

## 5. Environmental Analysis

### 5.11 NOISE

This section discusses the fundamentals of sound; examines federal, state, and local noise guidelines, policies, and standards; reviews noise levels at existing receptor locations; evaluates potential noise impacts associated with the Agua Mansa Commerce Park Specific Plan project (proposed project); and provides mitigation to reduce noise impacts at sensitive residential locations. This evaluation uses procedures and methodologies as specified by Caltrans and the Federal Highway Administration (FHWA).

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for implementation of the proposed project to result in noise impacts.

The following analysis is based in part on information obtained from:

- *Agua Mansa Commerce Park Specific Plan Noise Impact Analysis*, Urban Crossroads Inc., January 28, 2019

A complete copy of the study is included in the technical appendices to this Draft EIR (Volume II, Appendix I).

#### 5.11.1 Environmental Setting

##### 5.11.1.1 SOUND FUNDAMENTALS

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel (dB). Changes of 1 to 3 dB are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible. A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernable to most people in an exterior environment whereas a 10 dBA change is perceived as a doubling (or halving) of the sound.

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all and are “felt” more as a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise is defined as unwanted sound, and is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

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#### Sound Measurement

Sound intensity is measured through the A-weighted measure to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies.

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. On a logarithmic scale, an increase of 10 dB is 10 times more intense than 1 dB, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases by 4.5 dB for each doubling of distance.

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called  $L_{eq}$ ), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the  $L_{50}$  noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the  $L_2$ ,  $L_8$  and  $L_{25}$  values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. These "L" values are typically used to demonstrate compliance for stationary noise sources with a city's noise ordinance, as discussed below. Other values typically noted during a noise survey are the  $L_{min}$  and  $L_{max}$ . These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level ( $L_{dn}$ ). The CNEL descriptor requires that an artificial increment of 5 dBA be added to the actual noise level for the hours from 7:00 p.m. to 10:00 p.m. and 10 dBA for the hours from 10:00 p.m. to 7:00 a.m. The  $L_{dn}$  descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 p.m. and 10:00 p.m. Both descriptors give roughly the same 24-hour level with the CNEL being only slightly more restrictive (i.e., higher).

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### Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA could result in permanent hearing damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 190 dBA will rupture the eardrum and permanently damage the inner ear.

#### 5.11.1.2 REGULATORY FRAMEWORK

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

#### State of California

California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a general plan that includes a noise element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research. The purpose of the noise element is to limit the exposure of the community to excessive noise levels.

Table 5.11-1 identifies normally acceptable, conditionally acceptable, and clearly unacceptable noise levels for various land uses. A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements.

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**Table 5.11-1 Community Noise and Land Use Compatibility**

Land Uses	CNEL (dBA)					
	55	60	65	70	75	80
Residential-Low Density Single Family, Duplex, Mobile Homes						
Residential- Multiple Family						
Transient Lodging: Hotels and Motels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playground, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Businesses, Commercial and Professional						
Industrial, Manufacturing, Utilities, Agricultural						

#### Explanatory Notes

	<b>Normally Acceptable:</b> With no special noise reduction requirements assuming standard construction.		<b>Normally Unacceptable:</b> New construction is discouraged. If new construction does not proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	<b>Conditionally Acceptable:</b> New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.		<b>Clearly Unacceptable:</b> New construction or development should generally not be undertaken.

Source: California Office of Noise Control. *Guidelines for the Preparation and Content of Noise Elements of the General Plan*. February 1976. Adapted from the US EPA Office of Noise Abatement Control, Washington D.C. Community Noise. Prepared by Wyle Laboratories. December 1971.

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### *Green Building Standards Code*

The 2016 Green Building Standards Code contains mandatory measures for nonresidential building construction in Section 5.507, Environmental Comfort. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when nonresidential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA Leq for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

### **Local Noise Standards**

#### *City of Jurupa Valley General Plan Noise Element*

The City of Jurupa Valley General Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the noise element identifies several policies to minimize the impacts of excessive noise levels throughout the community, and establishes noise level requirements for all land uses. The Land Use/Noise Compatibility Matrix, Figure 7-3 of the General Plan, identifies guidelines to describe categories of compatibility, not specific noise standards. The noise-sensitive residential land use in the project study area is considered normally acceptable with unmitigated exterior levels of less than 60 dBA CNEL and conditionally acceptable with noise levels approaching 70 dBA CNEL. For industrial land uses, exterior noise levels approaching 70 dBA CNEL are considered normally acceptable, and noise levels ranging from 70 dBA CNEL to 80 dBA CNEL are considered conditionally acceptable. For conditionally acceptable exterior noise levels, new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design.

#### *City of Jurupa Valley Operational Noise Standards*

Chapter 11.05 of the City of Jurupa Valley Municipal Code sets stationary-source (operational) exterior noise limits for residential uses in the project study area of 55 dBA Leq for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA Leq during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. However, consistent with guidance received from the City of Jurupa Valley, dated December 19, 2018, the noise study was prepared to evaluate potential impacts based on 65 dBA Leq daytime (7:00 a.m. to 10:00 p.m.) and 45 dBA Leq nighttime (10:00 p.m. to 7:00 a.m.) exterior noise level standards. The City of Jurupa Valley noise-related CEQA thresholds guidance is provided in Appendix 3.1 of the Noise Study (Appendix I).

### **Construction Noise Standards**

To control noise impacts associated with the construction of the proposed project, the City of Jurupa Valley has established limits to the hours of operation. Section 11.05.020 of the Municipal Code states that noise sources associated with any private construction activity within one-quarter of a mile from an inhabited

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dwelling are exempt from the noise regulations if construction activity occurs between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and 7:00 a.m. and 6:00 p.m. during the months of October through May.

Per City of Jurupa Valley guidance, the daytime and nighttime 8-hour construction noise level standards are 80 dBA Leq and 70 dBA Leq, respectively. These standards are consistent with Federal Transit Administration (FTA) guidance for construction noise analysis.

#### *County of San Bernardino General Plan Noise Element*

The County of San Bernardino has adopted a general plan noise element to limit the exposure of the community to excessive noise levels. The most common sources of environmental noise in San Bernardino County are associated with roads, airports, railroad operations, and industrial activities. To address these noise sources, the following goals have been identified in the noise element:

- **N 1.** The County will abate and avoid excessive noise exposures through noise mitigation measures incorporated into the design of new noise-generating and new noise-sensitive land uses, while protecting areas within the County where the present noise environment is within acceptable limits.
- **N 1.5.** Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-truck traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.
- **N 2.** The County will strive to preserve and maintain the quiet environment of mountain, desert, and other rural areas.

#### *County of San Bernardino Noise Standards*

Title 8 of the Development Code contains the noise level limits for mobile, stationary, and construction-related noise sources. Section 83.01.080(d), Table 83-3, contains the County's mobile noise source standards. Based on these standards, there are no exterior or interior noise level standards for the industrial warehouse use of the project and existing uses in the project study area. Exterior transportation (mobile) noise level standards for residential land uses in the project study area are shown to be up to 65 dBA CNEL with mitigation.

#### *Operational Noise Standards*

Section 83.01.080(c) of the County Development Code establishes the noise level standards for stationary noise sources. For residential properties, the exterior noise level shall not exceed 55 dBA Leq during daytime hours (7:00 a.m. to 10:00 p.m.) and shall not exceed 45 dBA Leq during the nighttime hours (10:00 p.m. to 7:00 a.m.) for both the whole hour, and for not more than 30 minutes in any hour. These standards shall apply for a cumulative period of 30 minutes in any hour, and the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. Appendix 3.2 of the Noise Study (Appendix I) includes the County Code noise standards.

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### *City of Rialto General Plan Safety and Noise Element*

The safety and noise element establishes policies to guard against the creation of any new noise and land use conflicts, and to minimize the impact of existing noise sources on the community. The element does not contain specific transportation-related noise standards; however, it does provide land use compatibility guidelines for future development and the future noise contour boundaries for major roadways in Rialto. The “Rialto Noise Guidelines for Land Use Planning” matrix indicates that light industrial land uses, such as the project site, are considered normally acceptable with exterior noise levels below 70 dBA CNEL and conditionally acceptable with noise levels below 75 dBA CNEL. Noise-sensitive residential land uses are considered normally acceptable with exterior noise levels below 60 dBA CNEL and conditionally acceptable with noise levels below 65 dBA CNEL. For conditionally acceptable land uses, new development should be undertaken only after detailed analysis of noise reduction requirements.

### *City of Rialto Operational Noise Standards*

The City of Rialto Municipal Code does not identify specific stationary-source exterior noise level standards. Therefore, to evaluate potential impacts at adjacent sensitive receiver, exterior noise level thresholds are based on the County of San Bernardino Development Code.

### *City of Riverside General Plan Noise Element*

The City of Riverside adopted a noise element to identify noise conflicts and to reduce existing and potential noise impacts. The noise element contains objectives and policies to achieve and maintain noise levels compatible with various types of land uses. The “Noise/Land Use Noise Compatibility Criteria” in the noise element provides guidelines to evaluate the land use compatibility of transportation-related noise. Based on the land use noise compatibility categories, residential land use is considered normally acceptable with unmitigated exterior noise levels of less than 60 dBA CNEL and conditionally acceptable with noise levels approaching 65 dBA CNEL. Industrial land uses are considered normally acceptable with exterior noise levels approaching 70 dBA CNEL and conditionally acceptable with exterior noise level of up to 80 dBA CNEL. For conditionally acceptable land use, new construction or development should be undertaken only after a detailed analysis of noise reduction requirements, 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.

### **Vibration Standards**

To analyze vibration impacts originating from the operation and construction of the Agua Mansa Commerce Park Specific Plan, vibration-generating activities are evaluated against standards identified by the City of Jurupa Valley as a threshold of 0.2 inches per second (in/sec) peak-particle velocity (PPV) during either long-term operation or construction of the project.

### **Agua Mansa Industrial Corridor Specific Plan**

While the project is proposing to be removed from the Agua Mansa Industrial Corridor Specific Plan (AMICSP), the existing AMICSP document, prepared in July 1986, identifies development standards related to industrial uses. Page 4-16 of the AMICSP document indicates that residentially zoned property exterior noise

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level standards are 55 dBA during daytime hours and 50 dBA during nighttime hours. While the daytime standard identified in the AMICSP is lower than the daytime threshold in guidance from the City of Jurupa Valley for the purpose of this analysis, the nighttime noise level threshold identified by the City's threshold guidance of 45 dBA Leq represents a more conservative threshold during the noise-sensitive nighttime hours at sensitive residential uses. The noise study by Urban Crossroads (2019) was prepared consistent with the City of Jurupa Valley's guidance for CEQA noise thresholds of significance and evaluates project noise level compliance based on the 2018 guidance received from the City of Jurupa Valley; therefore, it does not rely on the AMICSP standards.

#### 5.11.1.3 EXISTING NOISE ENVIRONMENT

As part of Urban Crossroads' Agua Mansa Commerce Park Specific Plan Noise Impact Analysis, 24-hour noise level measurements were taken at 10 locations in the project study area. The receiver locations were selected to describe and document the existing noise environment in the project study area. Noise measurement locations are shown in Figure 5.11-1. Table 5.11-2 summarizes long-term measurements results.

**Table 5.11-2 Noise Measurements along Local Roadways**

Location	Jurisdiction	Distance to Project Boundary (feet)	Description	Energy Noise Level dBA Leq		CNEL
				Daytime	Nighttime	
L1	County of SB	1,075	Located near existing residential homes northwest of the Project site.	61.6	59.1	66.2
L2	Jurupa Valley	40	Located near existing residential homes on El Rivino Road north of the Project site.	59.6	58.8	65.5
L3	County of SB	740	Located near existing residential homes on El Rivino Road northeast of the Project site.	60.8	58.1	65.3
L4	Jurupa Valley	170	Located on Agua Mansa Road east of the Project site near existing industrial uses.	70.6	70.7	77.3
L5	Jurupa Valley	2,290	Located on Wilson Street near an existing residential home and industrial uses.	63.7	62.4	69.1
L6	Jurupa Valley	80	Located on Agua Mansa Road south of the Project site near existing industrial uses.	71.4	70.1	76.9
L7	Jurupa Valley	3,000	Located on Hall Avenue near existing residential homes south of the Project site.	64.2	60.1	67.8
L8	Jurupa Valley	2,995	Located on 24th Street near Avalon Park south of the Project site.	62.3	60.2	67.1
L9	Jurupa Valley	925	Located on Andalusia Avenue west of the Project site near existing residential homes.	50.6	49.6	56.5
L10	Jurupa Valley	240	Located on Castellano Road west of the Project site near existing residential homes.	59.2	58.7	65.4

Notes: "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.; "SB" = San Bernardino

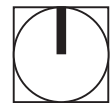


Figure 5.11-1 - Noise Measurement Locations  
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- Project Boundary
- ▲ Noise Measurement Locations

0 1,400  
Scale (Feet)



Source: Urban Crossroads, 2019

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### On-Road Vehicles

Noise from motor vehicles is generated by engine vibrations, the interaction between tires and the road, and the exhaust system. Reducing the average motor vehicle speed reduces the noise exposure of receptors adjacent to the road. Each reduction of five miles per hour reduces noise by about 1.3 dBA.

In order to assess the potential for mobile-source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the project area. Average daily traffic volumes were based on the existing daily traffic volumes provided by Urban Crossroads. The results of this modeling indicate that average noise levels along arterial segments currently range from approximately 58 dBA to 77 dBA CNEL as calculated at a distance of 50 feet from the centerline of the road. Interstate routes would have noise levels that range from 66 dBA to 82 dBA CNEL at the edge of the roadway. Noise levels for existing conditions along analyzed roadways are presented in Table 5.11-2.

### 5.11.2 Notice of Preparation / Scoping Comments

A Notice of Preparation (NOP) for the proposed project was circulated for public review on July 17, 2017. None of the comments received during the NOP comment period pertain to the topic of noise.

In addition, a scoping meeting was held on July 27, 2017, at the Jurupa Valley City Hall, 8930 Limonite Avenue, Jurupa Valley, CA 92509 to elicit comments on the scope of the DEIR. A list of attendees is provided in Appendix A; no verbal or written comments were received during the scoping meeting.

### 5.11.3 Thresholds of Significance

The City of Jurupa Valley has not established local CEQA significance thresholds as described in Section 15064.7 of the State CEQA Guidelines. Criteria for determining the significance of impacts related to noise are based on criteria in Appendix G of the CEQA Guidelines. According to Appendix G, a project would normally have a significant effect on the environment if the project would result in:

- N-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- N-2 Generation of excessive groundborne vibration or groundborne noise levels.
- N-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

#### *City of Jurupa Valley*

Chapter 11.05 of the City of Jurupa Valley Municipal Code sets stationary-source (operational) exterior noise limits for residential uses in the project study area of 55 dBA Leq for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA Leq during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. However, consistent with

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guidance received from the City of Jurupa Valley, dated December 19th, 2018, this the noise study was prepared to evaluate potential impacts based on 65 dBA Leq daytime (7:00 a.m. to 10:00 p.m.), and 45 dBA Leq nighttime (10:00 p.m. to 7:00 a.m.) exterior noise level standards. The City of Jurupa Valley noise-related CEQA thresholds guidance is provided in Appendix 3.1 of the Noise Study (Appendix I).

#### Construction Thresholds

Based on the Federal Transit Administration (FTA 2018), Transit Noise and Vibration Impact Assessment Manual, construction noise is not to exceed 80 dBA Leq daytime (7:00 a.m. to 10:00 p.m.) and 70 dBA Leq nighttime (10:00 p.m. to 7:00 a.m.)

#### Transportation Noise Thresholds

Based on guidance dated December 19, 2018, provided by the City of Jurupa Valley, the following significance criteria is used to assess potential off-site traffic noise impacts at noise-sensitive uses:

- When the Project creates a noise increase of 3 dBA CNEL or greater at existing noise-sensitive land uses when increasing the without Project off-site traffic noise level to 65 dBA CNEL or above.
- When the Project creates a noise increase of 3 dBA CNEL or greater at existing and future commercial uses when increasing the without Project off-site traffic noise level to 70 dBA CNEL or above.

#### Stationary Thresholds

##### *Stationary Noise Standards*

For the purpose of this Noise Impact Analysis a threshold must be determined to evaluate the operational noise level increases related to the Project. As such, the criteria previously discussed and provided by the City of Jurupa Valley for off-site traffic noise is used with the equivalent noise level metrics to describe stationary-source noise levels at nearby sensitive uses and commercial uses, as follows:

- When the Project creates a 3 dBA Leq or greater operational (stationary-source) noise level increase at existing and future noise-sensitive land uses or commercial uses, increasing the noise level to 65 dBA Leq or above (City of Jurupa Valley guidance received December 19, 2018).

##### *City of Rialto*

The City of Rialto Municipal Code does not identify specific stationary-source exterior noise level standards. Therefore, to evaluate potential impacts at adjacent sensitive receiver locations per CEQA Guidelines, in Rialto, exterior noise level thresholds are identified based on the County of San Bernardino Development Code.

##### *County of San Bernardino*

The County of San Bernardino County Code, Title 8 Development Code, Section 83.01.080(c) establishes the noise level standards for stationary noise sources. For residential properties the exterior noise level shall not exceed 55 dBA Leq during daytime hours (7:00 a.m. to 10:00 p.m.) and shall not exceed 45 dBA Leq during the

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nighttime hours (10:00 p.m. to 7:00 a.m.) for both the whole hour, and for not more than 30 minutes in any hour. These standards shall apply for a cumulative period of 30 minutes in any hour, and the standard plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour, or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or the standard plus 20 dBA for any period of time. Appendix 3.2 of the Noise Study (Appendix I) includes the County Code noise standards.

### Vibration Thresholds

Per the FTA criteria, the threshold for architectural damage for buildings with reinforced concrete, steel, or timber (i.e., concrete industrial buildings) is 0.5 in/sec PPV, and for buildings with non-engineered timber and masonry (i.e., residential buildings), the criterion is 0.2 in/sec PPV.

## 5.11.4 Applicable Policies and Design Features

### 5.11.4.1 PLANS, POLICIES, AND PROGRAMS

There are no plans, policies, or programs specific to noise. Applicable requirements are detailed under Regulatory Framework.

### 5.11.4.2 PROJECT DESIGN FEATURE

There are no applicable project design features related to noise.

## 5.11.5 Environmental Impacts

<b>Impact N-1</b>	<b>Threshold: Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</b>
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### Construction Noise Levels

Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. Construction typically occurs in numerous stages. Construction stages for this project are: demolition, site preparation, grading, building construction, paving, and architectural coating.

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads (see Appendix I) to describe the typical construction activity noise levels for each stage of project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 80 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet, and to 68 dBA at 200



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feet. The construction stages used in this analysis are consistent with the air quality impact analysis prepared for the project by Urban Crossroads (see Section 5.2, *Air Quality*, of this DEIR).

The project construction noise level impacts at the nearby sensitive receiver locations as shown on Figure 5.11-2, were calculated using the reference construction equipment noise levels. Table 5.11-3 provides a summary of the construction noise levels by stage at the nearby noise-sensitive receiver locations, and Table 5.11-4 provides a daytime and nighttime noise levels summary. Based on the stages of construction, the noise impacts associated with the proposed project are expected to create temporarily high noise levels at the nearby receiver locations. To assess the worst-case construction noise levels, this analysis shows the highest noise impacts when the equipment with the highest reference noise level is operating at the closest point from primary construction activity to each receiver location.

**Table 5.11-3 Unmitigated Construction Equipment Noise Level Summary (dBA Leq)**

Receiver Location <sup>1</sup>	Construction Noise Levels by Stage						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Construction Noise Level <sup>2</sup>
R1	62	62	62	50.6	54	49.9	62
R2	69	69	69	57.6	61	56.9	69
R3	62.8	62.8	62.8	51.4	54.8	50.7	62.8
R4	57.6	57.6	57.6	46.2	49.6	45.5	57.6
R5	46.3	46.3	46.3	34.9	38.4	34.2	46.3
R6	43.8	43.8	43.8	32.4	35.8	31.7	43.8
R7	46.6	46.6	46.6	35.2	38.6	34.5	46.6
R8	54.3	54.3	54.3	42.9	46.3	42.2	54.3
R9	58.2	58.2	58.2	46.8	50.3	46.1	58.2
R10	70.2	70.2	70.2	58.8	62.2	58.1	70.2

<sup>1</sup> Noise receiver locations are shown on Figure 5.11-2.

<sup>2</sup> Estimated construction noise levels during peak operation conditions.

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**Table 5.11-4 Unmitigated Daytime and Nighttime Construction Equipment Noise Level Summary (dBA L<sub>eq</sub>)**

Receiver Location <sup>1</sup>	Construction Noise Levels by Stage	
	Highest Daytime Construction Noise Levels	Nighttime Construction Noise Levels (Concrete Pours)
R1	62	54
R2	69	61
R3	62.8	54.8
R4	57.6	49.6
R5	46.3	38.4
R6	43.8	35.8
R7	46.6	38.6
R8	54.3	46.3
R9	58.2	50.3
R10	70.2	62.2

<sup>1</sup> Noise receiver locations are shown in Figure 5.11-2.

The highest construction noise levels at the potentially impacted receiver locations will satisfy the City of Jurupa Valley 80 dBA Leq daytime and 70 dBA Leq nighttime thresholds during temporary project construction activities. The noise impact due to unmitigated project construction noise levels is, therefore, less than significant.

### Operational Stationary Noise

To analyze noise impacts originating from a designated fixed location or private property such as the proposed project site, stationary-source (operational) noise—such as the expected roof-top air conditioning units, idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, and parking lot vehicle movements—is typically evaluated against standards established under a city’s municipal code. Although the project site is in the City of Jurupa Valley, sensitive receivers are also located in the adjacent jurisdiction of the County of San Bernardino (north). Therefore, to accurately describe the potential operational (stationary-source) noise levels, this analysis presents the appropriate operational (stationary source) noise standards for each of the noise-sensitive receiver locations within their respective jurisdictions.

To estimate the project operational (stationary-source) noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed project. Projected noise levels assume the worst-case noise environment—with the roof-top air conditioning units, idling trucks, delivery truck activities, backup alarms, loading and unloading, parking lot vehicle movements, and regional park activities all operating simultaneously. These noise level impacts will likely vary throughout the day. Reference noise level measurements can be found in Appendix I. Project plus ambient noise levels are predicted to remain below 65 dBA Leq, and the project daytime operational (stationary-source)

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noise level increase of up to 0.3 dBA Leq and nighttime operational (stationary-source) noise level increase of up to 0.3 dBA Leq are below the 3 dBA Leq threshold, therefore resulting in a less than significant impact.

#### Traffic Noise

To assess the off-site transportation CNEL noise level impacts associated with the proposed project, noise contours were developed based on the traffic analysis in DEIR Appendix K. Noise contour boundaries represent equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for both development scenarios as described in Chapter 3, *Project Description*:

- **Alternative 1.** 200,000 square feet (SF) business park, no retails, up to 64,000 SF research and development, and 70.9 acre open space area.
- **Alternative 2.** 150,000 SF business park, 25,000 SF retail, up to 64,000 SF research and development, and 70.9 acre open space area.

Each of these alternatives were also evaluated with an optional circulation plan (noted as 1A and 2A). Under the optional circulation plan, connectivity between Buildings 1 through 5 (Industrial Park) and Rubidoux Boulevard would not be possible. This is in the event that access across the railroad spur line is not granted. Trip distribution for the project would then be altered slightly relative to the proposed plan.

The developed noise contours represent the following scenarios:

- Existing Without / With Alternative 1 / With Alternative 1A / With Alternative 2 / With Alternative 2A:
  - This scenario refers to the existing noise conditions, without and with the proposed project.
- Opening Year 2020 Without / With Alternative 1 / With Alternative 1A / With Alternative 2 / With Alternative 2A:
  - This scenario refers to the background noise conditions in Year 2020 without and with the proposed project plus ambient growth. This scenario corresponds to Year 2020 conditions and includes all cumulative projects identified in the traffic impact analysis.
- Year 2035 Without / With Alternative 1 / With Alternative 1A / With Alternative 2 / With Alternative 2A:
  - This scenario below refers to the background noise conditions at future Year 2035 without and with the proposed Project plus ambient growth. This scenario corresponds to Year 2035 conditions and includes all cumulative projects identified in the traffic impact analysis.

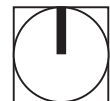


Figure 5.11-2 - Sensitive Receiver Locations  
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- Project Boundary
- Receiver Locations
- Distance from Receiver to Project Site Boundary (in feet)

0 1,400  
Scale (Feet)



Source: Urban Crossroads, 2019

PlaceWorks

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### *Existing Plus Project Traffic Noise*

The Existing plus Project traffic noise levels have been analyzed, but this scenario would not actually occur since the project would not be fully constructed and operational until Opening Year 2020. The Existing without Project exterior noise levels are expected to range from 68.2 to 79.5 dBA CNEL along roadway study segments, without accounting for any noise attenuation features such as noise barriers or topography (see Table 7-1 of Appendix I).

The traffic noise level increase due to the project over existing conditions would be the same for each alternative development scenario (1, 1A, 2, and 2A). The existing plus project noise level would

would range from 68.6 to 79.9 dBA CNEL. The project-related noise level increase would range from 0.0 to 3.1 dBA CNEL.

### *Opening Year 2020 Project Traffic Noise Level Contributions*

The Opening Year 2020 without Project exterior noise levels are expected to range from 69.4 to 80.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography.

### *Opening Year 2020 with Project Alternative 1 Off-Site Traffic Noise Level Increase*

Opening Year 2020 with Project Alternative 1 conditions will range from 69.7 to 80.6 dBA CNEL. Project Alternative 1 off-site traffic noise level increases will range from 0.0 to 2.3 dBA CNEL. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would experience a less than significant impact.

### *Opening Year 2020 With Project Alternative 1A Off-Site Traffic Noise Level Increases*

Opening Year 2020 with Project Alternative 1A conditions will range from 69.7 to 80.6 dBA CNEL. Project Alternative 1A off-site traffic noise level increases will range from 0.0 to 3.2 dBA CNEL. The 3.2 dBA CNEL increase is at a non-sensitive land use. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would experience a less than significant impact.

### *Opening Year 2020 With Project Alternative 2 Off-Site Traffic Noise Level Increases*

Opening Year 2020 with Project Alternative 2 conditions will range from 69.7 to 80.5 dBA CNEL. Project Alternative 2 off-site traffic noise level increases will range from 0.0 to 2.3 dBA CNEL. Based on the significance criteria the land uses adjacent to the study-area roadway segments would experience a less than significant impact.

### *Opening Year 2020 With Project Alternative 2A Off-Site Traffic Noise Level Increases*

Project Alternative 2A conditions will range from 69.7 to 80.5 dBA CNEL. Project Alternative 2A off-site traffic noise level increases will range from 0.0 to 3.5 dBA CNEL. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would experience a less than significant impact.

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#### *Opening Year 2035 Project Traffic Noise Level Contributions*

##### *Year 2035 With Project Alternative 1 Off-Site Traffic Noise Level Increase*

Year 2035 with Project Alternative 1 conditions will range from 69.7 to 81.1 dBA CNEL. Project Alternative 1 off-site traffic noise level increases will range from 0.0 to 2.2 dBA CNEL. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would result in a less than significant impact.

##### *Year 2035 With Project Alternative 1A Off-Site Traffic Noise Level Increases*

Year 2035 with Project Alternative 1A conditions will range from 69.7 to 81.1 dBA CNEL. Project Alternative 1A off-site traffic noise level increases will range from 0.0 to 3.0 dBA CNEL. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would result in a less than significant impact.

##### *Year 2035 With Project Alternative 2 Off-Site Traffic Noise Level Increases*

Year 2035 with Project Alternative 2 conditions will range from 69.7 to 81.1 dBA CNEL. Project Alternative 2 off-site traffic noise level increases will range from 0.0 to 2.1 dBA CNEL. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would result in a less than significant impact.

##### *Year 2035 With Project Alternative 2A Off-Site Traffic Noise Level Increases*

Year 2035 with Project Alternative 2A conditions will range from 69.7 to 81.1 dBA CNEL. Project Alternative 2A off-site traffic noise level increases will range from 0.0 to 3.2 dBA CNEL. Based on the significance criteria, the land uses adjacent to the study-area roadway segments would result in a less than significant impact.

***Level of Significance before Mitigation:*** Less than significant.

<b>Impact N-2</b>	<b>Threshold: Would the project generate excessive groundborne vibration or groundborne noise levels?</b>
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This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, ground-borne vibration from vehicular traffic is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 5.11-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts, the FTA provides the following equation:  $PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$



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**Table 5.11-5 Normally Compatible Community Vibration Levels**

Equipment	PPV (in/sec) at 25 feet
Small Bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large Bulldozer	0.089
Vibratory Roller	0.21

Source: Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, September 2018.

### Operational Vibration

To assess the potential vibration impacts from truck haul trips associated with operational activities, the City of Jurupa Valley threshold for vibration of 0.2 in/sec PPV is used. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for the Agua Mansa Commerce Park Specific Plan heavy truck activity at normal traffic speeds will approach 0.004 in/sec PPV and 0.003 in/sec RMS at 25 feet based on the FTA's Transit Noise Impact and Vibration Assessment (2018). Trucks on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby homes would not exceed the 0.2 in/sec PPV threshold, and therefore, would result in a less than significant impact.

**Level of Significance before Mitigation:** Less than significant.

<b>Impact N-3</b>	<b>Threshold: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?</b>
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The closest airports to the project site are Flabob Airport and Riverside Municipal Airport approximately 3 and 6.5 miles southwest of the site, respectively. Given the distance, the project site is not located within the airport land use plan of either Flabob or Riverside Municipal Airports.

**Level of Significance before Mitigation:** Impact N-3 will cause no impact.

### 5.11.6 Cumulative Impacts

If the construction of the project were to overlap with related projects in the project site vicinity, noise could combine to result in significant cumulative impacts. However, the closest planned and approved construction project (Market Street Commercial) is over 4,000 feet from the project. At this distance, cumulative impacts would be no greater than those described in Impact N-1. Therefore, the project would not contribute to a significant cumulative noise impact from construction noise.

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A significant cumulative traffic noise increase would be identified if project traffic were calculated to contribute 3 dBA or more under Year 2035 With Project conditions to a significant traffic noise increase over Year 2035 Without Project conditions. As shown in the noise impact analysis in Appendix I, cumulative traffic noise increase is projected to be:

- Year 2035 With Project Alternative 1
  - 2.2 dBA CNEL increase at nearest sensitive land use.
- Year 2035 With Project Alternative 1A
  - 3.0 dBA CNEL increase, however that is at a nonsensitive land use.
  - A 2.2 dBA CNEL increase at nearest sensitive land use.
- Year 2035 With Project Alternative 2
  - 2.1 dBA CNEL increase at nearest sensitive land use.
- Year 2035 With Project Alternative 2A
  - 3.2 dBA CNEL, however that is at a nonsensitive land use.
  - A 2.2 dBA CNEL increase at nearest sensitive land use.

None of the cumulative alternative scenarios result in a 3 dB or more increase at the nearest sensitive land uses; therefore this impact would be less than significant.

#### 5.11.7 Level of Significance Before Mitigation

Impact N-3 will cause no impact.

Upon implementation of regulatory requirements, the following impacts would be less than significant: N-1, and N-2

#### 5.11.8 Mitigation Measures

No mitigation is required.

#### 5.11.9 Level of Significance After Mitigation

All impacts would be less than significant.

#### 5.11.10 References

Urban Crossroads. 2019, January 28. Agua Mansa Commerce Park Specific Plan Noise Impact Analysis City of Jurupa Valley.