2.5 Noise

An acoustical impact analysis was prepared to determine the potential for short- and long-term noise impacts as a result of Project implementation. The report, titled, "Questhaven Residential Neighborhood Noise Impact Analysis" (herein, "NIA"), dated April 3, 2024, was prepared by Urban Crossroads, Inc. (herein, "Urban Crossroads"), and is provided as *Appendix K* to this EIR (Urban Crossroads, 2024). An NOP for the Project was released for public review on September 1, 2022 and an EIR Scoping Meeting was held on September 20, 2022. One comment letter related to noise was received. The San Dieguito Planning Group (received September 30, 2022) requested that the EIR address mitigation measures for noise pollution created by the Project.

2.5.1 Existing Conditions

2.5.1.1 Noise Definitions

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to 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 which are audible to the human ear. Figure 2.4-1, *Typical Noise Levels*, presents a summary of the typical noise levels and their subjective loudness and effects. (Urban Crossroads, 2024, p. 7)

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort. Another important aspect of noise is the duration of the sound and the way it is described and distributed in time. (Urban Crossroads, 2024, p. 7)

Environmental noise descriptors generally are based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the "average" noise levels within the environment. (Urban Crossroads, 2024, p. 7)

Peak hour or average noise levels, while useful, do not completely describe a given noise environment, however. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over

24 hours. The time-of-day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA Leq sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The County of San Diego relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources. (Urban Crossroads, 2024, p. 8)

2.5.1.2 Existing Noise Conditions

Existing Noise Setting

The Project site is located within unincorporated San Diego County, while the properties to the north, east and west generally are located in the City of San Marcos. The undeveloped parcel located adjacent to the northwest is also within the unincorporated county. All off-site noise sensitive land uses (NSLUs) assessed herein consist of residential uses located within the City of San Marcos, other than a sports facility, Loma San Marcos, located adjacent to and east of the Project site. (Urban Crossroads, 2024, p. 6)

To the west of the Project site is open space associated with the Rancho La Costa Habitat Conservation Area, beyond which is existing residential development. North of the Project site is land designated for open space, beyond which are existing residential uses. East of the Project site is a former recycling facility that is currently used as an indoor sports complex known as Loma San Marcos. To the south of the Project site is open space associated with the Rancho La Costa Habitat Conservation Area. The Project site is adjacent to the San Elijo Hills development in the City of San Marcos and is within the City's Sphere of Influence. (Urban Crossroads, 2024, p. 6)

Existing Noise Levels

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Figure 2.4-2, *Project Site and Noise Level Measurement Locations*, provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. in January 2021. Refer to subsection 1.2.3 of the Project's Noise Impact Analysis (NIA) (*Appendix K*) for a description of the methodology used for collecting existing noise level measurements. (Urban Crossroads, 2024, p. 13)

The noise measurements presented below focus on the average or equivalent sound levels (Leq). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 2.4-1, *24-Hour Ambient Noise Level Measurements*, identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Table 2.4-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 1.2 to the Project's NIA (*Appendix K*) provides summary worksheets of the noise levels for each hour as well as the minimum, maximum,

L1, L2, L5, L8, L25, L50, L90, L95, and L99 percentile noise levels observed during the daytime and nighttime periods. The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with surface streets in addition to background residential land use activities. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations. (Urban Crossroads, 2024, pp. 13, 15)

2.5.1.3 Regulatory Setting

California Code of Regulations

Title 24 of the California Code of Regulations requires that residential structures, except detached single-family dwellings, be designed to prevent the intrusion of exterior noise so that the interior CNEL with windows closed, attributable to exterior sources, shall not exceed 45 dBA in any habitable room.

San Diego County General Plan

The following Goal and Policies of the County General Plan Noise Element are relevant to the Project:

GOAL N-2

Protection of Noise Sensitive Uses. A noise environment that minimizes exposure of noise sensitive land uses to excessive, unsafe, or otherwise disruptive noise levels.

Policies

N-2.1 Development Impacts to Noise Sensitive Land Uses. Require an acoustical study to identify inappropriate noise level where development may directly result in any existing or future noise sensitive land uses being subject to noise levels equal to or greater than 60 dBA CNEL and require mitigation for sensitive uses in compliance with the noise standards listed in San Diego County General Plan Table N-2.

N-2.2 Balconies and Patios. Assure that in developments where the exterior noise level on patios or balconies for multi-family residences or mixed-use developments exceed 65 dBA CNEL, a solid noise barrier is incorporated into the building design of the balconies and patios while still maintaining the openness of the patio or balcony.

For all projects except single-family detached dwellings, exterior noise is defined as “noise measured at all exterior areas that are provided for group or private usable open space purposes.” For single-family projects, exterior noise is defined as “noise measured at an outdoor living area that adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

- Net lot area up to 4,000 square feet: 400 square feet
- Net lot area 4,000 square feet to 10 acres: 10 percent of net lot area
- Net lot area more than 10 acres: 1 acre

County of San Diego Noise Ordinance

The County Noise Ordinance, Section 36.404, sets limits on the noise levels generated from one property to another, such as from mechanical equipment. Section 36.410 of the Noise Ordinance also regulates noise generated by construction activities.

Section 36.404. Sound Level Limits

Unless a variance has been applied for by an applicant and granted by the County, it is unlawful for a person to cause or allow noise generated on a particular property to exceed the 1-hour average sound level set forth in Section 36.404 and shown herein as Table 2.4-2, *County of San Diego Noise Ordinance Sound Level Limits*. The noise level limits vary with the zoning of the properties concerned. The Project site is currently zoned Rural Residential (RR) and Open Space (S80). Adjacent properties are zoned S80, Agriculture (A72), and Limited Control (S87).

Section 36.408. Hours of Operation of Construction Equipment

Except for emergency work, it is unlawful for any person to operate or cause to be operated, construction equipment:

a. Between 7 p.m. and 7 a.m.

b. On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in Ordinance sections 36.409 and 36.410.

Section 36.409. Sound Level Limitations on Construction Equipment

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

Section 36.410. Sound Level Limitations on Impulsive Noise

In addition to the general limitations on sound levels in section 36.404 and the limitations on construction equipment in section 36.409, the following additional sound level limitations apply:

a. Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in County of San Diego Noise Ordinance Table 36.410A, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described

in subsection (c) of County of San Diego Noise Ordinance section 36.409. The maximum sound level depends on the use being made of the occupied property. The uses in County of San Diego NoiseOrdinance Table 36.410A are as described in the County Zoning Ordinance.

City of San Marcos General Plan

The Noise Element of the City of San Marcos General Plan contains applicable noise/land use compatibility guidelines, which are shown in Table 2.4-3, *City of San Marcos Noise and Land Use Compatibility Guidelines for Transportation-Related Noise*. Policies from the City's General Plan and that are relevant to the Project's potential noise impacts include the following:

N-1.1 Address the potential for excessive noise levels when making land use planning decisions in accordance with Table 7-3 Land Use Compatibility Noise Standards.

N-1.2: Ensure that acceptable noise levels are maintained near noise-sensitive uses.

N-1.4: Require new development projects to provide barriers to reduce noise levels, or provide sufficient spatial buffers to separate excessive noise generating land uses and noise-sensitive land uses.

N-1.5: Require an acoustical study for proposed developments in areas where the existing and projected noise level exceeds or would exceed the Normally Acceptable levels identified in Table 2.4-3.

N-2.2: Promote coordinated site planning and traffic control measures that reduce traffic noise on noise-sensitive land uses.

N-2.3: Advocate the use of alternative transportation modes such as walking, bicycling, mass transit, and non-combustible engine vehicles to reduce traffic noise.

N-2.5: Examine the applicability and noise reduction capabilities of cost effective alternative roadway surfaces, such as rubberized asphalt.

N-3.1: When adjacent to noise sensitive receptors, require developers and contractors to employ noise reduction techniques during construction and maintenance operations.

N-3.2: Limit the hours of construction and maintenance operations located adjacent to noise-sensitive land uses.

According to Table 2.4-3, for single-family residential uses, noise levels that are below 60 dBA CNEL are considered "acceptable", noise levels between 60 and 75 dBA CNEL are considered "conditionally acceptable", and noise levels that exceed 75 dBA CNEL are considered "unacceptable".

For multifamily residential uses, passive recreational areas, open space areas, and active recreational areas, noise levels below 65 dBA CNEL are considered "acceptable", noise levels between 65 and 75 dBA CNEL are considered "conditionally acceptable", and noise levels exceeding 75 dBA CNEL are considered "unacceptable".

City of San Marcos Noise Ordinance

The City's existing Noise Ordinance (Chapter 10.24 of the San Marcos Municipal Code, Ordinance No. 2008-1300) prohibits loud, annoying, or unnecessary noises. It provides definition for and examples of prohibited noise sources but does not establish numeric noise thresholds for transportation related (e.g., vehicle, railroad, aircraft traffic) or non-transportation related (e.g., air conditioner units, loading docks, construction) noise sources. Section 10.24.020 of the City's noise ordinance limits construction activities to Monday through Friday before 7:00 a.m. and after 6:00 p.m., or on Saturdays before 8:00 a.m. or after 5:00 p.m.

County Fire Code

The San Diego County Fire Code, Section 96.1.5607.16 addresses explosives, including blasting activities during grading. Blasting activities are only allowed to be conducted by persons who have a valid permit to conduct such activities, who have been approved by the Sheriff to conduct blasting operations and who have been placed on the list of approved blasters. A permit to blast in a specific location must be issued by the County Sheriff pursuant to Fire Code Section 105.6.15. According to Fire Code Section 5607.16.3.2, the Sheriff may impose written conditions and procedures as are deemed reasonably necessary to protect the public health and safety based upon the facts and circumstances of a particular blasting operation. Blasting is only allowed Monday through Saturday, between the hours of 7:00 a.m. and 6:00 p.m. or ½ hour before sunset, whichever occurs first. Prior to blasting activities, the property owner is required to provide a one-time notice in writing, to the local fire agency and dispatch center and to all residences, including mobile homes, and businesses within 600 feet of any potential major blast location or 300 feet from any potential minor blast location. The notice shall be given not less than 24 hours, but not more than one week, before a blasting operation and shall be in a form approved by the Sherriff.

Also, the blaster is required to retain an inspector to inspect all buildings and structures, including mobile homes, within 300 feet of the blast site before blasting operations, unless inspection is waived by the owner and/or occupant. The inspector is required to complete and sign pre-blast- inspection reports identifying all findings and inspection waivers. Following the blasting activity, the inspector is required to conduct a post-blast- inspection of any building and structure for which a written complaint alleging blast damage has been received. A written report of the inspection if required to be immediately filed with the Sherriff. (County, 2023a)

2.5.2 Analysis of Project Effects and Determinations as to Significance

2.5.2.1 Noise Sensitive Land Uses Affected by Airborne Noise

Noise generated as a result of the proposed Project would affect noise sensitive land uses located both within the County of San Diego and the City of San Marcos. However, as noted above, the City of San

Marcos Noise Ordinance does not establish numeric noise thresholds for transportation related (e.g., vehicle, railroad, aircraft traffic) or non-transportation related (e.g., air conditioner units, construction activities, etc.) noise sources. Although the City of San Marcos General Plan identifies land use compatibility guidelines, as shown in Table 2.4-3, the City's General Plan does not identify the level of noise increases that would be considered significant. Accordingly, for the analysis of potential noise impacts to existing land uses within the City of San Marcos, the analysis herein relies on the noise level increase criteria identified by the County of San Diego's Guidelines for Determining Significance and Report and Content Requirements for Noise, approved by the County Department of Planning and Land Use (DPLU) and Department of Public Works (DPW) on January 27, 2009.

Guidelines for the Determination of Significance

The Project would have a significant adverse noise effect if any of the following would occur as a result of a Project-related component:

(1) Project implementation would results in the exposure of any on- or off-site, existing or reasonably foreseeable, future Noise-Sensitive Land Use (NSLU) to exterior or interior noise (including noise generated from the Project, together with noise from roads, railroads, airports, heliports, or all other noise sources) in excess of any of the following:

A. Exterior Locations:

i. 60 dB (CNEL)[1]; or
ii. An increase of 10 dB (CNEL) over pre-existing noise.

In the case of single-family residential detached noise sensitive land use (NSLU), exterior noise shall be measured at an outdoor living area that adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

1) Net lot area up to 4,000 square feet: 400 square feet
2) Net lot area greater than 4,000 square feet and up to 10 acres: 10 percent of net lot area
3) Net lot area over 10 acres; 1 acre

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

i. 45 dB (CNEL) except for the following cases:

[1] For residential land uses that would be exposed to noise levels above 60 dB CNEL, any Project-related "barely perceptible" increase of 3 dB CNEL or greater would be considered a significant impact.

1) Rooms that are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior 1-hour average sound level due to noise outside should not exceed 50 decibels (A); and
2) Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

Guideline Source

The significance thresholds are based on the County of San Diego's "Guidelines for Determining Significance, Noise" (January 27, 2009).

Analysis

Noise Effects due to Long-Term Operation (Non-Vehicular)

As a proposed residential community, long-term operational noise associated with the Project would consist of typical noise associated with residential communities. Other than noise from vehicles, the Project's long-term operations only would have the potential to result in significant noise impacts related to the operation of mechanical Heating, Ventilation, and Air Conditioning (HVAC) equipment on homes. HVAC equipment associated with single-family residential uses is often ground mounted in the rear or side yard. The noise sources are primarily the fans and compressors associated with the condenser units. (Urban Crossroads, 2024, p. 41)

Noise levels from HVAC equipment can vary substantially depending on unit efficiency, size, and location. Based on the Project location climate zone, a typical 2,500 to 3,000 square foot residence typically requires 5 tons of HVAC per unit. Based on review of several manufactures (Carrier, Trane, and Rheem) conducted by Urban Crossroads, sound level specifications for 5-ton units, generally range from 44 to 45 dBA Leq at a distance of 50 feet. Based on the typical operating conditions for properly sized HVAC units, an HVAC is reasonably expected to for an average of 40 minutes per hour during the daytime hours, and 15 minutes per hour during the nighttime hours. These operating times would lower HVAC noise levels by approximately 2 dB and 6 dB during the day and nighttime hours, respectively. Accounting for typical attenuation rates of 6 dB per doubling of distance, noise levels attributed to unshielded HVAC mechanical systems could exceed the County property line noise limit (50 dBA Leq) within 35 feet of the source depending on the operation schedule. At this time, no plans are available that show the location of the proposed structures or HVAC locations in relation to property lines. If the HVAC units must be located closer than 35 feet from any property line, a 5.5-foot-high barrier blocking the line to receivers would reduce noise levels by 10 dB, thus allowing HVAC units within 5 feet of property lines. Therefore, prior to mitigation, the Project's impacts due to noise from HVAC equipment would be potentially significant prior to mitigation (**Significant Direct Impact N-1**). (Urban Crossroads, 2024, pp. 41-42)

Off-Site Noise Effects from Project Vehicular Traffic

The Project would increase traffic volumes on local roadways. Noise level increases would be greatest nearest the Project site, which would represent the greatest concentration of Project-related traffic. Traffic noise primarily is a function of volume, vehicle mix, speed, and proximity. For purposes of this

evaluation, the vehicle mix, speed, and proximity are assumed to remain constant in the future. Thus, the primary factor affecting noise levels would be increased traffic volumes. Impacts were determined by comparing existing average daily traffic volumes with the existing condition plus the Project at full build-out and the Near-Term Year 2024 Cumulative Condition with and without the Project. Horizon Year impacts were determined by comparing the 2035 Horizon Year conditions with Project and without the Project to determining the Project's contribution to the future noise levels. (Urban Crossroads, 2024, p. 31)

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 2-6 to 2-11 of the Project's NIA (*Appendix K*) present a summary of the exterior traffic noise levels for each traffic condition. Appendix 2.2 to the Project's NIA includes the traffic noise level contours worksheets for each traffic condition. (Urban Crossroads, 2024, p. 31)

Existing Project Traffic Noise Level Increases

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included herein to fully analyze all the existing traffic scenarios identified in the Project's Transportation Analysis ("TA"; *Appendix L1*). This condition is provided solely for informational purposes and would not occur, since the Project will not be fully developed and occupied under Existing conditions. Table 2-7 of the Project's NIA (*Technical Appendix K*) shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels are expected to range from 65.6 to 74.4 CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 2-7 of the Project's NIA shows the Existing with Project conditions would range from 65.6 to 74.4 CNEL. Table 2.4-4, *Existing with Project Traffic Noise Level Increases*, shows that the Project off-site traffic noise level impacts would range from 0.0 to 0.2 CNEL. Based on the significance criteria for off-site traffic noise (i.e., a "barely perceptible" increase of 3 dB CNEL or more for land uses exposed to noise levels above 60 dB CNEL), land uses adjacent to the study area roadway segments would experience less-than-significant noise-level increases on receiving land uses due to the Project-related traffic under Existing plus Project conditions. (Urban Crossroads, 2024, p. 35)

Near-Term Year 2024 Cumulative Project Traffic Noise Level Increases

Table 2-9 of the Project's NIA (*Technical Appendix K*) presents the Near-Term Year 2024 Cumulative without Project conditions CNEL noise levels. The Near-Term Year 2024 Cumulative without Project exterior noise levels are expected to range from 65.9 to 74.8 CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 2-10 of the Project's NIA shows the Near-Term Year 2024 Cumulative with Project conditions would range from 66.0 to 74.8 CNEL. Table 2.4-5, *Near-Term Yar 2024 With Project Traffic Noise Increases*, shows that the Project off-site traffic noise level increases would range from 0.0 to 0.1 CNEL. Based on the significance criteria for off-site

traffic noise (i.e., a "barely perceptible" increase of 3 dB CNEL or more for land uses exposed to noise levels above 60 dB CNEL), land uses adjacent to the study area roadway segments would experience less-than-significant noise-level increases on receiving land uses due to the Project-related traffic. (Urban Crossroads, 2024, p. 35)

Horizon Year 2035 Project Traffic Noise Level Increases

Table 2-11 of the Project's NIA (*Technical Appendix K*) presents the Horizon Year 2035 without Project conditions CNEL noise levels. The Horizon Year 2035 without Project exterior noise levels are expected to range from 66.8 to 74.6 CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 2-11 of the Project's NIA shows the Horizon Year 2035 with Project conditions would range from 66.8 to 74.6 CNEL. Table 2.4-6, *Horizon Year 2035 With Project Traffic Noise Increases*, shows that the Project off-site traffic noise level increases would range from 0.0 to 0.1 CNEL. Based on the significance criteria for off-site traffic noise (i.e., a "barely perceptible" increase of 3 dB CNEL or more for land uses exposed to noise levels above 60 dB CNEL), land uses adjacent to the study area roadway segments would experience less-than-significant noise-level increases on receiving land uses due to the Project-related traffic. (Urban Crossroads, 2024, p. 35)

Vehicle Traffic Noise On-Site

Noise in Exterior Locations

Based on the exterior noise modeling, the expected future exterior noise levels were calculated. Table 2.4-7, *Exterior Ground Floor Noise Levels*, presents a summary of future exterior noise level impacts at the ground level within the Project site. Receiver locations represent anticipated exterior use areas, such as back yards. The on-site traffic noise level analysis indicates that the outdoor living areas facing, or adjacent to, San Elijo Road would experience unmitigated exterior noise levels ranging from 58.9 to 65.6 CNEL. Based on the exterior noise levels, the Project would exceed the County of San Diego 60 CNEL exterior noise standard by placing homes in a location near San Elijo Road that experiences traffic noise levels above residential standards. Accordingly, prior to mitigation, Project impacts due to the exposure of on-site dwelling units placed near San Elijo Road to exterior noise levels exceeding 60 CNEL would be significant (**Significant Direct Impact N-2**). The on-site traffic noise analysis calculations are provided in Appendix 2.1 to the Project's NIA (*Technical Appendix K*). (Urban Crossroads, 2024, p. 26)

Noise in Interior Locations

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with a "windows closed" condition. However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: [1] weather-stripped solid core exterior doors; [2] upgraded dual glazed windows; [3] mechanical ventilation/air conditioning; and [4] exterior wall/roof assembles free of cut outs or openings. (Urban Crossroads, 2024, p. 27)

Table 2.4-8, *First Floor Interior Noise Impacts (CNEL)*, shows the future unmitigated exterior noise levels at the first-floor building façades are expected to range from 57.0 to 65.6 CNEL requiring an interior noise level reduction ranging from 12 to 20.6 CNEL. Table 2.4-9, *Second Floor Interior Noise Impacts (CNEL)*, shows the future unmitigated exterior noise levels at the second-floor building façades are expected to range from 56.5 to 65.1 CNEL requiring an interior noise level reduction ranging from 11.5 to 20.1 CNEL. Therefore, a windows-closed condition requiring a means of mechanical ventilation (e.g., air conditioning) is required for Lots 1 through 13. The interior noise level analysis shows that the County of San Diego 45 CNEL interior noise standards can be satisfied using mechanical ventilation and standard windows with a minimum STC rating of 27. Notwithstanding, in the absence of a "windows closed" condition, Project impacts due to interior noise levels being above residential standards due to placing homes in close proximity to San Elijo Road would be significant requiring mitigation (**Significant Direct Impact N-3**). The on-site traffic noise inputs are provided in Appendix 2.1 to the Project's NIA (*Technical Appendix K*). (Urban Crossroads, 2024, p. 27)

Aircraft Noise

The closest airport is a private airport, the McClellan Palomar Airport, located approximately 4.75 miles northwest of the Project site. According to Exhibit II-1 (Compatibility Policy Map: Noise) of the McClellan-Palomar Airport Master Plan Update (October 2021), the Project site is located approximately 3.2 miles southeast of the 60 dB CNEL contour for the McClellan-Palomar Airport (San Diego County, 2021, Exhibit II-1). As such, due to distance, Project traffic-related noise would not combine with airport-related noise levels such that a significant impact would occur. In addition, the Project does not include any airport-related facilities, and there are no components of the proposed Project that would result in an increase in air travel such that airport-related noise levels in the local area would increase. Therefore, Project impacts due to aircraft noise would be less than significant.

2.5.2.2 Project-Generated Airborne Noise

Guidelines for the Determination of Significance

The Project would have a significant adverse effect on noise if any of the following would occur as a result of a Project-related component:

- The Project will generate airborne noise which, together with noise from all other sources, will be in excess of either of the following:

  A. Non-construction noise: The limit specified in San Diego County Code Section 36.404, General Sound Level Limits, at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise. The limits provided by Section 36.404 are summarized below in Table 2.4-10.

  B. Construction Noise: Noise generated by construction activities related to the Project will exceed the standards listed in San Diego County Code Section 36.409, Sound Level Limits on Construction Equipment, and Section 36.410, Impulsive Noise Level Limits.

C. Impulsive Noise: Noise generated by the Project will exceed the standards listed in San Diego Code Section 36.410, Sound Level Limitations on Impulsive Noise.

Guideline Source

This significance threshold is derived from the County of San Diego's "Guidelines for Determining Significance, Noise" (January 27, 2009), and the County Noise Ordinance, Section 36.404, which sets limits on the noise levels generated from one property to another.

Analysis

Short-Term Construction Noise Emission Levels

Noise generated by the Project's construction equipment would include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages: site preparation, grading, building construction, paving, and architectural coating.

Typical Construction Noise Analysis

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest NSLU locations were completed. To assess the worst-case construction noise levels, the Project construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 2.4-13, *Unmitigated Construction Equipment Noise Level Summary*, the construction noise levels are expected to range from 59.8 to 81.9 dBA Leq, and the highest construction levels are expected to range from 69.9 to 81.9 dBA Leq at the nearest property line with an occupied structure. Appendix 3.1 includes the detailed CadnaA unmitigated construction noise model inputs. (Urban Crossroads, 2024, p. 43)

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest property lines, a construction-related noise level threshold of 75 dBA Leq is used as the threshold to assess the construction noise level impacts. The construction noise analysis shows that Receiver Location R5 would exceed the 75 dBA Leq significance threshold during Project construction activities, as shown on Table 2.4-14**,** *Typical Construction Noise Level Compliance (Without Mitigation)*. Therefore, the Project's typical construction noise impacts would be significant and would require mitigation (**Significant Direct Impact N-4**). (Urban Crossroads, 2024, p. 45)

Blasting Noise Analysis

Blasting would be required for several areas within the Project site. Shallow blasting (<30 feet below existing grade) and moderate depth blasting (30–40 feet below existing grade) would occur in several areas across the site. The exact locations for blasting are not known at this time so reasonable assumptions have been made for analytical purposes. Blasting locations would be determined following geotechnical investigations regarding rock locations prior to the issuance of grading permits. (Urban Crossroads, 2024, p. 43)

Prior to blasting, small holes would be drilled into the rock in a pattern that allows each hole to remove a small amount of rock. In order to comply with the County Fire Code, the blasting contractor would calculate and use only the amount of explosive in each of the small holes necessary to break the rock around each hole while crushing the rock for removal. The explosive would be detonated at each hole in a sequence with at least 8 milliseconds delay between charges to limit the total amount of vibration generated by the explosive fire at any one time. The blasting orientation also would be controlled in such a way that fractures and the energy from each blast would move the rock towards a hole that has already been cleared, limiting the containment of the explosive, and reducing potential vibrations at nearby structures. Another factor the blasting contractor can use to limit vibrations from blasting includes timing of energy release, i.e., the delay between each charge. (Urban Crossroads, 2024, pp. 43, 45)

For blasting, it is estimated that drilling would occur in grids of 4 feet by 4 feet to 6 feet by 6 feet. The drill holes would be extended to a depth of approximately 18 to 24 inches below the proposed subgrade. Additionally, a five-foot-thick blanket of soil would be applied before drilling to reduce noise. Assuming the use of a single drill rig, it is estimated that the drilling, blasting, and excavation would be coordinated such that the duration of drilling and blasting combined would be require a few weeks to complete. Completion of excavation and stockpiling of fractured rock after the final blast may require an additional week or two. (Urban Crossroads, 2024, p. 45)

According to the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM), within the audible frequency range, a blast generates maximum noise levels on the order of 94 dB(A) Lmax. However, the total time for a blast would be a fraction of a minute and only one blasting event would occur in a given hour. Thus, hourly noise levels from blasting are calculated to be 74 dBA Leq at 50 feet. The explosive charges used in mining and mass grading are typically wholly contained in the ground with a minimum 5-foot overburden, which would further attenuate noise levels. (Urban Crossroads, 2024, pp. 17-18)

As discussed above, blasting and rock drilling are both calculated to be approximately 74 dBA Leq at 50 feet. Blast locations are unknown at this time, and blasting could be conducted anywhere within the construction activity footprint as shown on Figure 2.4-4, *On-Site Receiver Locations*. As the Project construction activity would occur less than 50 feet from the property line of Loma San Marcos, rock drilling and blasting noise levels conservatively are evaluated as a significant impact at this location for which mitigation would be required (**Significant Direct Impact N-5**). (Urban Crossroads, 2024, p. 45)

Long-Term Operational Noise Emission Levels

As previously discussed, as a proposed residential community, long-term operational noise associated with the Project would consist of typical noise associated with residential communities. The Project's long-term non-vehicular operations only would have the potential to result in significant noise impacts related to the Project's proposed mechanical HVAC equipment. HVAC equipment associated with single-family residential uses is often ground mounted in the rear or side yard. The noise sources are primarily the fans and compressors associated with the condenser units. (Urban Crossroads, 2024, p. 41)

Noise levels from HVAC equipment can vary substantially depending on unit efficiency, size, and location. Based on the Project location climate zone, a typical 2,500 to 3,000 square foot residence typically requires 5 tons of HVAC per unit. Based on review of several manufactures (Carrier, Trane, and Rheem) conducted by Urban Crossroads, sound level specifications for 5-ton units, generally range from 44 to 45 dBA Leq at a distance of 50 feet. Based on the typical operating conditions for properly sized HVAC units, an HVAC unit would operate an estimated to operate for an average of 40 minutes per hour during the daytime hours, and 15 minutes per hour during the nighttime hours. These operating times would lower HVAC noise levels by approximately 2 dB and 6 dB during the day and nighttime hours, respectively. Accounting for typical attenuation rates of 6 dB per doubling of distance, noise levels attributed to unshielded HVAC mechanical systems could exceed the County property line noise limit (50 dBA Leq) within 35 feet of the source depending on the operation schedule. At this time, no plans are available that show the location of the proposed structures or HVAC locations in relation to property lines. If the HVAC units must be located closer than 35 feet from any property line, a 5.5-foot-high barrier blocking the line to receivers would reduce noise levels by 10 dB, thus allowing HVAC units within 5 feet of property lines. Therefore, prior to mitigation, the Project's impacts due to noise from HVAC equipment would be potentially significant prior to mitigation (**Significant Direct Impact N-1**). (Urban Crossroads, 2024, pp. 41-42)

Potential Impulsive Noise Impacts

There are no significant known sources of vibration associated with Project operation, as the Project would consist of a proposed residential community. No onsite rock crushing is anticipated during the grading operations. No pile driving is anticipated during building construction. However, blasting is anticipated to be required to break up subsurface rock structures. (Urban Crossroads, 2024, p. 47)

Blasting involves drilling bore holes and placing small amounts of explosives in each hole. By limiting the amount of explosives in each hole the blasting contractor can limit the fraction of the total energy released at any single time, which can limit noise and vibration levels. Rock drilling generates impulsive noise from the striking of the hammer with the anvil within the drill body, which drives the drill bit into the rock. As previously discussed, rock drilling generates noise levels of approximately 85 dBA Lmax at 50 feet for approximately 20 percent of an hour. (Urban Crossroads, 2024, p. 47)

When explosive charges detonate in rock, almost all of the available energy from the explosion is used in breaking and displacing the rock mass. However, some blast energy escapes into the atmosphere. As previously discussed, due to the short duration of a blast, blasting is calculated to generate approximately 94 dBA Lmax at 50 feet for approximately 1 percent of an hour. (Urban Crossroads, 2024, p. 47)

Thus, the maximum noise levels from a rock drilling or blasting could exceed the County's maximum noise level threshold of 82 dBA; however, as rock drilling would only generate maximum noise levels 20 percent of an hour, and blasting would only generate maximum noise levels for 1 percent of an hour, neither activity would exceed the County impulsive threshold for 25 percent or more of an hour. Thus, based on duration, impulsive noise levels are anticipated to be below the County's impulsive noise level threshold. No impulsive noise impacts are anticipated, and no mitigation measures are required. (Urban Crossroads, 2024, pp. 47-48)

2.5.2.3 Ground-Born Vibration and Noise Impact Analysis

Guidelines for the Determination of Significance

The Project would have a significant adverse effect on noise if the following would occur as a result of a Project-related component:

(3) Project implementation would expose the uses listed in Table 2.4-15 and Table 2.4-16 to ground-borne vibration or noise levels equal to or in excess of the levels shown.

Accordingly, impacts from general construction would occur if vibration levels exceed 0.0040 in/sec RMS (0.016 in/sec PPV) at any surrounding residential structure or 0.0056 in/sec rms (0.0224 in/sec PPV) at any non-residential structure. There are no special buildings near the Project site that could be affected by Project related vibrations.

Guidelines Source

The significance threshold is based on the County of San Diego's "Guidelines for Determining Significance, Noise" (January 27, 2009).

Analysis

No operational components of the Project include significant groundborne noise or vibration sources and no significant vibrations sources currently exist, or are planned, in the Project area. Thus, no significant groundborne noise or vibration impacts would occur with the operation of the proposed Project. As such, the analysis below focuses on the Project's potential to result in groundborne noise or vibration associated with the Project's construction activities. (Urban Crossroads, 2024, p. 50)

Typical Project Construction Vibration Levels

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration (FTA). While vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. (Urban Crossroads, 2024, p. 50)

Ground vibration levels associated with various types of construction equipment are summarized on Table 2.4-17, *Vibration Source Levels for Construction Equipment*. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. The FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$. Vibration receiver locations considered in the analysis are presented on Figure 2.4-5, *Vibration Receiver Locations* (Urban Crossroads, 2024, p. 50)

Table 2.4-18, *Typical Project Construction Vibration Levels*, presents the expected Project-related typical construction activity vibration levels at each of the nearest receiver locations. At distances ranging from 123 to 1,051 feet from the Project construction activities, the transient construction vibration velocity levels are estimated to range from0.00018 to 0.00816 PPV in/sec. Based on maximum acceptable continuous vibration threshold of 0.016 PPV (in/sec) for residential structures or 0.0224 in/sec PPV for commercial buildings, the typical Project construction vibration levels would satisfy the thresholds at all the nearest receiver locations. Moreover, the impacts at the site of the closest sensitive receivers are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter. Therefore, the vibration impacts due to the typical Project construction activities would be less than significant requiring no mitigation. (Urban Crossroads, 2024, p. 51)

Blasting-Related Construction Vibration Levels

Vibration levels associated with blasting are site-specific and are dependent on the amount of explosive used, soil conditions between the blast site and the receptor, and the elevation where blasting would take place (specifically, how far below surface elevation where bedrock would be encountered). At the current stage of the proposed Project design, a blasting and monitoring plan has not been completed; thus, specifics, such as the explosive, blasting quantities, and exact locations, have not been identified. However, it can be assumed all blasting locations would be associated with non-rippable rock, and to be conservative as the non-rippable rock locations are only generally known, the entire construction area (refer to Figure 2.4-5) conservatively is evaluated as a potential blasting location. (Urban Crossroads, 2024, p. 53)

As with noise, while almost all of the available energy from an explosion is used in breaking and displacing the rock mass, a small portion of the energy is released in the form of vibration waves that radiate away from the charge location. The strength, or 'amplitude,' of the waves reduces as the distance from the charge increases. The rate of amplitude decay depends on local geological conditions but can be estimated with a reasonable degree of consistency, which allows regulatory agencies to control blasting operations by means of relationships between distance and explosive quantity. (Urban Crossroads, 2024, p. 53)

The explosive charges used in mining and mass grading are typically wholly contained in the ground and are typically covered with overburden. Based on extensive research conducted by the United States Bureau of Mines and the Office of Surface Mining, universities, and private groups, vibration standards, vibration damage criteria, seismographs standards, and techniques to predict and control blast vibrations have been developed that greatly reduce the risk of offsite impacts from blasting. These methods and techniques are incorporated into blasting and monitoring requirements of the County Fire Code. (Urban Crossroads, 2024, p. 53)

The range of vibration levels in this analysis is based on the quantity of explosive, as all other parameters were held constant. As shown in Table 2.4-19, *Blasting Vibration Based on Charge Weight and Distance*, blasting is predicted to generate vibration levels ranging exceeding 1.0 in/sec PPV, depending on charge weight, anywhere from 20 feet to 70 feet from the blast. (Urban Crossroads, 2024, p. 53)

As indicated in Table 2.4-19, vibration levels associated with blasting can be controlled through the charge weight. However, the actual resulting PPV from blasting can be further controlled and reduced through best engineering practices used by professional, licensed, blasters, including, but not limited to, orienting the progressions of the charges away from receivers, decreasing confinement of the explosive energy, increasing spatial distribution of the charges, and increasing time of energy release or detonation. The County Fire Code includes a minimum energy release time for individual charges of 8 milliseconds to limit vibrations. However, based on empirical data, even shorter delays of as little as 5 milliseconds can minimize vibration in very close blasting situations (10 to 25 feet). (Urban Crossroads, 2024, p. 54)

The proposed Project would comply with the County Fire Code and would include all feasible vibration reduction strategies, including conducting pre- and post-construction surveys of all structures within 300 feet of any blast and would monitor blasting vibrations levels. The monitoring of blasting vibrations level would be used to reduce charge weights, increase timing between charges, or other appropriate measures as required to reduce vibrations from blasting. With the implementation of these requirements, vibrations from blasting would be reduced to 1.0 in/sec PPV or less at the nearest residence, and as such, blasting-related vibration impacts during construction would be less than significant. (Urban Crossroads, 2024, p. 54)

2.5.3 Cumulative Impact Analysis

For purposes of evaluating the Project's potential to result in cumulatively-considerable noise impacts, a study area has been defined. For analysis of construction-related noise and vibration impacts, the cumulative study area includes lands within 1,000 feet of the Project site, as construction activities occurring on properties located further than 1,000 feet of the Project site would not have the potential to combine with Project-related construction noise levels such that sensitive receptors would be exposed to noise levels exceeding the County's noise level standards. Similarly, for stationary noise impacts, the cumulative study area includes lands within 1,000 feet of the Project site, as operational noise from cumulative developments located further than 1,000 feet of the Project site have no reasonable potential to combine with Project operational noise levels on site such that nearby sensitive receptors would be exposed to noise levels exceeding the County's noise standards. For the issue of traffic-related noise, the long-term analysis considers buildout of the County's General Plan land use plan and the land use plans of other jurisdictions based on the SANDAG Series 13 model. For near-term traffic-related noise, the cumulative study area includes cumulative projects that would contribute 50 or more peak hour trips to the Project's study area intersections (as listed in Table 2.4-4 through Table 2.4-6), and includes traffic from the following cumulative developments:

1. Corner @ 2 Oaks – This project is located at the southwest corner of Twins Oaks Valley Road and San Marcos Boulevard intersection. This project proposes to construct a 13,499 square foot building for office and commercial use as well as 118 multi-family dwelling units.
2. Kaiser Permanente – This project is located at 400 Craven Road. This project proposes to construct a 428,500 square foot building for medical office space and accommodate 206 hospital beds. This project would be an extension of the already existing Kaiser Permanente located at same location.

3. Brookfield Residential (multi-family) – This project is located at the southwest corner of Twin Oaks Valley Road and South Village Drive. This project proposes to develop 220 multi-family dwelling units.
4. Fenton South (Discovery Village South) – This project is located at future extension of Discovery Street. This project proposes to develop 230 single family dwelling units.
5. Mesa Rim Climbing Gym – This project is located at 285 Industrial Street. This project proposes to construct 28,000 square foot building for indoor recreation climbing gym.
6. Artis Senior Living – This project is located at the northeast corner of Rancho Santa Fe Road and San Elijo Road intersection. This project proposes to construct a congregate care facility accommodating 64 beds.
7. Block 3 Housing – This project is located at the northeast corner of June Way and Barham Drive intersection. This project proposes to develop a student housing facility accommodating 342 beds.
8. Loma San Marcos Specific Plan Phase 2 – This project is located on San Elijo Road. This project proposes to construct 213,621 SF of Movie Production space and a 6-story office building measuring 120,000 SF.

With respect to the Project's non-vehicular operational-related noise, other than Loma San Marcos, the areas surrounding the Project site primarily consist of developed residential areas and thus generate a similar level of noise as the Project would. While the Project would potentially result in direct operational noise impacts associated with the operation of HVAC units, cumulatively-considerable operational noise impacts would be less than significant because there are no substantial off-site noise generating uses that could combine with the Project's HVAC noise to exacerbate noise conditions on surrounding properties and cause the cumulative noise levels to substantially increase. (Urban Crossroads, 2024, p. 48)

Table 2.4-5 and Table 2.4-6 present the anticipated noise levels along study area roadways under near-term (2024) cumulative and horizon year (2035) conditions, respectively. As previously noted, Table 2.4-5 accounts for traffic from the list of projects provided above, while Table 2.4-6 accounts for buildout of the San Diego County General Plan and the general plans of other jurisdictions based on the SANDAG Series 13 model. As indicated in Table 2.4-5 and Table 2.4-6, the Project and other cumulative developments would not expose any nearby sensitive receptors to noise level increases exceeding 3 dB CNEL. As such, cumulatively-considerable traffic-related noise impacts would be less than significant.

Impacts associated with on-site traffic-related noise, which could potentially expose future on-site dwelling units to noise levels exceeding the County's noise level standards, are impacts on, rather than impacts from, the proposed Project. As such, cumulatively-considerable impacts associated with on-site traffic-related noise would not occur.

There are no components of the proposed Project that could cumulatively contribute to excessive airport-related noise in the local area, as the Project site is located approximately 4.75 miles southeast of the McClellan Palomar Airport, is located approximately 3.2 miles outside the 60 dB CNEL noise

contour for this facility, and the Project does not include any uses that would cause or contribute to increased airport-related noise in the local area. Cumulatively-considerable impacts would not occur.

With respect to construction- and blasting-related noise, no cumulative projects are known within 1,000 feet of Project construction. As noted above, only future development projects in the direct vicinity (1,000 feet) of the Project site could add to construction noise generated by the Project and result in a cumulative noise impact. As such, cumulatively-considerable noise impacts associated with Project construction and blasting activities would be less than significant on a cumulatively-considerable basis. (Urban Crossroads, 2024, p. 48)

There are no significant known sources of vibration associated with Project operation, as the Project would consist of a proposed residential community. No onsite rock crushing is anticipated during the grading operations. No pile driving is anticipated during building construction. Thus, cumulatively-considerable impulsive noise impacts associated with long-term operation of the Project and associated with these types of construction activities would not occur. Although the Project's grading would require blasting activities, as noted above there are no cumulative developments within 1,000 feet of the Project site and that could be under simultaneous construction. As such, cumulatively-considerable impulsive noise impacts associated with the Project's blasting activities would be less than significant.

As a proposed residential community, the Project does not include any uses that could cause or contribute to long-term operational-related groundborne noise or vibration. The analysis of Project-specific impacts presented above demonstrates that groundborne noise and vibration impacts during construction activities would be less than significant. As there are no cumulative developments located within 1,000 feet of the Project site and that could be under construction at the same time as the Project, cumulatively-considerable impacts associated with groundborne noise and vibration would be less than significant.

2.5.4 Significance of Impacts Prior to Mitigation

***Significant Direct Impact N-1*:** The operation of unshielded HVAC mechanical systems for the Project's residential homes could exceed the County property line noise limit (50 dBA Leq) within 35 feet of the source depending on the operation schedule. This represents a potentially significant direct operational noise impact.

***Significant Direct Impact N-2*:** Proposed outdoor living areas (residential yards) facing, or adjacent to, San Elijo Road would experience unmitigated exterior noise levels ranging from 58.9 to 65.6 CNEL. Because outdoor living areas would exceed the County of San Diego 60 CNEL exterior noise standard, the noise impact from vehicular noise is considered a significant direct impact.

***Significant Direct Impact N-3*:** For proposed residential homes facing, or adjacent to, San Elijo Road, unmitigated exterior noise levels at the second-floor building façades are expected to range from 56.5 to 65.1 CNEL requiring an interior noise level reduction ranging from 12 to 20.6 CNEL to meet the County's 45 CNEL standard. In the absence of a "windows closed" condition, impacts due to traffic-related interior noise levels would be significant.

***Significant Direct Impact N-4*:** During the Project's construction, maximum construction-related noise levels at the adjacent occupied land use to the east, Loma San Marcos, would exceed the 75 dBA Leq significance threshold. Therefore, the Project's short-term construction-related noise impact on Loma San Marcos would be significant.

***Significant Direct Impact N-5*:** Blasting and rock drilling activities would produce noise levels of approximately 74 dBA Leq at 50 feet. Blasting could be conducted anywhere within the construction activity footprint and because Project construction activity would occur less than 50 feet from the property line of Loma San Marcos, rock drilling and blasting noise levels conservatively are evaluated as a significant impact at this location.

2.5.5 Mitigation

M-N-1 Prior to the issuance of each residential building permit, the County shall review the proposed locations of HVAC units. For HVAC units located less than 35 feet from the nearest property line, a three-sided barrier blocking the line of sight to adjacent properties shall be required. The barrier, if required, shall have a minimum height of 5.5 feet or be 1.75 times the height of the HVAC units and shall be constructed of materials with a minimum weight of 2 pounds per square foot. The barrier shall be solid with no holes, perforations, or gaps.

M-N-2 Residential lots proposed within 400 feet of the San Elijo Road right-of-way (Lots 1 through 6 and 15 through 18 of Tentative Map 5643) shall have "noise protection easements" to mitigate vehicular noise levels from San Elijo Road. Such easements shall be shown on the final map or subsequent implementing tentative map, as applicable. The noise protection easements shall contain a restriction requiring that exterior noise levels not exceed 60 CNEL within the easement area of the lot. The restriction shall apply to the following minimum exterior use areas: 1) for lots less than 4,000 s.f. in area, the exterior area shall include 400 square feet; and 2) for lots larger than 4,000 s.f, the exterior area shall include 10 percent of the lot area. A noise study is required to be prepared and approved by the County Department of Planning and Development Services (PDS) prior to the issuance of building permits for these lots demonstrating that the residential lots within 400 feet of San Elijo Road would achieve these requirements. In the event that the noise study determines that one or more lots would not achieve the 60 CNEL noise limit within the minimum exterior use areas, the noise study shall identify noise attenuation measures that must be incorporated, such as the use of sound walls or berms, in order to achieve the exterior noise requirement of 60 CNEL within the minimum exterior use areas. The County shall require that the noise attenuation measures be installed and be verified as effective in meeting the 60 CNEL requirement by an acoustical engineer prior to the issuance of certificates of occupancy.

M-N-3 To achieve interior noise levels at or below 45 CNEL in a windows closed condition, homes located on Lots 1 through 13 shall have mechanical ventilation (e.g., air conditioning) and standard windows with a minimum Sound Transmission Class (STC)

rating of 27. The County shall verify that these features will be installed as part of the building permit plan check process.

M-N-4 Prior to the issuance of a grading or blasting permit that would permit these activities within 50 feet of the adjacent Loma San Marcos property line, a temporary noise barrier as described below or a functional equivalent as verified by a professional acoustical engineer shall be implemented to ensure that construction-related noise is maintained at or below 75 dBA Leq on the Loma San Marcos property, which occurs to the immediate east of the Project site's northeastern boundary.

a. A temporary 12-foot-high noise barrier shall be installed along the eastern property line of the Project site where it borders the Loma San Marcos facility south of the roadway during grading and blasting activities. The barrier shall be of sufficient length to block the line of sight between Loma San Marcos and the construction activities. The noise barrier shall be constructed of material with a minimum weight of 2 pounds per square foot with no gaps or perforations. The noise barrier may be constructed of, but are not limited to, 5/8-inch plywood, 5/8-inch oriented strand board, or hay bales. The noise barrier shall be installed prior to grading, rock drilling, or blasting activities within 50 feet of the eastern property line, and shall remain in place throughout the duration of grading, construction, and blasting activities on the site.

2.5.6 Conclusion

The following provides a summary of the significance of the impacts identified above under subsection 2.4.4 after incorporation of the mitigation measure identified under subsection 2.4.5.

***Less-than-Significant Direct Impact N-1 with Mitigation*:** Implementation of Mitigation Measure M-N-1 would ensure that all HVAC units on site are either located more than 35 feet from the nearest property line, or would require the construction of a physical barrier blocking the line-of-sight to receivers. The required setback of HVAC units or installation of the required barriers would ensure that stationary noise sources associated with the Project-related operational activities would be reduced to below the 50 dBA Leq property noise level limit. Accordingly, implementation of the required mitigation would reduce the Project's potential long-term operational noise impacts to less-than-significant levels.

***Less-than-Significant Direct Impact N-2 with Mitigation*:** Implementation of Mitigation Measure M-N-2 would ensure that exterior noise levels at the Project's residential lots are below the County standard of 60 CNEL. Through a performance-based measure requiring noise protection easements on lots within 400 feet of San Elijo Road and the conduct of an acoustical study(ies) to verify that the 60 CNEL requirement is met, implementation of the required mitigation would reduce the Project's impact due to placing residential lots in an area within 400 feet of San Elijo Road impacted by vehicular noise, to below a level of significance.

***Less-than-Significant Direct Impact N-3 with Mitigation*:** Implementation of Mitigation Measure M-N-3 would ensure that homes located on Lots 1 through 13 have a mechanical ventilation (e.g., air conditioning) and standard windows with a minimum STC rating of 27. Implementation of the required mitigation would ensure that interior noise levels achieve the County's interior noise standard of 45 CNEL, reducing the potential interior noise level impact to below a level of significance.

***Less-than-Significant Direct Impact N-4 with Mitigation*:** Implementation of Mitigation Measure M-N-4 would ensure that a temporary noise barrier is placed along the eastern property line that adjoins the adjacent Loma San Marcos sports complex when Project-related grading and blasting activities occur within 50 feet of the property line. As indicated in Table 2.4-20, *Typical Construction Noise Level Compliance (With Mitigation)*, with implementation of the required mitigation, Project-related construction noise would be reduced to below the threshold of significance of 75 dBA Leq at all receptor locations. Therefore, implementation of the required mitigation would reduce the Project's construction-related noise impact to less-than-significant levels.

***Less-than-Significant Direct Impact N-5 with Mitigation*:** Implementation of Mitigation Measure M-N-4 would ensure that a temporary noise barrier is placed along the eastern property line that adjoins the adjacent Loma San Marcos sports complex when Project-related grading and blasting activities occur within 50 feet of the property line. As indicated in Table 2.4-20, *Typical Construction Noise Level Compliance (With Mitigation)*, with implementation of the required mitigation, Project-related rock drilling and blasting noise would be reduced to below the threshold of significance of 75 dBA Leq. Therefore, implementation of the required mitigation would reduce the Project's rock drilling and blasting related noise impacts to less-than-significant levels.

Figure 2.5-1 Typical Noise Levels

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

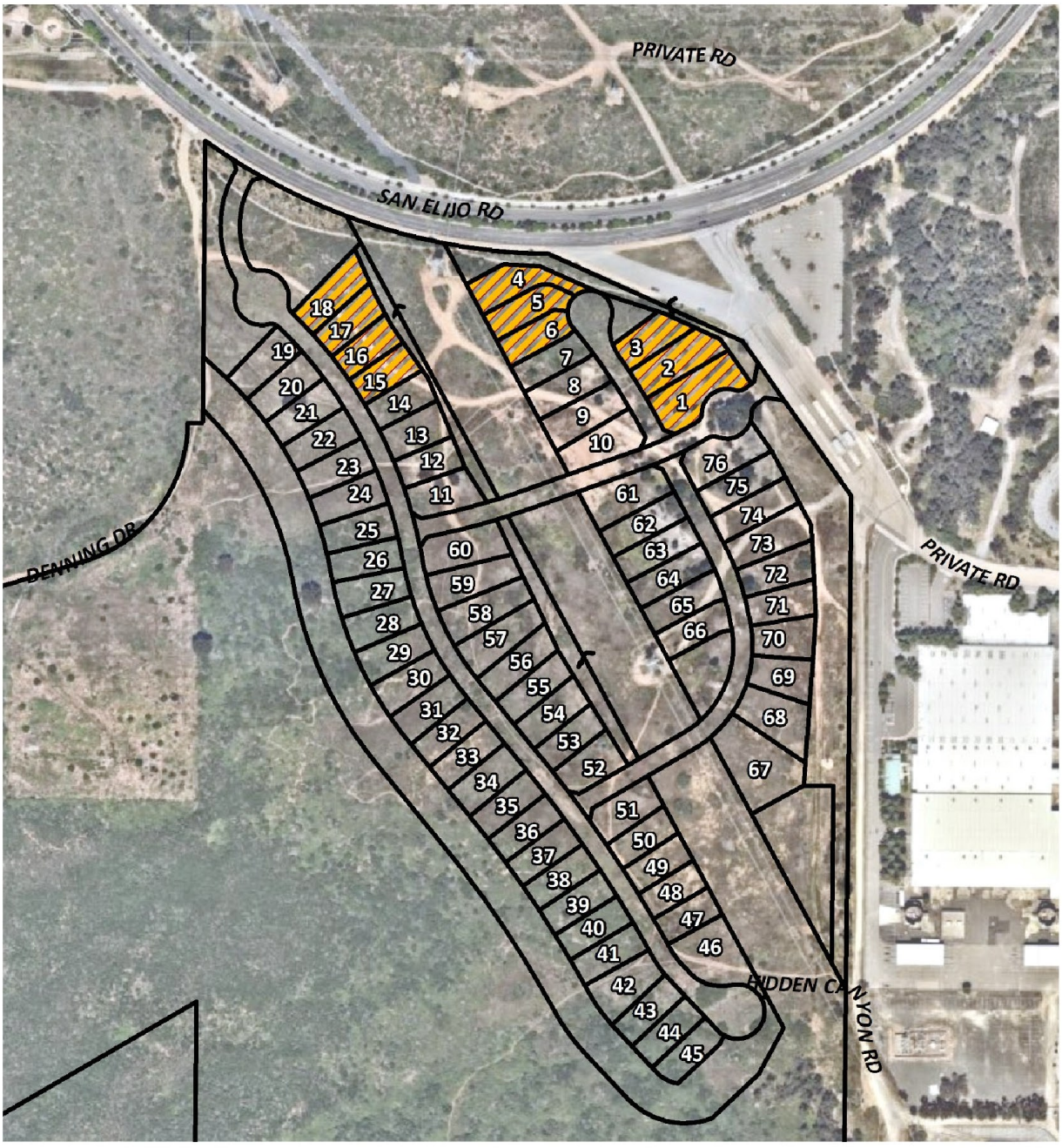
(Urban Crossroads, 2024, Exhibit 1-C)

Source(s): Urban Crossroads (08-26-2021)

Figure 2.5-2

Not to Scale

Project Site and Noise Level Measurement Locations



Source(s): Urban Crossroads (08-26-2021)

Figure 2.5-3

Not to Scale

Noise Protection Easements

Source(s): Urban Crossroads (08-26-2021)

Figure 2.5-4

Not to Scale

On-Site Noise Receiver Locations

Source(s): Urban Crossroads (08-26-2021)

Figure 2.5-5

Not to Scale

Vibration Receiver Locations

Table 2.5-1 24-Hour Ambient Noise Level Measurements

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located west of the Project site on Dove Tail Drive near existing single-family residential home at 2832 Dove Tail Drive.	44.9	42.6	49.7
L2	Located northwest of the Project site on Fallsview Road near Mahogany Park.	53.5	47.7	56.1
L3	Located on the intersection of River Crest Road and Black Walnut Drive near existing single-family residential home at 1554 Black Walnut Drive.	50.8	40.3	51.0
L4	Located northeast of the Project site on Dandelion Way near existing multi-family residential home at 1380 Dandelion Way.	53.0	49.5	56.9
L5	Located by the northeast boundary of the Project site near Play-by-Play Productions at 1601 San Elijo Road.	59.6	55.9	63.4

[1] See Exhibit 1-F for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

(Urban Crossroads, 2024, Table 1-1)

Table 2.5-2 County of San Diego Noise Ordinance Sound Level Limits

Zone	Applicable Hours	Sound Level Limit dB $L_{eq\ (1\ hour)}$
RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92, RV, and RU. Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
RRO, RC, RM, C30, S86, RV, RU and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S94, V4, and all other commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2 V1 V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
M50, M52, M54	Anytime	70
S82, M56, and M58	Anytime	75
S88 (see subsection (c) below)		

Source: County of San Diego Noise Ordinance, Section 36.404 (San Diego County, 2015).

Notes:

a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 8 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 4, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable onehour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

(f) Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line are subject to the noise level limits in this table, as measured at or beyond 6 feet from the boundary of the easement upon which the equipment is located.

Table 2.5-3 City of San Marcos Noise and Land Use Compatibility Guidelines for Transportation-Related Noise

Land Use Category		Exterior Noise Level (CNEL)					
		55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior/age-restricted housing						
B	Residential—multifamily residences, mixed use (residential/commercial)						
C	Lodging—hotels, motels						
D[2]	Schools, churches, hospitals, residential care facility, child care facilities						
E[2]	Passive recreational parks, nature preserves, contemplative spaces, cemeteries						
F[2]	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation						
G[2]	Office/professional, government, medical/dental, commercial, retail, laboratories						
H[2]	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair						

Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved

Conditionally Acceptable - New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table 7-4, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate County decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.

Unacceptable - New construction or development shall not be undertaken.

(San Marcos, 2012, Table 7-3)

Table 2.5-4 Existing with Project Traffic Noise Level Increases

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Incremental Noise Level Increase Threshold	
			E	EP	Increase		Limit (dBA)	Exceeded?
1	Rancho Santa Fe Road	Melrose Drive to San Elijo Road	73.0	73.0	0.0	Yes	3	No
2	Rancho Santa Fe Road	San Elijo Road to Avenida Soledad	74.4	74.4	0.0	Yes	3	No
3	San Elijo Road	Rancho Santa Fe Road to Melrose Drive	69.4	69.5	0.1	Yes	3	No
4	San Elijo Road	Melrose Drive to Street "E"	70.9	71.0	0.1	Yes	3	No
5	San Elijo Road	Street "E" to Baker Street	69.8	70.0	0.2	Yes	3	No
6	San Elijo Road (SB)	Baker Street to Elfin Forest Road	66.8	66.9	0.1	Yes	3	No
7	San Elijo Road (SB)	Elfin Forest Road to Schoolhouse Way	65.8	65.8	0.0	Yes	3	No
8	San Elijo Road (NB)	Baker Street to Elfin Forest Road	66.8	66.9	0.1	Yes	3	No
9	San Elijo Road (NB)	Elfin Forest Road to Schoolhouse Way	65.6	65.6	0.0	Yes	3	No
10	San Elijo Road	East of Schoolhouse Way	68.5	68.6	0.1	Yes	3	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

(Urban Crossroads, 2024, Table 2-13)

Table 2.5-5 Near-Term Yar 2024 With Project Traffic Noise Increases

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Incremental Noise Level Increase Threshold	
			NT 2024	NT+P 2024	Increase		Limit (dBA)	Exceeded?
1	Rancho Santa Fe Road	Melrose Drive to San Elijo Road	73.6	73.6	0.0	Yes	1	No
2	Rancho Santa Fe Road	San Elijo Road to Avenida Soledad	74.8	74.8	0.0	Yes	1	No
3	San Elijo Road	Rancho Santa Fe Road to Melrose Drive	71.0	71.1	0.1	Yes	1	No
4	San Elijo Road	Melrose Drive to Street "E"	72.2	72.2	0.0	Yes	1	No
5	San Elijo Road	Street "E" to Baker Street	70.2	70.2	0.0	Yes	1	No
6	San Elijo Road (SB)	Baker Street to Elfin Forest Road	67.2	67.2	0.0	Yes	1	No
7	San Elijo Road (SB)	Elfin Forest Road to Schoolhouse Way	66.2	66.3	0.1	Yes	1	No
8	San Elijo Road (NB)	Baker Street to Elfin Forest Road	67.2	67.2	0.0	Yes	1	No
9	San Elijo Road (NB)	Elfin Forest Road to Schoolhouse Way	65.9	66.0	0.1	Yes	1	No
10	San Elijo Road	East of Schoolhouse Way	68.9	69.0	0.1	Yes	1	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

(Urban Crossroads, 2024, Table 2-14)

Table 2.5-6 Horizon Year 2035 With Project Traffic Noise Increases

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Incremental Noise Level Increase Threshold	
			2035 CY	2035 CYP	Increase		Limit (dBA)	Exceeded?
1	Rancho Santa Fe Road	Melrose Drive to San Elijo Road	73.4	73.4	0.0	Yes	1	No
2	Rancho Santa Fe Road	San Elijo Road to Avenida Soledad	74.6	74.6	0.0	Yes	1	No
3	San Elijo Road	Rancho Santa Fe Road to Melrose Drive	70.6	70.6	0.0	Yes	1	No
4	San Elijo Road	Melrose Drive to Street "E"	71.5	71.5	0.0	Yes	1	No
5	San Elijo Road	Street "E" to Baker Street	70.4	70.4	0.0	Yes	1	No
6	San Elijo Road (SB)	Baker Street to Elfin Forest Road	66.8	66.8	0.0	Yes	1	No
7	San Elijo Road (SB)	Elfin Forest Road to Schoolhouse Way	67.5	67.6	0.1	Yes	1	No
8	San Elijo Road (NB)	Baker Street to Elfin Forest Road	66.9	66.9	0.0	Yes	1	No
9	San Elijo Road (NB)	Elfin Forest Road to Schoolhouse Way	67.0	67.1	0.1	Yes	1	No
10	San Elijo Road	East of Schoolhouse Way	71.7	71.7	0.0	Yes	1	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.

(Urban Crossroads, 2024, Table 2-15)

Table 2.5-7 Exterior Ground Floor Noise Levels

Receiver Location[1]	Location	Unmitigated Exterior Noise Level (CNEL)
R01	Lot 1	58.9
R02	Lot 2	**60.1**
R03	Lot 3	**61.4**
R04	Lot 4	**64.5**
R05	Lot 5	**62.2**
R06	Lot 6	**60.8**
R07	Lot 7	59.6
R08	Lot 18	**65.6**
R09	Lot 17	**62.6**
R10	Lot 16	**61.5**
R11	Lot 15	**60.2**
R12	Lot 19	59.1
R13	Lot 20	57.0

1 See Figure 2.4-3 for the on-site receiver locations.
2 CadnaA noise model inputs and calculations are included in Appendix 2.1 to the Project's NIA (*Technical Appendix K*).

(Urban Crossroads, 2024, Table 2-3)

Table 2.5-8 First Floor Interior Noise Impacts (CNEL)

Receiver	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
R01	58.9	13.9	25.0	No	33.9	45	No
R02	60.1	15.1	25.0	No	35.1	45	No
R03	61.4	16.4	25.0	No	36.4	45	No
R04	64.5	19.5	25.0	No	39.5	45	No
R05	62.2	17.2	25.0	No	37.2	45	No
R06	60.8	15.8	25.0	No	35.8	45	No
R07	59.6	14.6	25.0	No	34.6	45	No
R08	65.6	20.6	25.0	No	40.6	45	No
R09	62.6	17.6	25.0	No	37.6	45	No
R10	61.5	16.5	25.0	No	36.5	45	No
R11	60.2	15.2	25.0	No	35.2	45	No
R12	59.1	14.1	25.0	No	34.1	45	No
R13	57.0	12.0	25.0	No	32.0	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g., air conditioning).
[2] Noise reduction required to satisfy the 45 CNEL interior noise standard.
[3] Estimated minimum interior noise reduction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.

(Urban Crossroads, 2024, Table 2-4)

Table 2.5-9 Second Floor Interior Noise Impacts (CNEL)

Receiver	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
R01	58.5	13.5	25.0	No	33.5	45	No
R02	59.7	14.7	25.0	No	34.7	45	No
R03	61.0	16.0	25.0	No	36.0	45	No
R04	64.0	19.0	25.0	No	39.0	45	No
R05	61.8	16.8	25.0	No	36.8	45	No
R06	60.3	15.3	25.0	No	35.3	45	No
R07	59.1	14.1	25.0	No	34.1	45	No
R08	65.1	20.1	25.0	No	40.1	45	No
R09	62.2	17.2	25.0	No	37.2	45	No
R10	61.0	16.0	25.0	No	36.0	45	No
R11	59.7	14.7	25.0	No	34.7	45	No
R12	58.6	13.6	25.0	No	33.6	45	No
R13	56.5	11.5	25.0	No	31.5	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g., air conditioning).
[2] Noise reduction required to satisfy the 45 CNEL interior noise standard.
[3] Estimated minimum interior noise reduction.
[4] Does the required interior noise reduction trigger upgraded windows with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.

(Urban Crossroads, 2024, Table 2-5)

Table 2.5-10 County of San Diego Noise Ordinance Sound Level Limits

Zone	Applicable Hours	Sound Level Limit dBA L_{eq} (1 hour)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92, RV, and RU with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
(2) RRO, RC, RM, S86, V5, RV and RU with a General Plan Land Use Designation density of 10.9 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
(3) S-94, V4 and all other commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
(4) V1, V2	7 a.m. to 10 p.m.	55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
(5) M-50, M-52, and M-54	Anytime	70
(6) S82, M56 and M58	Anytime	75
(7) S88 (see subsection (c) below)		

Source: County of San Diego Noise Ordinance, Section 36.404

Notes:

(a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

(c) S88 zones are Specific Planning Areas which allow for different uses. The sound level limits in Table 14 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 14, subsection (1) apply to property with a residential, agricultural, or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

(f)A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond 6 feet from the boundary of the easement upon which the facility is located.

(Urban Crossroads, 2024, Table 3-1)

Table 2.5-11 County of San Diego Code Section 36.410, Maximum Sound Level (Impulsive) Measured at Occupied Property in Decibels

Occupied Property Use	Decibels (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial, or industrial use	85

(Urban Crossroads, 2024, Table 3-2)

Table 2.5-12 County of San Diego Code Section 36.410, Maximum Sound Level (Impulsive) Measured at Occupied Property in Decibels for Public Road Projects

Occupied Property Use	Decibels (dBA)
Residential, village zoning or civic use	85
Agricultural, commercial, or industrial use	90

(Urban Crossroads, 2024, Table 3-3)

Table 2.5-13 Unmitigated Construction Equipment Noise Level Summary

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	71.1	69.3	67.4	67.0	61.0	71.1
R2	71.0	69.2	67.3	66.9	60.9	71.0
R3	69.9	68.1	66.2	65.8	59.8	69.9
R4	70.2	68.4	66.5	66.1	60.1	70.2
R5	81.9	80.1	78.2	77.8	71.8	81.9

1 Noise receiver locations are shown on Figure 2.4-4.

2 Construction noise level calculations based on distance from the Project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 3.1 to the Project's NIA (*Technical Appendix K*).

(Urban Crossroads, 2024, Table 3-4)

Table 2.5-14 Typical Construction Noise Level Compliance (Without Mitigation)

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold	Threshold Exceeded?[3]
R1	71.1	75	No
R2	71.0	75	No
R3	69.9	75	No
R4	70.2	75	No
R5	81.9	75	**Yes**

1 Noise receiver locations are shown on Figure 2.4-4.
2 Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 2.4-13.
3 Do the estimated Project construction noise levels exceed the construction noise level threshold?
(Urban Crossroads, 2024, Table 3-6)

Table 2.5-15 Guidelines for Determining the Significance of Groundborne Vibration and Noise Impacts

Land Use Category	Groundborne Vibration Impact Levels (inches/sec RMS)		Groundborne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations (research & manufacturing facilities with special vibration constraints)[6]	0.0018[3]	0.0018[3]	Not applicable[4,5]	Not applicable[4,5]
Category 2: Residences and buildings where people normally sleep (hotels, hospitals, residences, & other sleeping facilities)[6]	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use (schools, churches, libraries, other institutions, & quiet offices)[6]	0.0056	0.014	40 dBA	48 dBA

RMS = root mean square; re = relative
[1] "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
[2] "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
[3] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
[4] Vibration-sensitive equipment is not sensitive to groundborne noise.
[5] There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 14 gives criteria for acceptable levels of groundborne vibration and noise for these various types of special uses.
[6] For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds 1 inch per second. Non transportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in the County of San Diego.
(Urban Crossroads, 2024, Table 4-1)

Table 2.5-16 Guidelines for Determining the Significance of Groundborne Vibration and Noise Impacts for Special Buildings

Type of Building or Room	Groundborne Vibration Impact Levels (inches/sec rms)		Groundborne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Concert Halls, TV Studios, and Recording Studios	0.0018	0.0018	25 dBA	25 dBA
Auditoriums	0.0040	0.010	30 dBA	38 dBA
Theaters	0.0040	0.010	35 dBA	43 dBA

RMS = root mean square; re = relative

[1] "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

[2] "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

(Urban Crossroads, 2024, Table 4-2)

Table 2.5-17 Vibration Source Levels for Construction Equipment

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

(Urban Crossroads, 2024, Table 4-3)

Table 2.5-18 Typical Project Construction Vibration Levels

Receiver[1]	Structure Type[2]	Distance to Const. Activity (Feet)[3]	Typical Construction Vibration Levels PPV (in/sec)[4]				Thresholds PPV (in/sec)[5]	Thresholds Exceeded?[6]
			Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	Residential	832'	0.00018	0.00040	0.00046	0.00046	0.0160	No
R2	Residential	569'	0.00032	0.00070	0.00082	0.00082	0.0160	No
R3	Residential	1,051'	0.00013	0.00028	0.00033	0.00033	0.0160	No
R4	Residential	1,051'	0.00013	0.00028	0.00033	0.00033	0.0160	No
R5	Commercial	123'	0.00321	0.00696	0.00816	0.00816	0.0224	No

1 Receiver locations are shown on Figure 2.4-5.
2 Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.
3 Distance from receiver location to Project construction boundary to nearest structure.
4 Based on the Vibration Source Levels of Construction Equipment (Table 11-4 of the Project's NIA, included as *Technical Appendix K*).
5 Thresholds converted to PPV from County RMS threshold shown in Table 2.4-15.
6 Does the peak vibration exceed the acceptable vibration thresholds?
(Urban Crossroads, 2024, Table 4-4)

Table 2.5-19 Blasting Vibration Based on Charge Weight and Distance

Distance to Blast (feet)	Predicted Vibration Level by Charge Weight in/sec. PPV					
	8.00 Lbs.	4.00 Lbs.	2.00 Lbs.	1.00 Lbs.	0.50 Lbs.	0.25 Lbs.
10	**26.52**	**15.23**	**8.75**	**5.02**	**2.89**	**1.66**
20	**8.75**	**5.02**	**2.89**	**1.66**	0.95	0.55
30	**4.57**	**2.63**	**1.51**	0.87	0.50	0.29
40	**2.89**	**1.66**	0.95	0.55	0.31	0.18
50	**2.02**	**1.16**	0.67	0.38	0.22	0.13
60	**1.51**	0.87	0.50	0.29	0.16	0.09
70	**1.18**	0.68	0.39	0.22	0.13	0.07
80	0.95	0.55	0.31	0.18	0.10	0.06

Bolded numbers exceed the County standard for intermittent
(Urban Crossroads, 2024, Table 4-5)

Table 2.5-20 Typical Construction Noise Level Compliance (With Mitigation)

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold	Threshold Exceeded?[3]
R1	71.1	75	No
R2	71.0	75	No
R3	69.9	75	No
R4	69.5	75	No
R5	64.4	75	No

1 Noise receiver locations are shown on Figure 2.4-4.
2 Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 2.4-13.
3 Do the estimated Project construction noise levels exceed the construction noise level threshold?
(Urban Crossroads, 2024, Table 3-6)