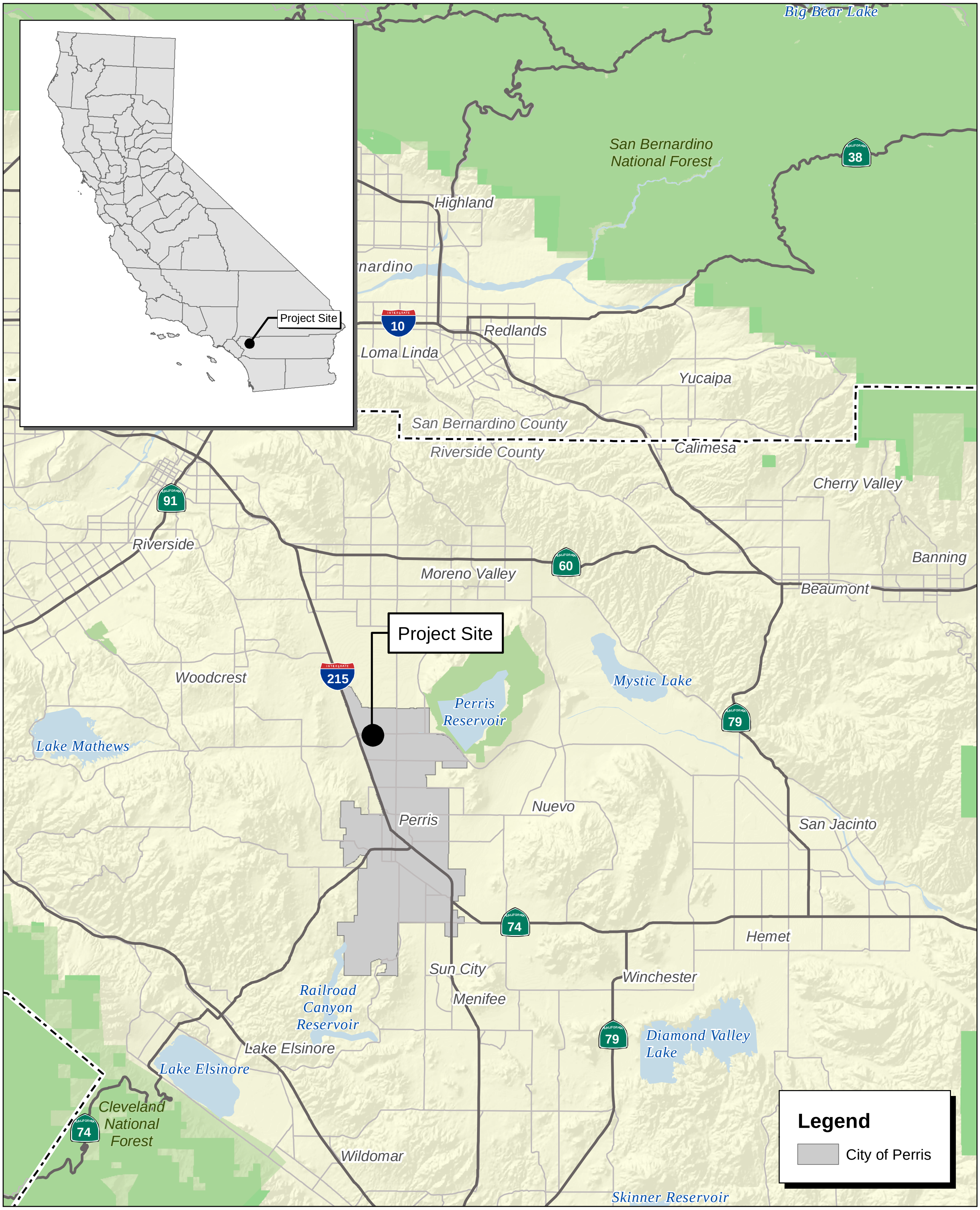
1.2.1 - Site Location

The proposed project is located in the City of Perris, in Riverside County, California (Exhibit 1). The approximately 7.5 acre project site is located south of Ramona Expressway between Brennan Avenue and Webster Avenue, and corresponds to Assessor's Parcel Numbers (APNs) 303-020-005, -022, -023, -024, and -025 (Exhibit 2). The site is located within the *Perris, California* United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map. The project site is located within the Perris Valley Commerce Center Specific Plan (PVCCSP) area and is designated as Light Industrial (LI). According to the City of Perris Zoning Map, the site is zoned as Light Industrial (LI).

1.2.2 - Project Description

The project site is currently used for storage of a variety of materials and currently contains five permanent buildings. A wood-framed commercial building and a residential building are present on the southeast portion of the project site. Two connected metal structures are present on the central portion of the project site, and a shed-type structure is present on the southwest portion of the project site. Infrastructure associated with the storage of materials, including concrete foundation pads, equipment shelving, and shipping containers are present throughout the southern portion of the site. The northern portion of the site includes a former storage area for pallets that was recently cleared and now supports ruderal vegetation.

The project applicant is proposing to construct an approximately 165,371-square-foot warehouse center for consumer products. The warehouse center would consist of a 160,371-square-foot warehouse, 2,500-square-foot office located on the first floor, a 2,500-square-foot mezzanine, 20 dock doors, an outdoor employee break area/seating patio, and an outdoor gym park (Exhibit 3).



Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

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Exhibit 1
Regional Location Map

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SEEFRIED INDUSTRIAL PROPERTIES, INC.
RAMONA EXPRESSWAY AND BRENNAN AVENUE WAREHOUSE PROJECT
NOISE IMPACT ANALYSIS REPORT

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Source: Bing Aerial Imagery.

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1,000 500 0 1,000 Feet

Exhibit 2
Local Vicinity Map

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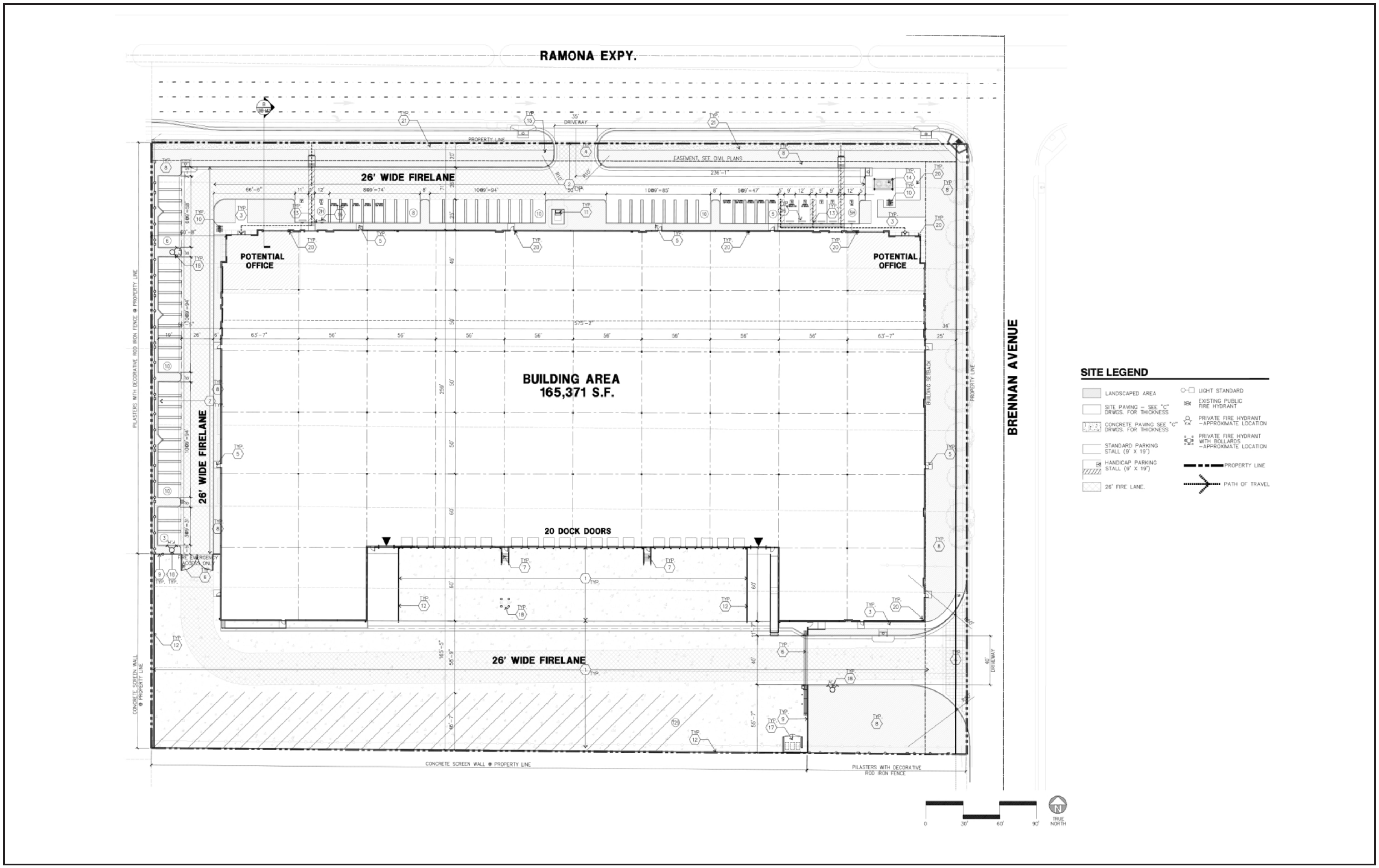

Source: HPA Architecture

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Exhibit 3
Site Plan

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SEEFRIED INDUSTRIAL PROPERTIES, INC.
RAMONA EXPRESSWAY AND BRENNAN AVENUE WAREHOUSE PROJECT
NOISE IMPACT ANALYSIS REPORT

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SECTION 2: NOISE AND VIBRATION FUNDAMENTALS

2.1 - Characteristics of Noise

Noise is generally defined as unwanted or objectionable sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in the extreme, hearing impairment. Noise effects can be caused by pitch or loudness. *Pitch* is the number of complete vibrations or cycles per second of a wave that result in the range of tone from high to low; higher-pitched sounds are louder to humans than lower-pitched sounds. *Loudness* is the intensity or amplitude of sound.

Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit, which expresses the ratio of the sound pressure level being measured to a standard reference level. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Only audible changes in existing ambient or background noise levels are considered potentially significant.

The human ear is not equally sensitive to all frequencies within the audible sound spectrum, so sound pressure level measurements can be weighted to better represent frequency-based sensitivity of average healthy human hearing. One such specific “filtering” of sound is called “A-weighting.” A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies that are audible to the human ear. Because decibels are logarithmic units, they cannot be added or subtracted by ordinary arithmetic means. For example, if one noise source produces a noise level of 70 dB, the addition of another noise source with the same noise level would not produce 140 dB; rather, they would combine to produce a noise level of 73 dB.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level. Noise levels diminish or attenuate as distance from the source increases based on an inverse square rule, depending on how the noise source is physically configured. Noise levels from a single-point source, such as a single piece of construction equipment at ground level, attenuate at a rate of 6 dB for each doubling of distance (between the single-point source of noise and the noise-sensitive receptor of concern). Heavily traveled roads with few gaps in traffic behave as continuous line sources and attenuate roughly at a rate of 3 dB per doubling of distance.

2.1.1 - Noise Descriptors

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (L_{dn}) based on dBA. CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

2.1.2 - Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source, as well as ground absorption, atmospheric conditions (wind, temperature gradients, and humidity) and refraction, and shielding by natural and manmade features. Sound from point sources, such as an air conditioning condenser, a piece of construction equipment, or an idling truck, radiates uniformly outward as it travels away from the source in a spherical pattern.

The attenuation or sound drop-off rate is dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in noise models: soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA per each doubling of the distance (dBA/DD) is typically observed over soft ground with landscaping, as compared with a 6 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone, and very hard packed earth. For line sources, such as traffic noise on a roadway, a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3 dBA/DD drop-off rate for hard-site conditions. Table 1 briefly defines these measurement descriptors and other sound terminology used in this section.

Table 1: Sound Terminology

Term	Definition
Sound	A vibratory disturbance created by a vibrating object which, when transmitted by pressure waves through a medium such as air, can be detected by a receiving mechanism such as the human ear or a microphone.
Noise	Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
Ambient Noise	The composite of noise from all sources near and far in a given environment.
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which represents the squared ratio of sound pressure amplitude to a reference sound pressure. The reference pressure is 20 micropascals, representing the threshold of human hearing (0 dB).
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level that approximates the frequency response of the human ear.
Equivalent Noise Level (L_{eq})	The average sound energy occurring over a specified time period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period.
Maximum and Minimum Noise Levels (L_{max} and L_{min})	The maximum or minimum instantaneous sound level measured during a measurement period.
Day-Night Level (DNL or L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m. (nighttime).
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.
Source: Data compiled by FirstCarbon Solutions (FCS) 2022.	

2.1.3 - Traffic Noise

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater number of trucks. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. Because of the logarithmic nature of noise levels, a doubling of the traffic volume (assuming that the speed and truck mix do not change) results in a noise level increase of 3 dBA. Based on the Federal Highway

Administration (FHWA) community noise assessment criteria, this change is "barely perceptible." For reference, a doubling of perceived noise levels would require an increase of approximately 10 dBA. The truck mix on a given roadway also has an effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

2.1.4 - Stationary Noise

A stationary noise producer is any entity in a fixed location that emits noise. Examples of stationary noise sources include machinery, engines, energy production, and other mechanical or powered equipment and activities such as loading and unloading or public assembly that may occur at commercial, industrial, manufacturing, or institutional facilities. Furthermore, while noise generated by the use of motor vehicles over public roads is preempted from local regulation, the use of these vehicles is considered a stationary noise source when operated on private property such as at a construction-site, a truck terminal, or warehousing facility.

The effects of stationary noise depend on factors such as characteristics of the equipment and operations, distance and pathway between the generator and receptor, and weather. Stationary noise sources may be regulated at the point of manufacture (e.g., equipment or engines), with limitations on the hours of operation, or with provision of intervening structures, barriers, or topography.

Construction activities are a common source of stationary noise. Construction-period noise levels are higher than background ambient noise levels but eventually cease once construction is complete. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on each construction-site and, therefore, would change the noise levels as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 2 shows typical noise levels of construction equipment as measured at a distance of 50 feet from the operating equipment.

Table 2: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Impact Pile Driver	Yes	95
Auger Drill Rig	No	85
Vibratory Pile Driver	No	95
Jackhammers	Yes	85
Pneumatic Tools	No	85
Pumps	No	77
Scrapers	No	85
Cranes	No	85
Portable Generators	No	82

Type of Equipment	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Rollers	No	85
Bulldozers	No	85
Tractors	No	84
Front-End Loaders	No	80
Backhoe	No	80
Excavators	No	85
Graders	No	85
Air Compressors	No	80
Dump Truck	No	84
Concrete Mixer Truck	No	85
Pickup Truck	No	55

Notes:
dBA = A-weighted decibel
L_{max} = maximum noise level
Source: Federal Highway Administration (FHWA). 2006. Highway Construction Noise Handbook. August.

2.1.5 - Noise from Multiple Sources

Because sound pressure levels in decibels are based on a logarithmic scale, they cannot be added or subtracted in the usual arithmetical way. Therefore, sound pressure levels in decibels are logarithmically added on an energy summation basis. In other words, adding a new noise source to an existing noise source, both producing noise at the same level, will not double the noise level. Instead, if the difference between two noise sources is 10 dBA or more, the louder noise source will dominate, and the resultant noise level will be equal to the noise level of the louder source. In general, if the difference between two noise sources is 0–1 dBA, the resultant noise level will be 3 dBA higher than the louder noise source, or both sources if they are equal. If the difference between two noise sources is 2–3 dBA, the resultant noise level will be 2 dBA above the louder noise source. If the difference between two noise sources is 4–10 dBA, the resultant noise level will be 1 dBA higher than the louder noise source.

2.2 - Characteristics of Groundborne Vibration and Noise

Groundborne vibration consists of rapidly fluctuating motion through a solid medium, specifically the ground, that has an average motion of zero and in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The effects of groundborne vibration typically only causes a nuisance to people, but in extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Because of the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels—denoted as LV—and is based on the reference quantity of 1 microinch per second. To distinguish these vibration levels referenced in decibels from noise levels referenced in decibels, the unit is written as “VdB.”

Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. When assessing annoyance from groundborne vibration, vibration is typically expressed as rms velocity in units of decibels of 1 microinch per second, with the unit written in VdB. Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. Human perception to vibration starts at levels as low as 67 VdB. Annoyance due to vibration in residential settings starts at approximately 70 VdB.

Off-site sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible groundborne noise or vibration. Construction activities, such as blasting, pile driving and operating heavy earthmoving equipment, are common sources of groundborne vibration. Construction vibration impacts on building structures are generally assessed in terms of PPV. Typical vibration source levels from construction equipment are shown in Table 3.

Table 3: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	rms Velocity in Decibels (VdB) at 25 Feet
Water Trucks	0.001	57
Scraper	0.002	58
Bulldozer—small	0.003	58
Jackhammer	0.035	79
Concrete Mixer	0.046	81
Concrete Pump	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Backhoe	0.051	82
Crane (Mobile)	0.051	82
Excavator	0.051	82
Grader	0.051	82

Construction Equipment	PPV at 25 Feet (inches/second)	rms Velocity in Decibels (VdB) at 25 Feet
Loader	0.051	82
Loaded Trucks	0.076	86
Bulldozer—Large	0.089	87
Caisson drilling	0.089	87
Vibratory Roller (small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (large)	0.210	94
Pile Driver (impact-typical)	0.644	104
Pile Driver (impact-upper range)	1.518	112

Notes:
PPV = peak particle velocity
rms = root mean square
Source: Compilation of scientific and academic literature, generated by the Federal Transit Administration (FTA) and Federal Highway Administration (FHWA).

The propagation of groundborne vibration is not as simple to model as airborne noise. This is because noise in the air travels through a relatively uniform medium, while groundborne vibrations travel through the earth, which may contain significant geological differences. Factors that influence groundborne vibration include:

- **Vibration source:** Type of activity or equipment, such as impact or mobile, and depth of vibration source;
- **Vibration path:** Soil type, rock layers, soil layering, depth to water table, and frost depth; and
- **Vibration receiver:** Foundation type, building construction, and acoustical absorption.

Among these factors that influence groundborne vibration, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of groundborne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Vibration propagation is more efficient in stiff clay soils than in loose sandy soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in groundborne vibration problems at large distance from the source. Factors such as layering of the soil and depth to the water table can have significant effects on the propagation of groundborne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils. There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil type, but it has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests. The vibration level (calculated below as PPV) at a distance from a point source can generally be calculated using the vibration reference equation:

$$PPV = PPV_{ref} * (25/D)^n \text{ (in/sec)}$$

Where:

PPV_{ref} = reference measurement at 25 feet from vibration source
D = distance from equipment to property line
n = vibration attenuation rate through ground

According to Section 7 of the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual, an "n" value of 1.5 is recommended to calculate vibration propagation through typical soil conditions.[1]

[1] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

SECTION 3: REGULATORY SETTING

3.1 - Federal Regulations

3.1.1 - United States Environmental Protection Agency

In 1972, Congress enacted the Noise Control Act. This act authorized the United States Environmental Protection Agency (EPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels) categories, as shown in Table 4. The EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

Table 4: Summary of EPA Recommended Noise Levels to Protect Public Welfare

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas, farms, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.
Notes: (24) signifies an L_{eq} duration of 24 hours. dB = decibel L_{dn} = day/night average sound level L_{eq} = equivalent continuous sound level Source: United States Environmental Protection Agency (EPA). 1978. Protective Noise Levels, EPA 550/9-79-100. November.		

3.1.2 - Federal Transit Administration

The FTA has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment Manual.[2] The FTA guidelines include thresholds for construction vibration impacts for various structural categories as shown in Table 5.

Table 5: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced—Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Non-engineered Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90

Notes:
PPV = peak particle velocity
rms = root mean square
VdB = vibration measured as rms velocity in decibels of 1 microinch per second
Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

3.2 - State Regulations

The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the “State Noise Insulation Standard,” it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor-ceiling assemblies must block or absorb sound. For limiting noise from exterior noise sources, the noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room with all doors and windows closed. In addition, the standards require preparation of an acoustical analysis demonstrating the manner in which dwelling units have been designed to meet this interior standard, where such units are proposed in an area with exterior noise levels greater than 60 dBA CNEL.

The proposed project does not include any type of residential development. Therefore, these standards are not applicable to the proposed project. However, the State has established land use compatibility guidelines for determining acceptable noise levels for specified land uses, including industrial type land uses such as the proposed project, which the City of Perris has adopted as described in Section 3.3 below.

[2] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

3.3 - Local Regulations

The project site is located in the PVCCSP within the City of Perris, in the County of Riverside. The City of Perris addresses noise in the Noise Element of its General Plan,[3] in its Municipal Code,[4] and in the PVCCSP.[5]

City of Perris General Plan

The City of Perris adopted its General Plan Noise Element in August of 2016. The objective of the General Plan's Noise Element is to limit population exposure to physically and/or psychologically damaging or intrusive noise levels. To assist with meeting its objective, the Noise Element of the City's General plan establishes the Land Use/Noise Compatibility Guidelines. These guidelines are summarized below:

The land use category listed in the City's Land Use/Noise Compatibility Guidelines that most closely applies to the proposed project is Light Industrial. Under this designation, noise environments up to 70 dBA CNEL are considered "normally acceptable" for this type of new land use development. While environments with ambient noise levels ranging from 70 dBA to 80 dBA CNEL are considered "conditionally acceptable" for this type of land use development; as such, development should only be undertaken after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

The following are the goals, policies, and implementation measures that are applicable to the project.

Goal I **Land Use Siting**. Future land uses compatible with projected noise environments.

Policy 1.A The State of California Noise/Land Use Compatibility Criteria shall be used in determining land use compatibility for new development.

Implementation Measures

I.A.1 All new development proposals will be evaluated with respect to the State Noise/Land Use Compatibility Criteria. Placement of noise-sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the "Normally Unacceptable" range and prohibited within areas exposed to "Clearly Unacceptable" noise ranges.

I.A.3 Acoustical studies shall be prepared for all new development proposals involving noise-sensitive land uses, as defined in Section 16.22.020J of the Perris Municipal Code, where such projects are adjacent to roadways and within existing or projected roadway CNEL levels of 60 dBA or greater.

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3 City of Perris. 2016. City of Perris General Plan. Noise Element. Website: https://www.cityofperris.org/home/showpublisheddocument/461/637203139725000000. Accessed May 12, 2022.
4 City of Perris. 2022. City of Perris Municipal Code. Website: https://library.municode.com/ca/perris/codes/code_of_ordinances. Accessed May 12, 2022.
5 City of Perris. 2022. Perris Valley Commerce Center Specific Plan (PVCCSP). Amendment No. 12. Website: https://www.cityofperris.org/Home/ShowDocument?id=2647. Accessed May 12, 2022.

I.A.4 As part of any approvals of noise-sensitive projects where reduction of exterior noise to 65 dBA is not reasonably feasible, the City will require the developer to issue disclosure statements to be identified on all real estate transfers associated with the affected property that identifies regular exposure to roadway noise.

City of Perris Municipal Code

The City of Perris establishes noise performance standards in its noise ordinance. Ordinances applicable to the proposed project are summarized below.

General Prohibition (Section 7.34.050)

The City has established general exterior sound level limits at residential properties to a maximum noise level of 60 dBA L_{max} from 10:01 p.m. to 7:00 a.m., and of 80 dBA L_{max} from 7:01 a.m. to 10:00 p.m. Furthermore, it is unlawful for any person to create noise that would cause the noise level as measured at an affected property line to exceed the ambient noise level by more than 1.0 decibels.

Construction Noise (Section 7.34.060)

The City has established that noise generated from construction activity shall not exceed 80 dBA L_{max} as measured at the nearest residential zone or property line. Additionally, construction activities are prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays to erect, construct, demolish, excavate, alter, or repair any building or structure in such a manner as to create disturbing, excessive, or offensive noise.

Performance Standards (Section 19.44.070)

This ordinance establishes the City's noise and vibration performance standards for industrial zone land use developments. The City establishes that noise generated on-site shall be controlled so as to be compatible with surrounding land uses. Any proposed use that may generate noise during evening hours (7:00 p.m. to 7:00 a.m.) must submit a detailed noise assessment and plan addressing and mitigating potential noise impacts. Furthermore, vibrations generated on-site shall not be detectable off-site. Any proposed use that may generate vibrations detectable off-site must submit a detailed vibration assessment and plan addressing and mitigating potential impacts.

Perris Valley Commerce Center Specific Plan and Perris Valley Commerce Specific Plan EIR

Applicable PVCCSP Mitigation Measures

The proposed project is required to comply with the following applicable mitigation measures from the PVCCSP EIR.

MM Noise 1 During all project site excavation and grading on-site, the construction contractors shall equip all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers consistent with manufacturer's standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receptors nearest the project site.

MM Noise 2 During construction, stationary construction equipment, stockpiling and vehicle staging areas will be placed a minimum of 446 feet away from the closet sensitive receptor.

MM Noise 3 No combustion-powered equipment, such as pumps or generators, shall be allowed to operate within 446 feet of any occupied residence unless the equipment is surrounded by a noise protection barrier.

MM Noise 4 Construction contractors of implementing development projects shall limit haul truck deliveries to the same hours specified for construction equipment. To the extent feasible, haul routes shall not pass sensitive land uses or residential dwellings.

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SECTION 4: EXISTING NOISE CONDITIONS

The proposed project site is located within the City of Perris, in the County of Riverside, California. The project site is surrounded by vacant land to the south and west and commercial and a vacant lot beyond Ramona Expressway to the north. To the north beyond the vacant lot of the project site, across a vacant lot, is the closest single-family home to the project site. Immediately east of the project site beyond Brennan Avenue is a Lowe's warehouse distribution center, and directly south is a vacant lot and storage yard.

Existing traffic noise levels along selected roadway segments in the project vicinity were modeled using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The daily traffic volumes were obtained from the Trip Generation Assessment prepared for the proposed project.[6] The traffic volumes described herein correspond to the existing without project conditions traffic scenario as described in the transportation analysis. The model inputs and outputs—including the 60 dBA, 65 dBA, and 70 dBA CNEL noise contour distances—are provided in the Appendix A of this document. A summary of the modeling results is shown in Table 6.

The results show that traffic noise levels along Ramona Expressway adjacent to the project site range up to approximately 70 dBA CNEL.

Table 6: Existing Traffic Noise Levels

Roadway Segment	Approximate ADT	Centerline to 70 CNEL (feet)	Centerline to 65 CNEL (feet)	Centerline to 60 CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Ramona Expressway	26,100	88	173	363	69.7

Notes:
ADT = Average Daily Traffic; The ADT values are calculated based on the PM peak-hour traffic volumes multiplied by a factor of 10.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibel
Modeling results do not take into account mitigating features such as topography, vegetative screening, fencing, building design, or structure screening. Rather, they assume a worst-case scenario of having a direct line of site on flat terrain.
Source: FirstCarbon Solutions (FCS) 2022.

6 Urban Crossroad. 2022. Ramona Expressway and Brenna Avenue Warehouse Trip Generation Assessment. January.

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SECTION 5: THRESHOLDS OF SIGNIFICANCE AND IMPACT ANALYSIS

5.1 - Thresholds of Significance

According to the California Environmental Quality Act (CEQA) Guidelines Appendix G, to determine whether impacts related to noise and vibration are significant environmental effects, the following questions are analyzed and evaluated.

It should be noted that the significance criteria question (a), below, is from the Land Use and Planning section of the CEQA Guidelines Appendix G checklist question (b). However, this question addresses impacts related to conflicts with land use plans, which would include project-related conflicts with the noise land use compatibility standards of the City of Perris General Plan, PVCCSP, and Municipal Code. Therefore, these impacts are addressed here.

Would the proposed plan:

a) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

b) Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

c) Generate excessive groundborne vibration or groundborne noise levels?

d) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

5.2 - Noise Levels That Would Conflict with Any Land Use Plan, Policy, or Regulation

A significant impact would occur if the proposed project resulted in a conflict with the City’s noise land use compatibility standards adopted for the purpose of avoiding or mitigating an environmental effect. The City of Perris noise land use compatibility standards consider noise environments with ambient noise levels up to 70 dBA CNEL to be “normally acceptable” for industrial land use development.

As previously discussed, the dominant noise source on the project site is traffic on local roadways. As shown in the existing traffic noise modeling results in Table 6, traffic noise levels along Ramona Expressway adjacent to the project site average 69.7 dBA CNEL as measured at 50-feet from the centerline of the outermost travel lane. These noise levels are within the City’s normally acceptable range for new industrial land use development.

The proposed project would not conflict with the City's normally acceptable land use compatibility standard for this type of land use development. Therefore, implementation of the proposed project would not result in a conflict with applicable land use compatibility standards, and this impact would be less than significant.

5.3 - Substantial Noise Increase in Excess of Standards

5.3.1 - Construction Noise Impacts

A significant impact would occur if the proposed project's construction activities would generate a substantial temporary increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The City has established that noise generated from construction activity shall not exceed 80 dBA L_{max} as measured at the nearest residential zone or property line. Additionally, construction activities are prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays.

Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities.

Construction-related Traffic Noise

Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. One type of short-term noise impact that could occur during proposed project construction would result from the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the project site. The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from passing trucks would be similar to existing vehicle-generated noise on these local roadways. Typically, a doubling of the Average Daily Traffic (ADT) hourly volumes on a roadway segment is required in order to result in an increase of 3 dBA in traffic noise levels; which, as discussed in the characteristics of nose discussion above, is the lowest change that can be perceptible to the human ear in outdoor environments. Project-related construction trips would not be expected to double the hourly or daily traffic volumes along any roadway segment in the project vicinity. For this reason, short-term intermittent noise from construction trips would not be expected to result in a perceptible increase in hourly- or daily-average traffic noise levels in the project vicinity. Therefore, short-term construction-related noise impacts associated with the transportation of workers and equipment to the project site would be less than significant.

Construction Equipment Operational Noise

The second type of short-term noise impact is related to noise generated during construction on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2 lists typical construction equipment noise levels, based on a distance of 50 feet between the equipment and a noise receptor. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings. Impact equipment such as pile drivers are not expected to be used during construction of this project.

The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery and compacting equipment, such as bulldozers, draglines, backhoes, front loaders, roller compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings.

Construction of the project is expected to require the use of scrapers, bulldozers, water trucks, haul trucks, and pickup trucks. Based on the information provided in Table 2, the maximum noise level generated by each scraper is assumed to be 85 dBA L_{max} at 50 feet from this equipment. Each bulldozer would also generate 85 dBA L_{max} at 50 feet. The maximum noise level generated by graders is approximately 85 dBA L_{max} at 50 feet. A characteristic of sound is that each doubling of sound sources with equal strength increases a sound level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, a reasonable worst-case combined noise level during this phase of construction would be 90 dBA L_{max} at a distance of 50 feet from the acoustic center of a construction area. This would result in a reasonable worst-case hourly average of 86 dBA L_{eq}. The acoustic center reference is used, because construction equipment must operate at some distance from one another on a project site, and the combined noise level as measured at a point equidistant from the sources (acoustic center) would be the worst-case maximum noise level. The effect on sensitive receptors is evaluated below.

The closest noise-sensitive receptor to the project site is a single-family residence north of the project site on Brennan Avenue. The façade of this single-family home would be located approximately 500 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would operate simultaneously during project construction. At this distance, relative worst-case maximum construction noise levels would attenuate to below 70 dBA L_{max}, with reasonable worst-case hourly average noise levels attenuating to below 66 dBA L_{eq}. These construction noise levels would not exceed the construction noise limits established by the City of 80 dBA L_{max} as measured at the nearest residential property line. Therefore, the impact of the proposed project would be less than significant. In addition, the proposed project must comply with the applicable mitigation measures from the PVCCSP EIR, including PVCCSP EIR mitigation measures MM Noise 1 through PVCCSP mitigation measure MM Noise 4, which include best management noise reduction measures to further reduce construction noise impacts.

Furthermore, Section 7.34.060 of the City's Municipal Code prohibits construction activities between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays. Because the proposed project would comply with this Municipal Code requirement restricting construction activities to daytime hours, this would preclude the proposed project from creating a substantial noise increase during nighttime hours that could result in sleep disturbance of sensitive receptors in the project vicinity. Therefore, project construction noise impacts would not result in a substantial temporary noise increase as measured at the nearest residential receptors, and the impact would be less than significant.

5.3.2 - Mobile Source Operational Noise Impacts

A significant impact would occur if implementation of the proposed project would result in a substantial increase in traffic noise levels compared with traffic noise levels existing without the proposed project. As noted in the characteristics of noise discussion, audible increases in noise levels refer to a change of 3 dBA or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Therefore, an increase of 3 dBA or above existing traffic noise levels would be considered a substantial permanent increase in traffic noise levels for the purpose of this analysis.

The proposed project would result in the addition of approximately 286 daily vehicle trips on nearby roadways, including 27 new trips during the AM peak-hour and 29 new trips during the PM peak-hour. As shown in Table 6, the existing traffic volumes along Ramona Expressway adjacent to the project site have 26,100 average daily trips. Therefore, these project trips would not result in a doubling of traffic volumes along any roadway segment in the project vicinity on an hourly or on a 24-hour average basis. A characteristic of noise is that a doubling of sound sources with equal strength is required to result in a perceptible increase (defined to be a 3 dBA or greater) in noise levels. As a result, the proposed project would not result in even a 1 dBA increase in traffic noise levels along any roadway segment in the project vicinity, and any increase would be well below the 3 dBA increase that would be considered substantial.

Based on the projected trip distribution, Brennan Avenue would experience an estimated 92 daily automobile vehicle trips and 102 daily truck trips. This volume of vehicles would result in average daily traffic noise levels of less than 59 dBA CNEL as measured at 50 feet from the centerline of the outermost travel lane. These traffic noise levels would not result in a substantial permanent increase in ambient noise levels above existing background ambient noise levels along this roadway segment.

Therefore, impacts from project-related traffic noise levels would not result in a substantial permanent increase in traffic noise levels in excess of applicable standards, and the impact would be less than significant.

5.3.3 - Stationary Source Operational Noise Impacts

A significant impact would occur if implementation of the proposed project would result in a substantial increase of more than 1 dBA in ambient noise levels as measured at residential land uses. The City limits exterior sound levels as measured at residential properties to 60 dBA L_{max} from 10:01

p.m. to 7:00 a.m., and 80 dBA L_{max} from 7:01 a.m. to 10:00 p.m. Furthermore, it is unlawful for any person to create noise that would cause the noise level as measured at an affected property line to exceed the ambient noise level by more than 1 dBA.

The proposed project would generate noise from truck delivery, loading and unloading activities at commercial loading areas; parking lot activities, which includes people conversing, doors shutting, engine startup, and slow-moving vehicles; and from new exterior mechanical equipment sources, such as rooftop ventilation systems. Potential impacts from these noise sources are discussed below.

Truck Loading Activities

Noise would be generated by truck loading and unloading activities at the loading docks along the southern, western, and northern sides of the proposed building. Typical noise levels from truck loading and unloading activity range from 70 dBA to 80 dBA L_{max} as measured at 50 feet. This maximum noise level range includes noise from associated truck loading/unloading activity, including trucks maneuvering, truck trailer loading, truck trailer unloading, backup alarms or beepers, and truck docking noise.

The proposed loading areas would be located on the southern side of the proposed warehouse building. The nearest noise-sensitive receptor to these proposed truck loading areas is a single-family residence located south of the project site on Brennan Avenue. The property line of this residential receptor is approximately 670 feet from the nearest proposed loading dock. Due to distance attenuation, noise levels from truck loading and unloading activities would attenuate to below 58 dBA L_{max} at this nearest property line of this sensitive receptor land use. As shown in Table 6, existing traffic noise levels on Ramona Expressway, adjacent to the project site, range up to approximately 70 dBA CNEL, at 50 feet from the centerline of the outermost travel lane.

Therefore, noise levels from truck loading and unloading activities would not exceed existing ambient noise levels. Additionally, the noise levels from truck loading would not exceed the daytime (80 dBA L_{max}) nor nighttime (60 dBA L_{max}) noise performance standards at this nearest sensitive receptor. Therefore, noise levels from truck loading and unloading activities would not generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity and would be less than significant.

Parking Lot Activities

Typical parking lot activities include people conversing, doors shutting, and vehicles idling which generate noise levels ranging from approximately 60 dBA to 70 dBA L_{max} at 50 feet. These activities are expected to occur sporadically throughout the day, as visitors and staff arrive and leave parking lot areas at the project site.

The nearest noise-sensitive receptor to proposed parking areas is a single-family residence north of the project site on Brennan Avenue. Proposed parking areas could be located approximately 520 feet from the property line of this closest sensitive receptor. At this distance, noise generated by typical parking lot activity would attenuate to below 50 dBA L_{max}. As shown in Table 6, existing traffic noise levels on Ramona Expressway, adjacent to the project site, range up to approximately 70 dBA CNEL, at 50 feet from the centerline of the outermost travel lane.

Therefore, noise levels from parking lot activities would not exceed existing ambient noise levels. Additionally, the noise levels from parking lot activities would not exceed the daytime (80 dBA L_{max}) nor nighttime (60 dBA L_{max}) noise performance standards at this nearest sensitive receptor. Therefore, noise levels from parking lot activities would not generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity and would be less than significant.

Mechanical Equipment Operations

At the time of preparation of this analysis, details were not available pertaining to the proposed rooftop mechanical ventilation systems for the project; therefore, a reference noise level for typical rooftop mechanical ventilation systems was used. Noise levels from commercially available rooftop mechanical ventilation equipment range from 50 dBA to 60 dBA L_{eq} at a distance of 25 feet.

The nearest noise-sensitive receptor to proposed rooftop mechanical ventilation equipment is a single-family residence north of the project site on Brennan Avenue. Rooftop mechanical ventilation equipment could be located approximately 550 feet from the property line of this closest sensitive receptor. At this distance, noise generated by typical rooftop mechanical ventilation equipment would attenuate to below 34 dBA L_{max}. As shown in Table 6, existing traffic noise levels on Ramona Expressway, adjacent to the project site, range up to approximately 70 dBA CNEL, at 50 feet from the centerline of the outermost travel lane.

Therefore, noise levels from mechanical ventilation equipment operations would not exceed existing ambient noise levels. Additionally, the noise levels from mechanical ventilation equipment operations would not exceed the daytime (80 dBA L_{max}) nor nighttime (60 dBA L_{max}) noise performance standards at this nearest sensitive receptor. Therefore, noise levels from mechanical ventilation equipment operations would not generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity and would be less than significant.

5.4 - Groundborne Vibration/Noise Levels

This section analyzes both construction and operational groundborne vibration and noise impacts. Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings. Groundborne noise is generated when vibrating building components radiate sound, or noise generated by groundborne vibration. In general, if groundborne vibration levels do not exceed levels considered to be perceptible, then groundborne noise levels would not be perceptible in most interior environments. Therefore, this analysis focuses on determining exceedances of groundborne vibration levels.

A significant impact would occur if the proposed project would generate groundborne vibration or groundborne noise levels in excess of established standards. The City of Perris has not established vibration standards for temporary construction activities. Therefore, the FTA's vibration impact criteria are utilized for the purpose of this analysis. The FTA has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its Transit Noise and Vibration Impact Assessment Manual[7]and summarized in Table 5. However, the City has established a standard for ongoing operational activity vibration impacts that would prohibit operations that generate vibration that is discernible beyond the boundary line of a property.

5.4.1 - Short-term Construction Vibration Impacts

Of the variety of equipment used during construction, the large vibratory rollers that are anticipated to be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Large vibratory rollers produce groundborne vibration levels ranging up to 0.201 inch per second (in/sec) PPV at 25 feet from the operating equipment.

The nearest off-site structure to the project construction footprint is the Carl's Jr. commercial building located north of the project site on Ramona Expressway. The façade of this closest structure would be located approximately 240 feet from the construction footprint where the heaviest construction equipment would potentially operate. At this distance, groundborne vibration levels would range up to 0.003 in/sec PPV from operation of the types of equipment that would produce the highest vibration levels. This is well below the FTA's Construction Vibration Impact Criteria of 0.2 in/sec PPV for this type of structure, a building of non-engineered timber and masonry construction. Therefore, project construction activities would not generate groundborne vibration or groundborne noise levels in excess of established standards, and the impact to off-site receptors from short-term groundborne vibration associated with construction would be less than significant.

5.4.2 - Operational Vibration Impacts

Implementation of the proposed project would not include any new permanent sources that would expose persons in the project vicinity to groundborne vibration levels that could be perceptible without instruments beyond the boundary line of the project property. Additionally, there are no active sources of groundborne vibration in the project vicinity that would produce vibration levels that would be perceptible without instruments within the project site. Therefore, the proposed project would not generate groundborne vibration or groundborne noise levels in excess of established standards and there would be no impact related to operational groundborne vibration.

5.5 - Excessive Noise Levels from Airport Activity

A significant impact would occur if the proposed project would expose people residing or working in the project area to excessive noise levels for a project located in the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

The nearest public airport to the project site is the March Air Reserve Base, located approximately 1.5 miles north of the project site. According to the airport's noise exposure map, the project site is located outside of the 65 dBA CNEL airport noise contours.[8] While aircraft noise is occasionally

[7] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.
[8] March Air Reserve Base. 2014. Riverside County Airport Land Use Compatibility Plan. Website: https://www.rcaluc.org/Portals/13/42%20-%20Vol.%202%20March%20Air%20Reserve%20Base%20Final.pdf?ver=2016-08-15-150039-073. Accessed May 11, 2022.

audible on the project site from aircraft flyovers, aircraft noise associated with nearby airport activity would not expose people residing or working near the project site to excessive noise levels. Therefore, implementation of the proposed project would not expose persons residing or working in the project vicinity to noise levels from airport activity that would be in excess of normally acceptable standards for the proposed land use development, and no impact would occur.

Appendix A:
Noise Modeling Data

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TABLE Existing (Year 2022)
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/19/2022
ROADWAY SEGMENT: Ramona Expressway - Webster Avenue to Indian Avenue
NOTES: Ramon Expressway Warehouse - Existing (Year 2022)

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 26100   SPEED (MPH): 50   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 42   SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.67

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
88.4	172.7	363.3	778.3

TABLE Project Trips Only
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/19/2022
ROADWAY SEGMENT: Brennan Avenue - south of Ramon Expressway (project trips only)
NOTES: Ramon Expressway Warehouse - Project Trips Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 200   SPEED (MPH): 35   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	52.00	8.00	4.00
M-TRUCKS	8.00	2.00	4.00
H-TRUCKS	13.00	2.00	7.00

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.79

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	51.9	109.5
