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## 5. Environmental Analysis

### 5.7 NOISE

This section of the DSEIR supplements and updates information and analysis contained in Section 5.4, *Noise*, of the 2003 OCGP EIR and the seven subsequent Addenda. It reviews the fundamentals of sound; reviews federal, state, and local noise guidelines, policies, and standards; reviews noise levels at existing off-site receptor locations; evaluates potential noise impacts associated with the Modified Project as compared to the Approved Project; and recommends mitigation measures, where necessary, to reduce noise impacts of the Modified Project. This evaluation uses procedures and methodologies as specified by the California Department of Transportation (“Caltrans”) and the Federal Highway Administration (“FHWA”). This section is based, in part, on the following technical studies:

- *Great Park Neighborhoods General Plan Amendment / Zone Change Noise Impact Analysis*, Urban Crossroads, May 25, 2011 (the "Noise Study").
- *Great Park Neighborhoods General Plan Amendment / Zone Change and VTTM 17008 Amendment Traffic Impact Analysis*, Urban Crossroads, May 31, 2011 (the "Traffic Study").

These studies are included as Appendix K and M to this DSEIR, respectively.

#### 5.7.1 Environmental Setting

##### Terminology/Noise Descriptors

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.”

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (“dB”).** A unitless measure of sound on a logarithmic scale.
- **A-Weighted Decibel (“dBA”).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (“L<sub>eq</sub>”).** The mean of the noise level averaged over the measurement period, regarded as an average level.
- **Day-Night Level (“L<sub>dn</sub>”).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

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- Community Noise Equivalent Level (“CNEL”). The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the levels occurring during the period from 7:00 PM to 10:00 PM and 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

$L_{dn}$  and CNEL values rarely differ by more than 1 dB. As a matter of practice,  $L_{dn}$  and CNEL values are considered to be equivalent and are treated as such in this assessment.

### Characteristics of Sound

When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human, frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. The normal range of human hearing extends from approximately 0 dBA to 140 dBA.

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. Because of the physical characteristics of noise transmission and of noise perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 5.7-1 presents the subjective effect of changes in sound pressure levels.

<i>Table 5.7-1</i>	
<i>Change in Sound Pressure Level (dB)</i>	
<i>Change in Apparent Loudness</i>	
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen 1988.

Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as spreading loss. Generally, sound levels from a point source will decrease by 6.0 dBA for each doubling of distance. Sound levels for a highway line source vary differently with distance because sound pressure waves propagate along the line and overlap at the point of measurement. A closely spaced, continuous line of vehicles along a roadway becomes a line source and produces a 3.0 dBA decrease in sound level for each doubling of distance. However, experimental evidence has shown that where sound from a highway propagates close to "soft" ground (e.g., plowed farmland, grass, crops, etc.), a more suitable drop-off rate to use is not 3.0 dBA but rather 4.5 dBA per distance doubling (FHWA 2010).

When sound is measured for distinct time intervals, the statistical distribution of the overall sound level during that period can be obtained. The  $L_{eq}$  is the most common parameter associated with such measurements. The  $L_{eq}$  metric is a single-number noise descriptor that represents the average sound level over a given period of time. For example, the  $L_{50}$  noise level is the level that is exceeded 50 percent of the time. This level is also the level that is exceeded 30 minutes in an hour. Similarly, the  $L_{02}$ ,  $L_{08}$  and  $L_{25}$  values are the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. Other values

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typically noted during a noise survey are the  $L_{\min}$  and  $L_{\max}$ . These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet-time noise levels in a 24-hour noise descriptor called the CNEL or  $L_{dn}$ .

### Effects of Noise Exposure

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. Physical damage to human hearing can occur with prolonged exposure to noise levels higher than 85 dBA. High ambient or background noise levels are widespread and generally more concentrated in urban areas than in less developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Table 5.7-2 shows the typical noise levels emitted by common noise sources.

*Table 5.7-2  
Typical Noise Levels from Noise Sources*

<i>Common Outdoor Activities</i>	<i>Noise Level (dBA)</i>	<i>Common Indoor Activities</i>
	110	Rock Band
Jet Flyover at 1,000 feet	100	
Gas Lawn Mower at three feet	90	
Diesel Truck at 50 feet, at 50 mph	80	Food Blender at 3 feet Garbage Disposal at 3 feet
Noisy Urban Area, Daytime	70	Vacuum Cleaner at 10 feet Normal speech at 3 feet
Commercial Area	60	
Heavy Traffic at 300 feet	50	Large Business Office Dishwasher Next Room
Quiet Urban Daytime	40	Theater, Large Conference Room (background)
Quiet Urban Nighttime	30	Library
Quiet Suburban Nighttime	20	Bedroom at Night, Concert Hall (background)
Quiet Rural Nighttime	10	Broadcast/Recording Studio
	0	
Lowest Threshold of Human Hearing		Lowest Threshold of Human Hearing

Source: Caltrans. Traffic Noise Analysis Protocol, Table 9-2136.2. October 1998.

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#### Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is described as the velocity and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to building damage, and acceptable equipment vibration levels.

During construction of a development project, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may experience annoyance due to noise generated from vibration of a structure or items within a structure. This type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).
- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity ("PPV") or the root mean square ("RMS") velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal and RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage.

The units for PPV velocity is normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all PPV and RMS velocity levels are in in/sec and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Human-made vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction operations generally include a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at distances within 200 feet of the vibration sources. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities,

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differential settlement of pavement, etc., all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, and heavy loads.

#### Regulatory Framework

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. The City of Irvine regulates noise through the City of Irvine Municipal Code, Chapter 2, Noise (Sections 6-8-201 through 6-8-209), also known as the City's Noise Ordinance, discussed below. Potential noise impacts were evaluated based on the City of Irvine Municipal Code and General Plan, FHWA methodology, and Federal Transit Administration ("FTA") methodology to determine whether a significant adverse noise impact would result from the construction and operation of the Modified Project as compared to the Approved Project.

#### *State of California Noise Requirements*

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

In addition, CEQA requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a significant impact if the project exposes people to noise levels in excess of thresholds, which can include standards established in the local general plan or noise ordinance.

#### *State of California Building Code*

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL. Title 21 of the California Code of Regulations prescribes additional requirements for noise-sensitive structures within the 65 dBA CNEL noise contour of an airport.

#### *City of Irvine*

#### *Land Use Compatibility Criteria*

The noise standards specified in the Noise Element of the City of Irvine General Plan are a guideline to evaluate the acceptability of the noise levels generated by traffic flow. These standards are used for

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assessment of long-term traffic-related noise impacts on land uses. The City of Irvine uses the state's land use compatibility standards shown in Table 5.7-3 to determine the compatibility of a proposed land use based on the exterior noise environment.

Based on these standards, the City has developed policies to ensure land use compatibility when placing new land uses. The City uses an exterior noise level of 65 dBA CNEL as the critical criterion for assessing the compatibility of residential land uses with noise sources. The City requires that, for new residential land uses, the noise levels in the exterior areas considered by the City to be noise sensitive not exceed 65 dBA CNEL. In addition, the City requires that commercial developments not exceed an indoor noise level of 55 dBA CNEL and that residential developments not exceed an indoor noise level of 45 dBA CNEL with windows closed, which is based on the California Building Code.

*Table 5.7-3  
State of California Land Use Compatibility for Exterior Community Noise*

<i>Land Use Category</i>	<i>Noise Range (<math>L_{dn}</math> or CNEL), dBA</i>			
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>
Passively used open spaces	50	50–55	55–70	70+
Auditoriums, concert halls, amphitheaters	45–50	50–65	65–70	70+
Residential: low-density single-family, duplex, mobile homes	50–55	55–70	70–75	75+
Residential: multifamily	50–60	60–70	70–75	75+
Transient lodging: motels, hotels	50–60	60–70	70–80	80+
Schools, libraries, churches, hospitals, nursing homes	50–60	60–70	70–80	80+
Actively used open spaces: playgrounds, neighborhood parks	50–67	–	67–73	73+
Golf courses, riding stables, water recreation, cemeteries	50–70	–	70–80	80+
Office buildings, business commercial and professional	50–67	67–75	75+	–
Industrial, manufacturing, utilities, agriculture	50–70	70–75	75+	–

Source: Office of Noise Control, California Department of Health, 1976.

Noise Range I—Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Noise Range II—Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Noise Range III—Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Noise Range IV—Clearly Unacceptable: New construction or development should generally not be undertaken.

### *Transportation-Related Noise Standards*

To control transportation-related noise, the Noise Element of the City of Irvine General Plan establishes guidelines, listed in Table 5.7-4, below, for acceptable community noise levels. The City of Irvine General Plan provides specific noise level standards for all land use categories that are used to regulate traffic-related noise level impacts (from noise sources such as arterial roads, freeways, airport and railroads). For noise-sensitive uses that contain habitable dwellings, the Noise Element establishes both exterior and interior noise level standards.

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*Table 5.7-4  
City of Irvine Interior and Exterior Noise Standards*

<i>Land Use Categories</i>		<i>Energy Average (dBA CNEL)</i>	
<b>Categories</b>	<b>Uses</b>	<b>Interior<sup>1</sup></b>	<b>Exterior<sup>2</sup></b>
Residential	Single family	45 <sup>3</sup> / 55 <sup>4</sup>	65 <sup>7</sup>
	Multi-Family		
	Mobile Home	—	65 <sup>5</sup>
Commercial/Industrial	Hotel, motel, transient lodging	45	65 <sup>6</sup>
	Commercial, retail, bank, restaurant	55	—
	Office building, professional office, research & development	50	—
	Amphitheater, concert hall, auditorium, meeting hall	45	—
	Gymnasium (Multipurpose)	50	—
	Health Clubs	55	—
	Manufacturing, warehousing, wholesale, utilities	65	—
Institutional	Hospital, school classroom	45	—
	Church, library	45	65
Open Space	Parks	45	—

Source: Table F-1 of the City of Irvine General Plan Noise Element.

Interpretation:

<sup>1</sup> Interior environment excludes bathrooms, toilets, closets and corridors.

<sup>2</sup> Limited to private yard of single family homes, multifamily private patio or balcony served by a means of exit from inside, mobile home park, hospital patio, park's picnic area, school's playground, and hotel and motel recreation areas.

<sup>3</sup> Noise requirement with closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided pursuant to Appendix Chapter 12, Section 1208 of the Uniform Building Code.

<sup>4</sup> Noise level with open windows, if they are used to meet natural ventilation requirement.

<sup>5</sup> Exterior noise level such that interior noise level will not exceed 45 dB CNEL.

<sup>6</sup> Except those areas affected by aircraft noise.

<sup>7</sup> Multi-family developments with balconies that do not meet the 65 CNEL are required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts.

For noise-sensitive residential uses, the Noise Element requires that exterior noise levels not exceed 65 dBA CNEL for outdoor living areas and that interior noise levels not exceed 45 dBA CNEL. Noise-sensitive exterior uses are limited to the private yards of single-family homes, multi-family private patios or balconies served by a means of exit from inside, mobile home parks, hospital patios, park picnic areas, school playgrounds, and hotel and motel recreation areas. Multi-family developments with balconies that do not meet the 65 dBA CNEL exterior noise level standard are required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts.

#### *Nontransportation/Stationary Source Noise Standards*

The City's Noise Ordinance (Irvine Municipal Code, Title 6 [Public Works], Division 8 [Pollution], Chapter 2 [Noise]) (adopted in 1975 and revised in February 2005) establishes the maximum permissible noise level from a stationary source that may intrude into adjoining property. Section 6-8-204 (General Provision) of the City's Noise Ordinance establishes noise level standards for various land use categories affected by stationary noise sources. For residential properties, the exterior noise level shall not exceed 55 dBA during daytime hours (7:00 AM to 10:00 PM) and shall not exceed 50 dBA during the nighttime hours (10:00 PM to 7:00 AM) for more than 30 minutes in any hour. For events with shorter duration, these noise levels are adjusted upwards accordingly, as shown in Table 5.7-5.

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*Table 5.7-5  
City of Irvine Exterior Noise Standards by Noise Zone*

Noise Zone	Time Interval	Noise Standard ( $L_{eq}$ )				
		$L_{50}$	$L_{25}$	$L_8$	$L_2$	$L_{max}$
Zone 1: hospitals, libraries, churches, schools, and residential properties	7:00 AM to 10:00 PM	55	60	65	70	75
	10:00 PM to 7:00 AM	50	55	60	65	70
Zone 2: professional office and public institutional	Anytime	55	60	65	70	75
Zone 3: commercial, excluding professional office	Anytime	60	65	70	75	80
Zone 4: industrial	Anytime	70	75	80	85	90

Source: City of Irvine, Municipal Code, Title 6, Division 8, Chapter 2, Noise.

Noise standards shall be reduced by five dB for impact, or predominant tone noise or for noises consisting of speech or music. In the event that the noise source and the affected property are within different noise zones, the noise standards of the affected property shall apply.

Maintenance of property may exceed the noise standards, so long as maintenance activities that exceed the noise limits in Table 5.7-5 are restricted to the hours of 7:00 AM through 7:00 PM Monday through Friday or 9:00 AM through 6:00 PM Saturdays.<sup>1</sup> In addition, the City further restricts the maximum noise levels of leaf blowers and hours of use to 8:00 AM through 5:00 PM Monday through Friday and 9:00 AM through 5:00 PM on Saturdays.<sup>2</sup>

#### *Commercial Deliveries/Pickups*

Commercial deliveries or pickups for commercial properties that share a property line with any residential property are required to limit the hours of delivery/pickup service to 7:00 AM through 10:00 PM daily, as outlined in the City's Noise Ordinance.<sup>3</sup>

#### *Construction Noise Standards*

The City's Noise Ordinance regulates the timing of construction activities and includes special provisions for sensitive land uses. Section 6-8-205.A (Special Provisions) of the Municipal Code states that construction activities and agricultural operations may occur between the hours of 7:00 AM and 7:00 PM Monday through Friday, and 9:00 AM to 6:00 PM on Saturdays. No construction shall be permitted outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the Chief Building Official or authorized representative. Trucks, vehicles, and equipment that are making or involved with deliveries, loading, or transfer of materials, equipment service, or maintenance of any devices or appurtenances for or within any construction project in the City are also subject to these prohibitions.

#### *Noise Standard Exemptions*

The City's Noise Ordinance also determines what specific activities are exempt from the noise provisions. Section 6-8-205.D of the Municipal Code states that activities lawfully conducted on public parks, public playgrounds, and public or private school grounds are exempt from the Noise Ordinance's provisions.

<sup>1</sup> *Id.* Section 6-8-205B.

<sup>2</sup> *Id.*, Section 6-8-205C.

<sup>3</sup> *Id.* Section 6-8-205A.

### *Federal Transit Administration Vibration Criteria*

The level at which groundborne vibration is strong enough to cause structural damage has not been determined conclusively. The most conservative estimates are reflected in the Federal Transit Administration (“FTA”) standards, shown in Table 5.7-6. Vibration-related problems generally occur due to resonances in the structural components of a building because structures amplify groundborne vibration. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. According to Caltrans Transportation Related Earthborne Vibration (2002), extreme care must be taken when sustained pile driving occurs within 25 feet of any building; the threshold at which there is a risk of architectural damage to normal houses with plastered walls and ceilings is 0.2 inches per second.

*Table 5.7-6  
Groundborne Vibration and Noise Impact Criteria, Structural Damage*

<i>Building Category</i>		<i>PPV (in/sec)</i>	<i>VdB</i>
I.	Reinforced concrete, steel, or timber (no plaster)	0.5	102
II.	Engineered concrete and masonry (no plaster)	0.3	98
III.	Nonengineered timber and masonry buildings	0.2	94
IV.	Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2006.

RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

### *5.7.2 Thresholds of Significance*

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would normally have a significant effect on the environment if the project would result in:

- N-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- N-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- N-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- N-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- N-5 For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.
- N-6 For a project within the vicinity of a private airstrip, expose people residing or working the project area to excessive noise levels.

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In the Initial Study for the Modified Project, included as Appendix A to this DSEIR, the City determined that the following impacts would not be significant: N-5 and N-6. The City determined that those impacts were sufficiently analyzed in the Certified EIR and that implementation of the changes proposed by the Modified Project would not change the conclusions of the Certified EIR with respect to those impacts.

Therefore, impacts N-5 and N-6 will not be addressed further in this section. Chapter 8, *Impacts Found Not to Be Significant*, of this DSEIR, substantiates the City's determination that impacts associated with impacts N-5 and N-6 would be less than significant, as concluded in the Certified EIR.

#### City of Irvine Thresholds

##### *Noise Compatibility*

The noise standards specified in the City of Irvine Noise Element are used to evaluate the acceptability of the noise levels under the thresholds stated above. Based on the noise compatibility criteria, the City has developed policies and guidelines to ensure land use compatibility when placing new land uses. The City requires that the exterior areas for new residential land uses not exceed 65 dBA CNEL. The City also requires that new commercial developments achieve an indoor impact noise standard of 55 dBA CNEL, and that new residential developments achieve an indoor impact noise standard of 45 dBA CNEL with windows closed, which is based on the California Building Code.

##### *Stationary Source Noise*

The City's Noise Ordinance establishes the maximum permissible noise level that may intrude into an adjoining property or dwelling unit (see Table 5.7-4, above).

##### *Substantial Increase in Traffic Noise Levels*

The traffic noise thresholds used by the City are based on human tolerance to noise and are widely used for assessing traffic noise impacts. In general, people tend to compare intruding noise to the existing background noise. If the new noise is readily identifiable or considerably louder than the background noise level, it has the potential to be objectionable or annoying (Caltrans 1998). Consequently, the noise threshold for an increase in traffic noise levels is based on the potential for traffic noise to become considerably louder than the ambient noise level. In general, noise levels must increase by 10 dBA in order to double ambient noise levels. An increase of 5 dBA is readily perceptible to the public and a 3 dBA increase is barely perceivable to the average healthy human ear (Caltrans 1998).

The Environmental Noise Assessment prepared for the 2003 OCGP EIR identified a traffic noise screening analysis threshold of 1.5 dBA for all project-related traffic noise level increases where the resulting noise levels would be in excess of 65 dBA, and required further analysis where that screening threshold was met within residential and other sensitive areas (2003 OCGP EIR § 5.4, Noise, p. 5.4-26.). Although changes in noise levels of 3 dBA are considered "barely perceptible," and changes of 5 dBA are considered "clearly noticeable," the 2003 OCGP EIR used this 1.5 dBA noise level screening threshold to be conservative. For consistency, the 1.5 dBA threshold was also used in the noise technical report prepared by Urban Crossroads for the Modified Project (see Appendix K of this DSEIR) that was used for the analysis in this section.

### *Construction*

The Noise Ordinance regulates the timing of construction activities and includes special provisions for sensitive land uses. No construction is permitted outside of the hours specified under Section 6-8-205 of the City of Irvine Municipal Code (7:00 AM to 7:00 PM Monday through Friday and 9:00 AM to 6:00 PM Saturdays) unless a temporary waiver is granted by the Chief Building Official or authorized representative. The potential for construction noise impacts to be objectionable depends on the magnitude of noise generated by the construction equipment, the frequency of noise sources during the construction day, and total duration of construction activities.

### *Vibration*

Based on the FTA vibration criteria, vibration that is strong enough to cause structural damage (0.2 in/sec for typical wood-framed buildings or 0.5 in/sec for reinforced concrete, steel, or timber) would be considered a significant impact.

### *5.7.3 The Approved Project*

In May 2003, the 2003 OCGP EIR was certified by the City of Irvine, and certain development within Planning Areas 51 and 30 was approved, including 3,625 residential units, approximately 6,585,000 square feet of non-residential uses and associated infrastructure. Section 5.4 of the 2003 OCGP EIR summarized the January 16, 2002, Environmental Noise Assessment for the Orange County Great Park Plan prepared by Black and Veatch, which was included as Appendix H to the 2003 OCGP EIR. After the 2003 OCGP EIR was certified, a variety of actions in furtherance of the project analyzed in the 2003 OCGP EIR occurred, the environmental consequences of which were analyzed in the Addenda to the 2003 OCGP EIR. Each addendum concluded that the environmental effects of these actions would not result in any new significant noise impacts. In 2008, the City approved 1,289 density bonus residential units to be developed on the Proposed Project Site that were granted pursuant to state law, but which have not previously been located within the Proposed Project Site. The Approved Project has been fully analyzed in the Certified EIR, with the exception of the 1,269 density bonus units, the granting of which was not subject to CEQA.

The 2003 OCGP EIR concluded that development of the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development would not result in any significant short- or long-term noise impacts. For construction impacts, the noise assessment for the 2003 OCGP EIR considered a worst-case scenario of simultaneous demolition and construction activities, with a combined sound level of 20 pieces of large mobile equipment operating at a distance of 5,000 feet, 5 concrete breakers operating at a distance of 6,000 feet, and 2 crusher plants operating at a distance of 10,000 feet from the nearest off-site residential location. These distances represented the shortest possible distance between the construction equipment and the off-site residences closest to the Proposed Project Site during a heavy construction period. The nearest off-site residential uses (sensitive receptor) were located approximately 4,000 feet from the Proposed Project Site boundary. Under those circumstances, the analysis estimated sound levels of approximately 56 dBA at the closest off-site residences.

As buildout of the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development was assumed to occur over time (years 2007–2025), construction-related noise impacts on residential areas within the Proposed Project Site were also estimated. Using the same construction equipment assumptions and a distance of 600 feet from the nearest residential area, the combined effect of the equipment noise levels was estimated at a sound level of 70 dBA at the nearest on-site residential

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locations during a heavy construction period. While the City's Noise Ordinance does not specify a limit on construction noise levels, it stipulates the days and hours during which construction activities may occur and when construction would not be allowed unless a temporary waiver is requested and granted; specifically, construction is allowed Monday through Friday between 7:00 a.m. and 7:00 p.m., and on Saturdays between 9:00 a.m. and 6:00 p.m.; no construction is allowed outside those hours, on Sundays, or on federal holidays.

The 2003 OCGP EIR also considered long-term noise impacts as a result of development of the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development. Long-term noise impacts included those associated with the operation and occupancy of the various land uses proposed, vehicle traffic generated by the proposed land uses, and stationary sources associated with the land uses within and surrounding the Proposed Project Site. As concluded in the 2003 OCGP EIR, long-term noise impacts were considered to be less than significant.

#### 5.7.4 Environmental Impacts of the Modified Project

##### Methodology

The following section outlines the methods and procedures used to model and analyze the future off-site and on-site traffic noise environment.

##### *FHWA Traffic Noise Prediction Model*

The roadway noise impacts from vehicular traffic were projected using a computer program that replicates the FHWA Traffic Noise Prediction Model- FHWA-RD-77-108 ("FHWA Model"). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level ("REMEL"). Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial); the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway); the total average daily traffic ("ADT"); the travel speed; the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume; the roadway grade; the angle of view (e.g., whether the roadway view is blocked); the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping); and the percentage of total ADT that flows each hour throughout a 24-hour period.

Table 5.7-7 presents the FHWA Traffic Noise Prediction Model roadway parameters used in the noise analysis of the Modified Project. Soft site conditions were used to develop the noise level contour boundaries. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation.

Table 5.7-8 presents the hourly traffic flow distributions (vehicle mixes) used for the noise analysis of the Modified Project. The vehicle mixes provide the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Traffic Noise Prediction Model based on roadway types. The City of Irvine roadway mix is based on the typical vehicle mix data published on December 14, 1993, by the County of Orange Land Use/Noise Compatibility Manual.

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*Table 5.7-7  
Roadway Parameters*

<i>Location</i>	<i>Roadway Classification</i>	<i>Number of Lanes</i>	<i>Right of Way (Feet)</i>	<i>Vehicle Speed (MPH)</i>
Irvine <sup>1</sup>	Local Collector	2	56	35
	Secondary Arterial	4	114	50
	Primary Highway	4	116	55
	Major Highway (6 lanes)	6	140	60
	Major Highway (8 lanes)	8	154	65
Other <sup>2</sup>	Collector	2	66	40
	Secondary	4	80	45
	Primary Arterial	4	100	50
	Major Arterial	6	120	55
	Principal	8	140	60

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

Notes: MPH = miles per hour

<sup>1</sup> Road classifications and design speeds based on City of Irvine Standard Plans dated March 19, 2009.

<sup>2</sup> The jurisdictions include, Aliso Viejo, Laguna Hills, Laguna Woods, Lake Forest, Mission Viejo, Orange, Orange County, and Tustin.

*Table 5.7-8  
Hourly Traffic Flow Distribution<sup>1</sup>*

<i>Motor Vehicle Type</i>	<i>Daytime (7 AM to 7 PM)</i>	<i>Evening (7 PM to 10 PM)</i>	<i>Nighttime (10 PM to 7 AM)</i>	<i>Total % Traffic Flow</i>
Automobiles	77.5%	12.9%	9.6%	97.42%
Medium Trucks	84.8%	4.9%	10.3%	1.84%
Heavy Trucks	86.5%	2.7%	10.8%	0.74%

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

<sup>1</sup> Hourly traffic flow distribution data published by the County of Orange Land Use/Noise Compatibility Manual, December 1993.

### *Off-Site Traffic Noise Prediction Model Inputs*

Although the Approved Project includes the 1,269 density bonus units, it does not locate those units on the Proposed Project Site even on a programmatic basis. Until generally located on the Proposed Project Site, the noise impacts of these units, which are primarily traffic-related impacts, cannot be determined. Therefore, for the purposes of identifying local noise impacts, the Approved Project, which is the baseline scenario, does not include the noise impacts of the density bonus units. Accordingly, the baseline noise impacts are equivalent to the noise impacts identified in the 2003 OCGPEIR. This approach is more conservative than CEQA requires, and likely overestimates the off-site traffic-related noise level impacts, as this baseline scenario does not include the noise impacts created by the 1,269 density bonus (primarily traffic-related impacts), even though they are a vested component of the Approved Project.

The City's General Plan Buildout Post-2030 average daily traffic volumes used for the off-site traffic-noise prediction model, as shown in Table 5.7-9, were provided by the Traffic Impact Analysis prepared by Urban Crossroads, Inc. for the Modified Project (see Appendix M of this DSEIR, Table 6-2). Table 5.7-9 provides

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the average daily traffic volumes used in the noise analysis for the Approved Project (without density bonus units), and compares that baseline scenario to the Modified Project.

The off-site traffic noise prediction model inputs are used to calculate the reference CNEL dBA noise levels at a distance of 100 feet from the centerline for the 363 off-site study area roadway segments. Noise level contours represent the distance to noise levels of a constant value and are measured from the center of the roadway. Noise level contours do not take into account the effect of any existing noise barriers or topography.

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Ada	s/o Barranca Parkway	Primary Highway <sup>1</sup>	2.2	2.4
Alicia Parkway	n/o Trabuco Road	Major Arterial <sup>2</sup>	38.8	38.8
Alicia Parkway	s/o Trabuco Road	Major Arterial <sup>2</sup>	43.1	42.9
Alicia Parkway	s/o Jeronimo Road	Major Arterial <sup>2</sup>	59.7	59.4
Alicia Parkway	n/o Muirlands Boulevard	Major Arterial <sup>2</sup>	59.9	59.7
Alicia Parkway	b/w I-5 NB Ramps and Muirlands Boulevard	Major Arterial <sup>2</sup>	65.7	65.6
Alicia Parkway	s/o I-5 SB Ramps	Major Arterial <sup>2</sup>	53.3	53.3
Alicia Parkway	s/o Paseo de Valencia	Major Arterial <sup>2</sup>	45.8	45.8
Alicia Parkway	s/o Moulton Parkway	Major Arterial <sup>2</sup>	44.4	44.5
Aliso Creek Road	e/o El Toro Road	Primary Arterial <sup>2</sup>	18.3	18.4
Alton Parkway	w/o Culver Drive	Major Highway <sup>1</sup>	26.7	26.8
Alton Parkway	e/o Culver Drive	Primary Highway <sup>1</sup>	28.7	28.7
Alton Parkway	e/o W. Yale Loop	Primary Highway <sup>1</sup>	27.8	27.7
Alton Parkway	e/o Lake Road	Primary Highway <sup>1</sup>	26.0	26.0
Alton Parkway	e/o Creek Road	Primary Highway <sup>1</sup>	25.0	25.1
Alton Parkway	w/o Jeffrey Road	Primary Highway <sup>1</sup>	30.0	30.1
Alton Parkway	b/w Jeffrey Road and Royal Oak	Primary Highway <sup>1</sup>	23.7	23.7
Alton Parkway	b/w Royal Oak and Valley Oak	Primary Highway <sup>1</sup>	21.0	20.9
Alton Parkway	w/o San Canyon Avenue	Major Highway <sup>1</sup>	21.0	20.8
Alton Parkway	e/o San Canyon Avenue	Major Highway <sup>1</sup>	31.9	31.7
Alton Parkway	e/o Laguna Canyon Road	Primary Highway <sup>1</sup>	19.0	19.0
Alton Parkway	b/w Pacifica and Banting	Primary Highway <sup>1</sup>	19.9	20.0
Alton Parkway	w/o Meridian	Primary Highway <sup>1</sup>	17.6	17.6
Alton Parkway	b/w Meridian and Irvine Center Drive	Major Highway <sup>1</sup>	17.8	18.1
Alton Parkway	b/w Enterprise Drive and Gateway Boulevard	Major Highway <sup>1</sup>	36.6	37.6
Alton Parkway	b/w Enterprise Drive and I-5 NB Ramps	Major Highway <sup>1</sup>	51.2	52.3

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*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Alton Parkway	b/w I-5 NP Ramps and Technology Drive W	Major Highway <sup>1</sup>	53.3	54.2
Alton Parkway	b/w Technology Drive W and Ada	Major Highway <sup>1</sup>	39.2	40.0
Alton Parkway	e/o Ada	Major Highway <sup>1</sup>	34.5	35.2
Alton Parkway	w/o Marine Way	Major Highway <sup>1</sup>	35.9	36.6
Alton Parkway	e/o Technology	Major Highway <sup>1</sup>	36.1	36.8
Alton Parkway	s/o Jeronimo Road	Major Highway <sup>1</sup>	41.0	42.1
Alton Parkway	n/o Jeronimo Road	Major Highway <sup>1</sup>	36.0	38.7
Alton Parkway	s/o Toledo Way	Major Highway <sup>1</sup>	27.7	31.6
Alton Parkway	n/o Toledo Way	Major Highway <sup>1</sup>	24.6	31.5
Alton Parkway	s/o Irvine Boulevard/Trabuco Road	Major Highway <sup>1</sup>	34.9	33.6
Alton Parkway	n/o Irvine Boulevard	Major Highway <sup>1</sup>	38.6	40.1
Alton Parkway	n/o Commercentre Drive	Major Arterial <sup>2</sup>	50.0	51.2
Alton Parkway	s/o SR-41 Ramps	Primary Arterial <sup>2</sup>	28.0	28.2
Alton Parkway	n/o SR-41 Ramps	Major Arterial <sup>2</sup>	18.0	18.4
Avenida Carlota	w/o Ridge Route Drive	Primary Arterial <sup>2</sup>	10.0	10.1
Avenida Carlota	w/o Paseo de Valencia	Primary Arterial <sup>2</sup>	17.3	17.3
Avenida Carlota	b/w Paseo de Valencia and El Toro Road	Primary Arterial <sup>2</sup>	36.3	36.2
Avenida Carlota	e/o El Toro Road	Primary Arterial <sup>2</sup>	23.2	23.3
Bake Parkway	s/o Portola Parkway	Primary Arterial <sup>2</sup>	23.0	22.9
Bake Parkway	n/o Commercentre Drive	Primary Arterial <sup>2</sup>	33.0	33.0
Bake Parkway	n/o Irvine Boulevard	Primary Arterial <sup>2</sup>	37.0	36.9
Bake Parkway	s/o Irvine Boulevard	Major Highway <sup>1</sup>	50.3	48.6
Bake Parkway	b/w Toledo Way and Jeronimo Road	Major Highway <sup>1</sup>	57.3	56.0
Bake Parkway	n/o Muirlands Boulevard	Major Highway <sup>1</sup>	63.7	62.4
Bake Parkway	s/o Muirlands Boulevard	Transit Corridor <sup>1</sup>	62.6	62.0
Bake Parkway	s/o Rockfield Boulevard	Major Highway <sup>1</sup>	77.9	76.4
Bake Parkway	n/o I-5 NB Ramps	Major Highway <sup>1</sup>	82.8	83.6
Bake Parkway	b/w I-5 SB Ramps and Research Drive	Major Highway <sup>1</sup>	35.3	35.5
Bake Parkway	b/w Research Drive and Irvine Center Drive	Major Highway <sup>1</sup>	17.1	17.1
Bake Parkway	s/o Irvine Center Drive	Major Highway <sup>1</sup>	15.9	16.4
Bake Parkway	b/w Lake Forest Drive and Ridge Route Drive	Major Highway <sup>1</sup>	3.2	3.4
Bake Parkway	b/w Ridge Route Drive and Laguna Canyon	Major Highway <sup>1</sup>	10.6	10.7
Barranca Parkway	w/o Culver Drive	Major Highway <sup>1</sup>	26.8	26.9

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*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Barranca Parkway	e/o Culver Drive	Primary Highway <sup>1</sup>	31.8	31.8
Barranca Parkway	e/o W. Yale Loop	Primary Highway <sup>1</sup>	29.1	29.1
Barranca Parkway	e/o Lake Road	Primary Highway <sup>1</sup>	25.9	26.0
Barranca Parkway	b/w Creek Road and Lyon	Primary Highway <sup>1</sup>	24.7	24.9
Barranca Parkway	w/o E. Yale Loop	Primary Highway <sup>1</sup>	24.6	24.4
Barranca Parkway	w/o Jeffrey Road	Primary Highway <sup>1</sup>	27.2	27.1
Barranca Parkway	e/o Jeffrey Road	Primary Highway <sup>1</sup>	17.7	17.7
Barranca Parkway	w/o Sand Canyon Avenue	Primary Highway <sup>1</sup>	17.7	17.4
Barranca Parkway	e/o Sand Canyon Avenue	Primary Highway <sup>1</sup>	15.4	15.2
Barranca Parkway	e/o Laguna Canyon Road	Primary Highway <sup>1</sup>	14.6	14.5
Barranca Parkway	b/w Discovery and Banting	Primary Highway <sup>1</sup>	13.1	12.9
Barranca Parkway	s/o Irvine Center Drive	Primary Highway <sup>1</sup>	18.1	18.0
Barranca Parkway	b/w I-5 HOV Ramp and Irvine Center Drive	Primary Highway <sup>1</sup>	21.1	20.7
Barranca Parkway	s/o Technology	Primary Highway <sup>1</sup>	22.3	22.1
Barranca Parkway	n/o Technology	Primary Highway <sup>1</sup>	16.0	16.1
Barranca Parkway	e/o Ada	Primary Highway <sup>1</sup>	13.2	13.5
Barranca Parkway	w/o Marine Way	Primary Highway <sup>1</sup>	24.3	24.9
Barranca Parkway	e/o Sterling	Primary Highway <sup>1</sup>	14.5	15.3
Bryan Avenue	w/o Jamboree Road	Primary Arterial <sup>2</sup>	25.1	25.1
Bryan Avenue	e/o Jamboree Road	Primary Highway <sup>1</sup>	19.8	19.6
Bryan Avenue	w/o Culver Drive	Primary Highway <sup>1</sup>	26.2	26.0
Bryan Avenue	e/o Culver Drive	Primary Highway <sup>1</sup>	19.3	19.2
Bryan Avenue	e/o Eastwood	Primary Highway <sup>1</sup>	14.2	14.0
Canyon View Avenue	w/o Jamboree Road	Primary Arterial <sup>2</sup>	7.3	7.3
Chapman Avenue/ Santiago Canyon	w/o Jamboree Road	Major Arterial <sup>2</sup>	29.4	29.3
Chapman Avenue/ Santiago Canyon	e/o Jamboree Road	Major Arterial <sup>2</sup>	40.0	39.8
Creek Road	n/o Alton Parkway	Local Collector <sup>1</sup>	4.3	4.3
Culver Drive	s/o Portola Parkway	Major Highway <sup>1</sup>	25.6	25.5
Culver Drive	n/o Irvine Boulevard	Major Highway <sup>1</sup>	28.9	28.9
Culver Drive	s/o Irvine Boulevard	Major Highway <sup>1</sup>	36.9	37.0
Culver Drive	n/o Bryan Avenue	Major Highway <sup>1</sup>	32.5	32.6
Culver Drive	s/o Bryan Avenue	Major Highway <sup>1</sup>	51.4	51.5
Culver Drive	n/o Trabuco Road	Major Highway <sup>1</sup>	52.0	52.2

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*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Culver Drive	s/o I-5 SB Ramps	Major Highway <sup>1</sup>	57.1	57.0
Culver Drive	n/o Walnut Avenue	Major Highway <sup>1</sup>	51.9	51.7
Culver Drive	b/w Walnut Avenue and Deerfield Drive	Major Highway <sup>1</sup>	47.8	47.9
Culver Drive	b/w Deerfield Drive and Irvine Center Drive	Major Highway <sup>1</sup>	42.8	42.7
Culver Drive	b/w Irvine Center Drive and Warner Avenue	Major Highway <sup>1</sup>	46.4	46.3
Culver Drive	b/w Warner Avenue and Barranca Parkway	Major Highway <sup>1</sup>	46.9	46.8
Culver Drive	n/o Alton Parkway	Major Highway <sup>1</sup>	51.0	51.2
Culver Drive	b/w Alton Parkway and Main Street	Major Highway <sup>1</sup>	51.9	51.9
Culver Drive	b/w Main Street and San Leandro	Major Highway <sup>1</sup>	52.7	52.8
Culver Drive	b/w San Leandro and I-405 NB Ramps	Major Highway <sup>1</sup>	58.8	58.9
E. Yale Loop	s/o Barranca Parkway	Secondary Arterial <sup>1</sup>	12.0	11.9
E. Yale Loop	n/o Alton Parkway	Primary Highway <sup>1</sup>	11.3	11.3
E. Yale Loop	s/o Alton Parkway	Primary Highway <sup>1</sup>	11.5	11.5
El Camino Real	e/o Tustin Ranch Road	Primary Arterial <sup>2</sup>	16.5	16.4
El Camino Real	e/o Jamboree Road	Primary Highway <sup>1</sup>	24.3	24.2
El Camino Real	s/o Bryan Avenue	Primary Highway <sup>1</sup>	7.9	7.9
El Toro Road	n/o Portola Parkway/S. Margarita Parkway	Major Arterial <sup>2</sup>	21.0	21.0
El Toro Road	s/o Portola Parkway/S. Margarita Parkway	Major Arterial <sup>2</sup>	33.0	33.0
El Toro Road	n/o Trabuco Road	Major Arterial <sup>2</sup>	33.0	32.9
El Toro Road	n/o Toledo Way	Principal <sup>2</sup>	48.0	48.1
El Toro Road	n/o Jeronimo Road	Principal <sup>2</sup>	48.0	48.3
El Toro Road	s/o Jeronimo Road	Principal <sup>2</sup>	51.0	50.9
El Toro Road	n/o Rockfield Boulevard	Principal <sup>2</sup>	51.0	51.0
El Toro Road	b/w Rockfield Boulevard and I-5 NB Ramps	Principal <sup>2</sup>	59.0	58.7
El Toro Road	b/w I-5 SB Ramps and Avenida Carolota	Major Arterial <sup>2</sup>	45.0	45.0
El Toro Road	n/o Paseo de Valencia	Major Arterial <sup>2</sup>	29.6	29.6
El Toro Road	s/o Paseo de Valencia	Major Arterial <sup>2</sup>	32.9	32.9
El Toro Road	s/o Moulton Parkway	Major Arterial <sup>2</sup>	32.4	32.4
El Toro Road	n/o Aliso Creek Road	Major Arterial <sup>2</sup>	26.7	26.6
El Toro Road	n/o SR-73	Major Arterial <sup>2</sup>	29.9	29.9
El Toro Road	s/o SR-73	Primary Arterial <sup>2</sup>	17.8	17.8
Fortune Drive	b/w Gateway Boulevard and	Primary Highway <sup>1</sup>	8.7	8.8

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*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
	Spectrum			
Fortune Drive	b/w Pacifica and Spectrum	Primary Highway <sup>1</sup>	8.8	8.9
Gateway Boulevard	w/o Fortune Drive	Primary Highway <sup>1</sup>	7.1	7.2
Gateway Boulevard	n/o Alton Parkway	Primary Highway <sup>1</sup>	1.6	1.7
Gateway Boulevard	w/o Irvine Center Drive	Primary Highway <sup>1</sup>	2.8	2.8
Glen Ranch Road	n/o Portola Parkway	Primary Arterial <sup>2</sup>	32.0	31.9
Glenwood Drive/ Indian Creek	w/o Moulton Parkway	Primary Arterial <sup>2</sup>	11.5	11.6
Handy Creek Road	e/o Jamboree Road	Collector <sup>2</sup>	2.1	2.2
Harvard Avenue	s/o Walnut Avenue	Local Collector <sup>2</sup>	11.4	11.5
Harvard Avenue	n/o Edinger Avenue	Primary Highway <sup>1</sup>	13.0	13.1
Harvard Avenue	b/w Edinger Avenue and Paseo Westpark	Primary Highway <sup>1</sup>	15.3	15.3
Hubble	n/o Irvine Center Drive	Primary Highway <sup>1</sup>	2.0	2.0
Irvine Boulevard	b/w Newport Boulevard and Red Hill Avenue	Major Arterial <sup>2</sup>	54.7	54.8
Irvine Boulevard	b/w Red Hill Avenue and Browning	Primary Arterial <sup>2</sup>	53.4	53.5
Irvine Boulevard	w/o Tustin Ranch Road	Major Arterial <sup>2</sup>	47.6	47.7
Irvine Boulevard	w/o Jamboree Road	Major Arterial <sup>2</sup>	41.6	41.6
Irvine Boulevard	e/o Jamboree Road	Major Highway <sup>1</sup>	44.6	44.4
Irvine Boulevard	b/w SR-261 Ramps	Major Highway <sup>1</sup>	43.0	43.1
Irvine Boulevard	e/o SR-261 NB Ramps	Major Highway <sup>1</sup>	44.1	44.2
Irvine Boulevard	w/o Culver Drive	Major Highway <sup>1</sup>	37.8	37.8
Irvine Boulevard	e/o Culver Drive	Major Highway <sup>1</sup>	38.3	38.4
Irvine Boulevard	e/o Yale Avenue	Major Highway <sup>1</sup>	41.9	42.1
Irvine Boulevard	w/o Jeffrey Road	Major Highway <sup>1</sup>	37.4	37.6
Irvine Boulevard	e/o Jeffery Road	Major Highway <sup>1</sup>	36.5	36.2
Irvine Boulevard	e/o Groveland	Major Highway <sup>1</sup>	35.9	35.8
Irvine Boulevard	e/o San Canyon Avenue	Major Highway <sup>1</sup>	40.2	41.1
Irvine Boulevard	e/o Alton Parkway	Major Highway <sup>1</sup>	39.8	34.3
Irvine Center Drive/ Edinger Avenue	w/o Jamboree Road	Major Arterial <sup>2</sup>	26.7	26.7
Irvine Center Drive/ Edinger Avenue	e/o Jamboree Road	Major Arterial <sup>2</sup>	29.8	29.9
Irvine Center Drive	e/o Hearthstone Boulevard	Major Highway <sup>1</sup>	25.3	25.3
Irvine Center Drive	e/o Culver Drive	Major Highway <sup>1</sup>	26.7	26.7
Irvine Center Drive	b/w Yale Avenue and Fontaine Avenue	Major Highway <sup>1</sup>	29.0	28.8

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*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Irvine Center Drive	e/o Jeffrey Road	Major Highway <sup>1</sup>	41.0	40.8
Irvine Center Drive	w/o Sand Canyon Avenue	Major Highway <sup>1</sup>	26.0	25.7
Irvine Center Drive	e/o Sand Canyon Avenue	Major Highway <sup>1</sup>	20.1	19.7
Irvine Center Drive	b/w Laguna Canyon Road and Discovery	Major Highway <sup>1</sup>	18.4	18.1
Irvine Center Drive	w/o Barranca Parkway	Major Highway <sup>1</sup>	22.6	22.5
Irvine Center Drive	b/w Barranca Parkway and Gateway Boulevard	Major Highway <sup>1</sup>	23.9	23.7
Irvine Center Drive	b/w Gateway Boulevard and Alton Parkway	Major Highway <sup>1</sup>	21.1	21.1
Irvine Center Drive	b/w Alton Parkway and Spectrum	Major Highway <sup>1</sup>	34.9	34.7
Irvine Center Drive	b/w Pacifica and Enterprise Drive	Major Highway <sup>1</sup>	35.2	35.0
Irvine Center Drive	b/w Enterprise Drive and I-405 SB Ramps	Major Highway <sup>1</sup>	53.4	52.9
Irvine Center Drive	b/w I-405 SB Ramps and Research Drive	Transportation Corridor <sup>1</sup>	13.3	13.2
Irvine Center Drive	b/w Research Drive and Hubble	Major Highway <sup>1</sup>	23.8	23.8
Irvine Center Drive	b/w Hubble and Bake Parkway	Major Highway <sup>1</sup>	22.3	22.3
Irvine Center Drive	b/w Bake Parkway and Muller	Major Highway <sup>1</sup>	21.1	21.1
Irvine Center Drive	b/w Muller and Tesla	Major Highway <sup>1</sup>	20.4	20.4
Irvine Center Drive	w/o Lake Forest Drive	Major Highway <sup>1</sup>	20.1	20.1
Jamboree Road	n/o Chapman Avenue/Santiago Canyon	Major Arterial <sup>2</sup>	20.4	20.5
Jamboree Road	s/o Chapman Avenue	Major Arterial <sup>2</sup>	14.0	14.1
Jamboree Road	s/o Canyon View Avenue	Major Arterial <sup>2</sup>	24.5	24.6
Jamboree Road	n/o Tustin Ranch Road	Major Arterial <sup>2</sup>	27.0	27.5
Jamboree Road	s/o Tustin Ranch Road	Major Arterial <sup>2</sup>	26.5	26.7
Jamboree Road	n/o Irvine Boulevard	Major Arterial <sup>2</sup>	27.1	27.2
Jamboree Road	s/o Irvine Boulevard	Transportation Corridor <sup>1</sup>	37.5	37.5
Jamboree Road	s/o Bryan Avenue	Transportation Corridor <sup>1</sup>	39.2	39.2
Jamboree Road	b/w El Camino Real and I-5 NB Ramps	Transportation Corridor <sup>1</sup>	61.5	61.5
Jamboree Road	n/o Michelle Drive	Transportation Corridor <sup>1</sup>	60.1	59.7
Jamboree Road	s/o Michelle Drive	Major Highway <sup>1</sup>	57.8	58.8
Jamboree Road	n/o Edinger Avenue	Transportation Corridor <sup>1</sup>	97.3	97.5
Jamboree Road	s/o Edinger Avenue	Transportation Corridor <sup>1</sup>	86.2	86.0
Jeffrey Road	e/o SR-241 NB Ramps	Primary Highway <sup>1</sup>	3.9	4.1

## 5. Environmental Analysis

### NOISE

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Jeffrey Road	n/o Portola Parkway	Primary Highway <sup>1</sup>	11.4	11.1
Jeffrey Road	n/o Irvine Boulevard	Major Highway <sup>1</sup>	33.9	33.8
Jeffrey Road	n/o Bryan Avenue	Major Highway <sup>1</sup>	35.7	35.5
Jeffrey Road	n/o Trabuco Road	Major Highway <sup>1</sup>	46.9	46.9
Jeffrey Road	s/o Trabuco Road	Major Highway <sup>1</sup>	50.6	50.4
Jeffrey Road	b/w Roosevelt and I-5 NB Ramps	Major Highway <sup>1</sup>	68.2	67.9
Jeffrey Road	s/o Walnut Avenue/I-5 SB Ramps	Major Highway <sup>1</sup>	50.7	50.6
Jeffrey Road	s/o Irvine Center Drive	Major Highway <sup>1</sup>	49.6	49.2
Jeffrey Road	n/o Alton Parkway	Major Highway <sup>1</sup>	48.4	48.3
Jeffrey Road	b/w Quailcreek and I-405 NB Ramps	Major Highway <sup>1</sup>	57.3	57.3
Jeronimo Road	e/o Alton Parkway	Primary Highway <sup>1</sup>	7.3	7.2
Jeronimo Road	w/o Lake Forest Drive	Primary Arterial <sup>2</sup>	12.0	12.0
Jeronimo Road	e/o Lake Forest Drive	Primary Arterial <sup>2</sup>	16.0	16.2
Jeronimo Road	e/o Ridge Route Drive	Primary Arterial <sup>2</sup>	15.0	15.2
Jeronimo Road	w/o Los Alisos Drive	Primary Arterial <sup>2</sup>	29.0	28.9
Jeronimo Road	e/o Los Alisos Drive	Primary Arterial <sup>2</sup>	23.5	23.7
Jeronimo Road	s/o Alicia Parkway	Primary Arterial <sup>2</sup>	25.5	25.5
Laguna Canyon Road	b/w Irvine Center Drive and Discovery	Primary Highway <sup>1</sup>	6.9	6.9
Laguna Canyon Road	b/w Waterworks Way and Irvine Center Drive	Primary Highway <sup>1</sup>	6.8	6.8
Laguna Canyon Road	n/o Alton Parkway	Primary Highway <sup>1</sup>	5.8	5.9
Laguna Canyon Road	s/o Alton Parkway	Primary Highway <sup>1</sup>	9.4	9.4
Laguna Canyon Road	n/o Quail Hill Parkway	Primary Highway <sup>1</sup>	7.5	7.5
Laguna Canyon Road	s/o Quail Hill Parkway	Primary Highway <sup>1</sup>	11.8	11.8
Laguna Canyon Road	n/o SR-73 NB Ramps	Primary Highway <sup>1</sup>	33.8	33.8
Laguna Hills Drive	s/o Paseo De Valencia	Primary Arterial <sup>2</sup>	24.2	24.2
Laguna Hills Drive	w/o Moulton Parkway	Major Arterial <sup>2</sup>	30.7	30.9
Lake Road	n/o Alton Parkway	Local Collector <sup>1</sup>	5.8	5.8
Lake Forest Drive	s/o Portola Parkway	Primary Arterial <sup>2</sup>	17.0	17.0
Lake Forest Drive	s/o SR-241 SB Ramps	Primary Arterial <sup>2</sup>	28.0	28.6
Lake Forest Drive	s/o Rancho Parkway	Primary Arterial <sup>2</sup>	35.0	34.9
Lake Forest Drive	n/o Trabuco Road	Primary Arterial <sup>2</sup>	35.0	34.7
Lake Forest Drive	s/o Trabuco Road	Major Arterial <sup>2</sup>	40.0	39.5
Lake Forest Drive	n/o Jeronimo Road	Major Arterial <sup>2</sup>	38.0	37.4
Lake Forest Drive	s/o Jeronimo Road	Major Arterial <sup>2</sup>	39.0	38.6

## 5. Environmental Analysis

### NOISE

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Lake Forest Drive	n/o Muirlands Boulevard	Major Arterial <sup>2</sup>	38.0	37.6
Lake Forest Drive	n/o Rockfield Boulevard	Major Arterial <sup>2</sup>	46.0	45.5
Lake Forest Drive	b/w Rockfield Boulevard and I-5 NB Ramps	Major Arterial <sup>2</sup>	70.0	69.4
Lake Forest Drive	s/o Avenida Carlota/I-5 SB Ramps	Major Highway <sup>1</sup>	23.0	22.8
Lake Forest Drive	s/o Irvine Center Drive	Major Highway <sup>1</sup>	12.6	12.5
Lake Forest Drive	b/w Scientific Way and Tesla	Major Highway <sup>1</sup>	21.9	21.7
Lake Forest Drive	e/o Bake Parkway	Major Highway <sup>1</sup>	23.9	23.6
Lake Forest Drive	w/o Bake Parkway	Primary Highway <sup>1</sup>	22.6	22.3
Los Alisos Boulevard	n/o Trabuco Road	Primary Arterial <sup>2</sup>	22.6	22.6
Los Alisos Boulevard	s/o Trabuco Road	Major Arterial <sup>2</sup>	28.7	28.4
Los Alisos Boulevard	e/o Muirlands Boulevard	Major Arterial <sup>2</sup>	39.0	38.7
Los Alisos Boulevard	w/o Muirlands Boulevard	Primary Arterial <sup>2</sup>	35.0	34.8
Los Alisos Boulevard	s/o Rockfield Boulevard/Fordview Street	Major Arterial <sup>2</sup>	32.0	32.0
Los Alisos Boulevard	b/w Avenida Carlota and Paseo de Valencia	Major Arterial <sup>2</sup>	25.1	25.2
Marine Way	s/o Barranca Parkway	Primary Highway <sup>1</sup>	12.8	14.5
Marine Way	n/o Rockfield Boulevard	Primary Highway <sup>1</sup>	24.7	26.7
Marine Way	s/o Rockfield Boulevard	Primary Highway <sup>1</sup>	19.3	21.1
Meridian	n/o Alton Parkway	Primary Highway <sup>1</sup>	1.0	1.0
Modjeska	n/o Irvine Boulevard	Local Collector <sup>1</sup>	11.8	13.9
Moulton Parkway	e/o (s/o) Lake Forest Drive	Major Arterial <sup>2</sup>	31.1	31.1
Moulton Parkway	e/o (s/o) Ridge Route Drive	Major Arterial <sup>2</sup>	38.4	38.4
Moulton Parkway	w/o (n/o) El Toro Road	Major Arterial <sup>2</sup>	43.7	43.7
Moulton Parkway	e/o (s/o) El Toro Road	Major Arterial <sup>2</sup>	44.3	44.4
Moulton Parkway	b/w Glenwood/Indian Creek and Laguna Hills Drive	Major Arterial <sup>2</sup>	41.1	41.0
Moulton Parkway	s/o Laguna Hills Drive	Major Arterial <sup>2</sup>	30.1	30.1
Moulton Parkway	s/o Alicia Parkway	Major Arterial <sup>2</sup>	26.2	26.2
Muirlands Boulevard	e/o Bake Parkway	Primary Arterial <sup>2</sup>	20.0	20.5
Muirlands Boulevard	w/o Ridge Route Drive	Primary Arterial <sup>2</sup>	26.0	26.2
Muirlands Boulevard	e/o Ridge Route Drive	Primary Arterial <sup>2</sup>	28.0	28.2
Muirlands Boulevard	e/o El Toro Road	Primary Arterial <sup>2</sup>	30.0	30.0
Muirlands Boulevard	s/o Los Alisos Boulevard	Primary Arterial <sup>2</sup>	24.1	24.3
Muirlands Boulevard	e/o Alicia Parkway	Primary Arterial <sup>2</sup>	19.9	19.9
Oak Canyon/Laguna Canyon Road	w/o Sand Canyon Avenue	Local Collector <sup>1</sup>	6.3	6.3

## 5. Environmental Analysis

### NOISE

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Orchard Hills/ Planning Area 1 Loop	n/o Portola Parkway	Local Collector <sup>1</sup>	7.0	6.9
Pacifica	w/o Fortune Drive	Primary Highway <sup>1</sup>	10.8	10.8
Pacifica	w/o (n/o) Alton Parkway	Primary Highway <sup>1</sup>	7.4	7.3
Paseo de Valencia	e/o El Toro Road	Primary Arterial <sup>2</sup>	36.4	36.4
Paseo de Valencia	w/o Los Alisos Boulevard	Major Arterial <sup>2</sup>	31.2	31.3
Paseo de Valencia	e/o Los Alisos Boulevard	Major Arterial <sup>2</sup>	47.2	47.2
Paseo de Valencia	w/o Alicia Parkway	Major Arterial <sup>2</sup>	36.5	36.3
Paseo de Valencia	e/o Alicia Parkway	Primary Arterial <sup>2</sup>	14.1	14.0
Portola Parkway	w/o Jamboree Road	Primary Arterial <sup>2</sup>	15.4	15.5
Portola Parkway	w/o SR-261 SB Ramps	Major Highway <sup>1</sup>	25.9	26.1
Portola Parkway	e/o SR-261 SB Ramps	Major Highway <sup>1</sup>	21.2	21.3
Portola Parkway	e/o Culver Drive	Major Highway <sup>1</sup>	22.6	22.7
Portola Parkway	w/o Jeffrey Road	Major Highway <sup>1</sup>	25.2	25.2
Portola Parkway	w/o Sand Canyon Avenue	Primary Highway <sup>1</sup>	26.9	26.8
Portola Parkway	e/o San Canyon Avenue	Primary Highway <sup>1</sup>	23.8	23.3
Portola Parkway	e/o Ridge Valley	Primary Highway <sup>1</sup>	21.3	21.7
Portola Parkway	b/w Silverado Canyon and Portola Springs	Primary Highway <sup>1</sup>	27.0	27.4
Portola Parkway	e/o Portola Springs	Primary Highway <sup>1</sup>	23.0	22.9
Portola Parkway	w/o Alton Parkway	Primary Arterial <sup>2</sup>	20.0	20.5
Portola Parkway	e/o Alton Parkway	Major Arterial <sup>2</sup>	31.0	31.7
Portola Parkway	w/o Lake Forest Drive	Major Arterial <sup>2</sup>	36.0	35.9
Portola Parkway	w/o Glenn Ranch Road	Major Arterial <sup>2</sup>	53.0	52.9
Portola Parkway	e/o Glenn Ranch Road	Major Arterial <sup>2</sup>	36.0	36.1
Portola Parkway	s/o SR-241 SB Ramps	Major Arterial <sup>2</sup>	35.0	35.0
Portola Parkway	s/o Rancho Parkway	Major Arterial <sup>2</sup>	60.0	60.1
Portola Parkway	e/o El Toro Road	Major Arterial <sup>2</sup>	50.3	50.2
Portola Springs	s/o Portola Parkway	Primary Highway <sup>1</sup>	5.7	6.6
Quail Hill Parkway	e/o Shady Canyon Drive	Primary Highway <sup>1</sup>	19.4	19.5
Rancho Parkway	w/o Bake Parkway	Primary Arterial <sup>2</sup>	13.0	13.4
Rancho Parkway	w/o Lake Forest Drive	Primary Arterial <sup>2</sup>	32.0	32.1
Rancho Parkway	e/o Lake Forest Drive	Primary Arterial <sup>2</sup>	22.0	22.0
Research Drive	e/o Irvine Center Drive	Primary Highway <sup>1</sup>	9.0	9.0
Research Drive	w/o (n/o) Bake Parkway	Primary Highway <sup>1</sup>	12.0	12.0
Research Drive	n/o Lake Forest Drive	Primary Highway <sup>1</sup>	12.1	12.1

## 5. Environmental Analysis

### NOISE

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Ridge Route Drive	s/o Trabuco Road	Primary Arterial <sup>2</sup>	9.0	8.9
Ridge Route Drive	n/o Jeronimo Road	Primary Arterial <sup>2</sup>	8.0	8.0
Ridge Route Drive	s/o Jeronimo Road	Primary Arterial <sup>2</sup>	12.0	12.0
Ridge Route Drive	s/o Muirlands Boulevard	Primary Arterial <sup>2</sup>	13.0	12.9
Ridge Route Drive	s/o Rockfield Boulevard	Primary Arterial <sup>2</sup>	18.0	18.0
Ridge Route Drive	s/o (w/o) Avenida Carlota	Primary Arterial <sup>2</sup>	14.9	14.9
Ridge Route Drive	s/o (w/o) Moulton Parkway	Primary Arterial <sup>2</sup>	11.0	11.0
Ridge Route Drive	e/o Bake Parkway	Primary Arterial <sup>2</sup>	9.6	9.4
Rockfield Boulevard	e/o Marine Way	Primary Highway <sup>1</sup>	6.0	6.4
Rockfield Boulevard	e/o Sterling	Primary Highway <sup>1</sup>	4.5	5.4
Rockfield Boulevard	w/o Bake Parkway	Primary Highway <sup>1</sup>	10.9	10.8
Rockfield Boulevard	w/o Lake Forest Drive	Primary Highway <sup>1</sup>	15.7	15.8
Rockfield Boulevard	w/o Ridge Route Drive	Primary Arterial <sup>2</sup>	24.0	24.0
Rockfield Boulevard	e/o Ridge Route Drive	Primary Arterial <sup>2</sup>	27.0	26.9
Rockfield Boulevard	e/o El Toro Road	Primary Arterial <sup>2</sup>	20.0	20.0
Roosevelt	w/o Jeffrey Road	Primary Highway <sup>1</sup>	10.1	10.2
Roosevelt	e/o Jeffrey Road	Primary Highway <sup>1</sup>	19.9	19.9
Roosevelt	w/o Sand Canyon Avenue	Primary Highway <sup>1</sup>	8.4	8.4
San Canyon Avenue	n/o Irvine Boulevard	Primary Highway <sup>1</sup>	29.0	28.8
San Canyon Avenue	s/o Irvine Boulevard	Major Highway <sup>1</sup>	32.5	32.9
San Canyon Avenue	n/o Trabuco Road	Major Highway <sup>1</sup>	29.5	29.7
San Canyon Avenue	s/o Trabuco Road	Transportation Corridor <sup>1</sup>	50.5	50.5
San Canyon Avenue	s/o Roosevelt	Transportation Corridor <sup>1</sup>	52.6	52.7
San Canyon Avenue	n/o I-5 NB Ramps	Transportation Corridor <sup>1</sup>	62.4	62.6
San Canyon Avenue	b/w I-5 SB Ramps and Burt Road	Major Highway <sup>1</sup>	51.8	52.0
San Canyon Avenue	b/w Burt Road and Oak Canyon/Laguna Canyon Road	Major Highway <sup>1</sup>	52.8	53.2
San Canyon Avenue	n/o Irvine Center Drive	Major Highway <sup>1</sup>	42.1	42.3
San Canyon Avenue	s/o Waterworks Way	Major Highway <sup>1</sup>	39.5	39.4
San Canyon Avenue	s/o Barranca Parkway	Major Highway <sup>1</sup>	38.6	38.7
San Canyon Avenue	b/w Alton Parkway and I-405 NB Ramps	Major Highway <sup>1</sup>	41.0	40.9
Santa Maria Avenue	s/o Moulton Parkway	Primary Arterial <sup>2</sup>	8.9	8.8
Santa Maria Avenue	e/o Laguna Canyon Road	Secondary <sup>2</sup>	5.9	5.9
Santiago Canyon Road	e/o SR-241 NB Ramps	Primary Arterial <sup>2</sup>	23.4	23.3

## 5. Environmental Analysis

### NOISE

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
Scientific Way	s/o Irvine Center Drive	Primary Highway <sup>1</sup>	1.7	1.7
Spectrum	w/o Fortune Drive	Local Collector <sup>1</sup>	3.0	3.1
Sterling	b/w Rockfield Boulevard and Barranca Parkway	Local Collector <sup>1</sup>	4.0	3.8
Technology Drive	e/o Barranca Parkway	Primary Highway <sup>1</sup>	20.4	20.6
Technology Drive	w/o Barranca Parkway	Primary Highway <sup>1</sup>	15.9	15.8
Technology Drive	e/o Laguna Canyon Road	Secondary Arterial <sup>1</sup>	16.9	17.1
Toledo Way	e/o Alton Parkway	Primary Highway <sup>1</sup>	5.2	4.7
Toledo Way	w/o Lake Forest Drive	Primary Arterial <sup>2</sup>	6.0	6.0
Toledo Way	w/o Ridge Route Drive	Secondary <sup>2</sup>	7.0	6.8
Toledo Way	e/o Ridge Route Drive	Primary Arterial <sup>2</sup>	8.0	7.8
Trabuco Road	b/w Culver Drive and I-5 NB Ramps	Primary Highway <sup>1</sup>	38.3	37.7
Trabuco Road	e/o I-5 NB Ramps	Primary Highway <sup>1</sup>	20.8	20.5
Trabuco Road	w/o Jeffrey Road	Primary Highway <sup>1</sup>	18.6	18.0
Trabuco Road	e/o Jeffrey Road	Primary Highway <sup>1</sup>	18.5	17.6
Trabuco Road	e/o Bake Parkway	Major Arterial <sup>2</sup>	27.0	27.9
Trabuco Road	b/w Lake Forest Drive and Ridge Route Drive	Major Arterial <sup>2</sup>	36.0	36.5
Trabuco Road	w/o El Toro Road	Major Arterial <sup>2</sup>	40.0	40.3
Trabuco Road	e/o El Toro Road	Primary Arterial <sup>2</sup>	23.3	23.7
Trabuco Road	n/o Alicia Parkway	Primary Arterial <sup>2</sup>	26.6	26.6
Trabuco Road	s/o Alicia Parkway	Primary Arterial <sup>2</sup>	13.9	13.9
Tustin Ranch Road	w/o Jamboree Road	Major Arterial <sup>2</sup>	12.1	12.3
Tustin Ranch Road	s/o Portola Parkway	Major Arterial <sup>2</sup>	31.4	31.8
Tustin Ranch Road	n/o La Colina Drive	Major Arterial <sup>2</sup>	31.3	31.7
Tustin Ranch Road	s/o Irvine Boulevard	Major Arterial <sup>2</sup>	28.0	28.2
University Drive	b/w I-405 SB Ramps and Michelson Drive	Major Highway <sup>1</sup>	60.0	59.2
Walnut Avenue	w/o Jamboree Road	Major Highway <sup>1</sup>	21.8	21.7
Walnut Avenue	e/o Jamboree Road	Major Highway <sup>1</sup>	22.8	23.0
Walnut Avenue	w/o Culver Drive	Primary Highway <sup>1</sup>	25.6	25.6
Walnut Avenue	e/o Culver Drive	Primary Highway <sup>1</sup>	25.4	25.4
Walnut Avenue	e/o Yale Avenue	Primary Highway <sup>1</sup>	12.9	12.9
Walnut Avenue/ I-5 SB Ramps	w/o Jeffrey Road	Primary Highway <sup>1</sup>	19.7	19.6
Warner Avenue	w/o Paseo Westpark	Primary Highway <sup>1</sup>	10.8	10.8
Warner Avenue	w/o Culver Drive	Primary Highway <sup>1</sup>	10.3	10.4
Warner Avenue	b/w Culver Drive and W. Yale Loop	Primary Highway <sup>1</sup>	11.0	11.0

## 5. Environmental Analysis

### NOISE

*Table 5.7-9  
General Plan Buildout (Post-2030)  
Off-Site Average Daily Traffic Volumes (1,000s)*

<i>Roadway</i>	<i>Segment</i>	<i>Classification</i>	<i>Approved Project<sup>3</sup></i>	<i>Modified Project<sup>4</sup></i>
W. Yale Loop	s/o Barranca Parkway	Primary Highway <sup>1</sup>	6.3	6.3
W. Yale Loop	s/o Alton Parkway	Primary Highway <sup>1</sup>	12.3	12.2
Yale Avenue	b/w Portola Parkway and Arborwood	Local Collector <sup>1</sup>	6.1	6.2
Yale Avenue	b/w Park Place and Irvine Boulevard	Primary Highway <sup>1</sup>	11.6	11.6
Yale Avenue	n/o Bryan Avenue	Primary Highway <sup>1</sup>	8.6	8.6
Yale Avenue	n/o Trabuco Road	Primary Highway <sup>1</sup>	10.0	10.0
Yale Avenue	n/o Walnut Avenue	Secondary Arterial <sup>1</sup>	13.5	13.4
Yale Avenue	s/o Walnut Avenue	Primary Highway <sup>1</sup>	12.1	12.1
Yale Avenue	b/w Deerfield Drive and Irvine Center Drive	Primary Highway <sup>1</sup>	12.9	12.9
Yale Avenue	b/w Irvine Center Drive and Yale Loop	Primary Highway <sup>1</sup>	10.8	10.8

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

Notes: MPH = miles per hour; n/o = north of; s/o = south of; b/w = between

<sup>1</sup> Road classifications based on City of Irvine Standard Plans dated March 19, 2009.

<sup>2</sup> Road classifications based on jurisdictions, including Aliso Viejo, Laguna Hills, Laguna Woods, Lake Forest, Mission Viejo, Orange, Orange County, and Tustin.

<sup>3</sup> Traffic volumes represent 3,625 dwelling units and non-residential uses, which were previously analyzed in the 2003 OCGP EIR, as described in Traffic Impact Analysis as the without project scenario or baseline Post-2030 condition. To provide a conservative comparison, the average daily traffic volumes used to describe the Approved Project do not include its 1,269 density bonus units.

<sup>4</sup> Modification to the configuration and the permitted on-site density of the originally approved 3,625 dwelling units and non-residential uses, which were previously analyzed in the 2003 OCGP EIR, and the location of the Approved Project's 4,894 dwelling units, including, without limitation, its 1,269 density bonus units.

### On-Site Traffic Noise Prediction Model Inputs

To predict the future on-site noise environment at individual lots within the Proposed Project Site, Modified Project General Plan Buildout Post-2030 average daily traffic volumes were used (see Table 5.7-10).

## 5. Environmental Analysis

### NOISE

*Table 5.7-10  
Roadway Parameters*

<i>Tract</i>	<i>Roadway</i>	<i>Lanes</i>	<i>Classification<sup>1</sup></i>	<i>Post 2030 ADT<sup>2</sup></i>	<i>Speed (MPH)<sup>1</sup></i>
17202	Irvine Boulevard	6	Major Highway (6)	40,800	60
	"A" Street	2	Local Collector	3,700	35
	"C" Street	2	Local Collector	360	35
17283A	Irvine Boulevard.	6	Major Highway (6)	35,200	60
	"LY" Street	2	Local Collector	2,400	35
	"LM" Street	2	Local Collector	1,100	35
	"O" Street	4	Secondary Arterial	12,200	50
	"C" Street	2	Local Collector	2,400	35
	"LN" Street	2	Local Collector	2,200	35
17364	SR-133	8	Transportation Corridor	84,800	65
	Portola Parkway	4	Primary Highway	20,700	55
	Irvine Boulevard	6	Major Highway (6)	38,800	60
	Ridge Valley	4	Secondary Arterial	16,700	50
17366	Irvine Boulevard	6	Major Highway (6)	35,300	65
	"LQ" Street	2	Local Collector	6,600	55
	"Z" Street	2	Local Collector	2,100	60
	"LN" Street	2	Local Collector	2,400	50
17368	Trabuco Road	4	Secondary Arterial	11,900	65
	"O" Street	4	Secondary Arterial	12,600	55
	"LV" Street	2	Local Collector	1,100	60
	"LY" Street	2	Local Collector	1,000	50

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

<sup>1</sup> Road classifications and design speeds based on City of Irvine Standard Plans dated March 19, 2009.

<sup>2</sup> Post-2030 ADT's including density bonus units based on the Traffic Impact Analysis prepared by Urban Crossroads Inc., May 2011(see Appendix M).

To assess the on-site traffic noise levels, detailed coordinate information for individual lots within each of the proposed VVTM's was collected to identify the spatial relationship and noise transmission path between the noise source and the sensitive receptors. The coordinate information was based on the grading plans provided for each VVTM. The grading plans were used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, the backyard receptor and the building façade.

The preliminary exterior noise level impacts presented later in this section reflect backyard receptors at a height of 5 feet above the pad elevation and a distance of 10 feet from the proposed barrier location or at the proposed building façade, whichever is greater. All first floor receptors were placed 5 feet above the proposed finished floor elevation at the building façade with all second floor receptors located 15 feet above the proposed finished floor elevation. A summary of the receptor and source geometry assumptions used to assess the on-site traffic noise levels is provided below:

### Receptor Horizontal Geometry:

- Backyard distance from noise barrier: 10 feet
- Façade distance from noise barrier: varies

### Receptor Vertical Geometry:

- Height above pad for ground level receptors:
  - Exterior noise = 5 feet
  - 1st Floor Interior = 5 feet
  - 2nd Floor Interior = 15 feet

### Source Horizontal Geometry:

- All vehicles are located at the single lane equivalent acoustic center of the full roadway.

### Source Vertical Geometry:

- Height above road grade:
  - Autos = 2 feet
  - Medium Trucks = 4 feet
  - Heavy Trucks = 8 feet

### Existing Plans, Programs, and Policies

The following measures are existing plans, programs, or policies (“PPPs”) that apply to the Modified Project, as well as to the Approved Project, and will help to reduce and avoid potential impacts related to noise:

- PPP 7-1 Title 6 (Public Works), Division 8 (Pollution), Chapter 2 (Noise) of the Irvine Municipal Code, also known as the City’s Noise Ordinance, outlines the regulations necessary to control unnecessary, excessive and annoying noise in the City. The provisions of this chapter are applicable to nontransportation-related stationary noise sources. It outlines the noise level measurement criteria; establishes the noise zones and the maximum permitted exterior and interior noise standards in each zone; and discloses special noise provisions for construction, truck delivery and maintenance activities. For example, as outlined in Section 6-8-205 of the Noise Ordinance, no construction shall be permitted outside of the hours of 7:00 AM to 7:00 PM Monday through Friday and 9:00 AM to 6:00 PM Saturdays, unless a temporary waiver is granted by the Chief Building Official or authorized representative. Trucks, vehicles, and equipment that are making, or are involved with, material deliveries, loading, or transfer of materials, equipment service, maintenance of any devices or appurtenances for or within any construction project in the City shall not be operated or driven on City streets outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the City. Any waiver granted shall take impact upon the community into consideration. No construction activity will be permitted outside of these hours except in emergencies including maintenance work on the City rights-of-way that might be required.
- PPP 7-2 Prior to the issuance of building permits for each structure or tenant improvement, other than a parking structure, the applicant shall submit a final acoustical report prepared to the satisfaction

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of the Director of Community Development. The report shall demonstrate that the development will be sound attenuated against present and projected noise levels including stationary, roadway, aircraft, helicopter, and railroad noise to meet City interior and exterior noise standards. The final acoustical report shall include all information required by the City's Acoustical Report Information Sheet (Form 42-48). The report shall be accompanied by a list identifying the sheet(s) of the building plans that include required sound attenuation measures (Standard Condition 3.5).

PPP 7-3 Title 5 (Planning), Division 10 (Grading Code and Encroachment Regulations), Chapter 1 (Grading Code), Section 5-10-127.G (Import and Export of Earth Materials) of the Irvine Municipal Code, states that if a grading project includes the movement of earth material to or from the site in an amount considered substantial by the Chief Building Official, the permittee is required to submit the proposed haul route for review and approval by the Chief Building Official. Special conditions of the grading permit may be imposed that require alternate routes or other measures in consideration of the possible impact on the adjacent community environment or effect on the public right-of-way itself.

### Project Design Features

The following project design features (“PDFs”) have been incorporated into the Modified Project to help to reduce or avoid its potential noise impacts.

PDF 7-1 **Construction Noise:** Prior to issuance of grading permits, the project applicant or its successor shall incorporate the following measures as a note on the grading plan cover sheet to ensure that the greatest distance between noise sources and sensitive receptors during construction activities has been achieved, and that construction noise has been reduced.

- During construction activities, all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, consistent with manufacturers’ standards. All stationary construction equipment shall be placed so that emitted noise is directed away from the noise-sensitive receptors nearest the Proposed Project Site boundaries.
- Equipment shall be staged in areas that will create the greatest distance between construction-related noise sources and the noise-sensitive receptors nearest the Proposed Project Site during all project construction.
- All construction-related activities shall be restricted to the construction hours outlined in the City’s Noise Ordinance (Municipal Code Section 6-8-205).
- Haul truck and other construction-related trucks traveling to and from the Proposed Project Site shall be restricted to the same hours specified for the operation of construction equipment. To the extent feasible, haul routes shall not pass directly by sensitive land uses or residential dwellings.
- Where construction will occur adjacent to any developed/occupied noise-sensitive uses, a construction-related noise mitigation plan shall be submitted the Director of Community Development for review and approval prior to the issuance of grading

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permits. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the Modified Project, through the use of such methods as: (1) temporary noise attenuation fences; (2) preferential location of equipment; and (3) use of current technology and noise-suppression equipment.

- Construction of planned sound walls that have been incorporated into the project design shall be installed prior to construction of the building foundation; or temporary sound blankets (fences typically composed of poly-vinyl-chloride-coated outer shells with absorbent inner insulation) shall be placed along the boundary of the Proposed Project Site facing the nearest noise-sensitive receptors during construction activities.

The following impact analysis addresses impacts that the Initial Study for the Modified Project disclosed could be potentially significant. The thresholds upon which these determinations were based are identified in brackets after the impact statement.

***IMPACT 5.7-1 THE MODIFIED PROJECT, LIKE THE APPROVED PROJECT, WOULD NOT SUBSTANTIALLY ELEVATE TRAFFIC NOISE LEVELS ABOVE LOCAL NOISE STANDARDS AT NOISE-SENSITIVE RECEPTORS PROXIMATE TO THE PROPOSED PROJECT SITE. [IMPACTS N-1 AND N-3]***

***Impact Analysis:*** To assess the off-site traffic-related exterior noise level impacts associated with the Modified Project, the CNEL levels at a distance of 100 feet from the roadway segments included in the traffic study area were developed for the General Plan Post-2030 With Modified Project described in the Traffic Impact Analysis prepared by Urban Crossroads (Appendix M to this DSEIR).

#### *Off-site Traffic-Related Noise Contours*

To quantify the Modified Project's traffic noise impact on the surrounding off-site areas, the changes in traffic noise levels on 363 roadway segments surrounding the Proposed Project Site caused by the Modified Project were determined based on the changes in the average daily traffic volumes.

The purpose of the off-site noise contours is to assess the Modified Project's incremental off-site traffic-related noise impacts at land uses adjacent to roadways conveying project traffic. Noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 55, 60, 65 and 70 dBA noise levels. The distance from the centerline of the roadway to the CNEL contours for roadways in the vicinity of the Proposed Project Site for the Modified Project are presented in the noise technical report prepared by Urban Crossroads (see Appendix K of this DSEIR).

The noise contours do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. In addition, since the noise contours reflect modeling of vehicular noise along area roadways, they appropriately do not reflect noise contribution from the surrounding commercial and industrial uses or railroad activities within the Modified Project study area.

#### *Off-site Modified Project Traffic-Related Noise Level Contributions*

Based on the significance criteria presented earlier in Section 5.7-2, *Thresholds of Significance*, a significant off-site traffic noise impact would occur when a project creates a traffic-related noise level increase in the area

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adjacent to the roadway of 1.5 dBA and the resulting noise level exceeds the 65 dBA CNEL exterior noise standard. Table 5.7-11 presents an off-site traffic noise level comparison of the baseline scenario that includes the originally approved 3,625 residential units and approximately 6,586,000 square feet of non-residential uses analyzed in the Certified EIR (referred to in the Table and in this Section as the “Approved Project”) to the Modified Project.

As demonstrated in Table 5.7-11, the Modified Project, as compared to the Approved Project, would increase the off-site traffic noise levels by anywhere from zero to 1.1 dBA CNEL on the 363 off-site roadway segments. Based on the traffic noise screening analysis threshold of 1.5 dBA for all project-related traffic noise level increases where the resulting noise levels would be in excess of 65 dBA, no potential significant off-site noise level impacts would be created by the Modified Project.

*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Ada	s/o Barranca Parkway	57.8	58.2	0.4	No
Alicia Parkway	n/o Trabuco Road	70.7	70.7	0.0	No
Alicia Parkway	s/o Trabuco Road	71.2	71.2	0.0	No
Alicia Parkway	s/o Jeronimo Road	72.6	72.6	0.0	No
Alicia Parkway	n/o Muirlands Boulevard	72.6	72.6	0.0	No
Alicia Parkway	b/w I-5 NB Ramps and Muirlands Boulevard	73.0	73.0	0.0	No
Alicia Parkway	s/o I-5 SB Ramps	72.1	72.1	0.0	No
Alicia Parkway	s/o Paseo de Valencia	71.5	71.5	0.0	No
Alicia Parkway	s/o Moulton Parkway	71.3	71.3	0.0	No
Aliso Creek Road	e/o El Toro Road	66.2	66.2	0.0	No
Alton Parkway	w/o Culver Drive	69.9	69.9	0.0	No
Alton Parkway	e/o Culver Drive	69.0	69.0	0.0	No
Alton Parkway	e/o W. Yale Loop	68.8	68.8	0.0	No
Alton Parkway	e/o Lake Road	68.5	68.5	0.0	No
Alton Parkway	e/o Creek Road	68.4	68.4	0.0	No
Alton Parkway	w/o Jeffrey Road	69.2	69.2	0.0	No
Alton Parkway	b/w Jeffrey Road and Royal Oak	68.1	68.1	0.0	No
Alton Parkway	b/w Royal Oak and Valley Oak	67.6	67.6	0.0	No
Alton Parkway	w/o San Canyon Avenue	68.8	68.8	0.0	No
Alton Parkway	e/o San Canyon Avenue	70.7	70.6	0.0	No
Alton Parkway	e/o Laguna Canyon Road	67.2	67.2	0.0	No
Alton Parkway	b/w Pacifica and Banting	67.4	67.4	0.0	No
Alton Parkway	w/o Meridian	66.8	66.8	0.0	No
Alton Parkway	b/w Meridian and Irvine Center Drive	68.1	68.2	0.1	No

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*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Alton Parkway	b/w Enterprise Drive and Gateway Boulevard	71.3	71.4	0.1	No
Alton Parkway	b/w Enterprise Drive and I-5 NB Ramps	72.7	72.8	0.1	No
Alton Parkway	b/w I-5 NP Ramps and Technology Drive W	72.9	73.0	0.1	No
Alton Parkway	b/w Technology Drive W and Ada	71.6	71.6	0.1	No
Alton Parkway	e/o Ada	71.0	71.1	0.1	No
Alton Parkway	w/o Marine Way	71.2	71.3	0.1	No
Alton Parkway	e/o Technology	71.2	71.3	0.1	No
Alton Parkway	s/o Jeronimo Road	71.8	71.9	0.1	No
Alton Parkway	n/o Jeronimo Road	71.2	71.5	0.3	No
Alton Parkway	s/o Toledo Way	70.1	70.6	0.6	No
Alton Parkway	n/o Toledo Way	69.5	70.6	1.1	No
Alton Parkway	s/o Irvine Boulevard/Trabuco Road	71.1	70.9	-0.2	No
Alton Parkway	n/o Irvine Boulevard	71.5	71.7	0.2	No
Alton Parkway	n/o Commercentre Drive	71.8	71.9	0.1	No
Alton Parkway	s/o SR-41 Ramps	68.0	68.0	0.0	No
Alton Parkway	n/o SR-41 Ramps	67.4	67.5	0.1	No
Avenida Carlota	w/o Ridge Route Drive	63.5	63.6	0.0	No
Avenida Carlota	w/o Paseo de Valencia	65.9	65.9	0.0	No
Avenida Carlota	b/w Paseo de Valencia and El Toro Road	69.1	69.1	0.0	No
Avenida Carlota	e/o El Toro Road	67.2	67.2	0.0	No
Bake Parkway	s/o Portola Parkway	67.1	67.1	0.0	No
Bake Parkway	n/o Commercentre Drive	68.7	68.7	0.0	No
Bake Parkway	n/o Irvine Boulevard	69.2	69.2	0.0	No
Bake Parkway	s/o Irvine Boulevard	72.6	72.5	-0.1	No
Bake Parkway	b/w Toledo Way and Jeronimo Road	73.2	73.1	-0.1	No
Bake Parkway	n/o Muirlands Boulevard	73.7	73.6	-0.1	No
Bake Parkway	s/o Muirlands Boulevard	78.7	78.7	0.0	No
Bake Parkway	s/o Rockfield Boulevard	74.5	74.5	-0.1	No
Bake Parkway	n/o I-5 NB Ramps	74.8	74.8	0.0	No
Bake Parkway	b/w I-5 SB Ramps and Research Drive	71.1	71.1	0.0	No
Bake Parkway	b/w Research Drive and Irvine Center Drive	68.0	68.0	0.0	No
Bake Parkway	s/o Irvine Center Drive	67.6	67.8	0.1	No
Bake Parkway	b/w Lake Forest Drive and Ridge	60.7	60.9	0.3	No

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*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
	Route Drive				
Bake Parkway	b/w Ridge Route Drive and Laguna Canyon	65.9	65.9	0.0	No
Barranca Parkway	w/o Culver Drive	69.9	69.9	0.0	No
Barranca Parkway	e/o Culver Drive	69.4	69.4	0.0	No
Barranca Parkway	e/o W. Yale Loop	69.0	69.0	0.0	No
Barranca Parkway	e/o Lake Road	68.5	68.5	0.0	No
Barranca Parkway	b/w Creek Road and Lyon	68.3	68.3	0.0	No
Barranca Parkway	w/o E. Yale Loop	68.3	68.3	0.0	No
Barranca Parkway	w/o Jeffrey Road	68.7	68.7	0.0	No
Barranca Parkway	e/o Jeffrey Road	66.9	66.9	0.0	No
Barranca Parkway	w/o Sand Canyon Avenue	66.9	66.8	-0.1	No
Barranca Parkway	e/o Sand Canyon Avenue	66.3	66.2	-0.1	No
Barranca Parkway	e/o Laguna Canyon Road	66.0	66.0	0.0	No
Barranca Parkway	b/w Discovery and Banting	65.6	65.5	-0.1	No
Barranca Parkway	s/o Irvine Center Drive	67.0	66.9	0.0	No
Barranca Parkway	b/w I-5 HOV Ramp and Irvine Center Drive	67.6	67.5	-0.1	No
Barranca Parkway	s/o Technology	67.9	67.8	0.0	No
Barranca Parkway	n/o Technology	66.4	66.4	0.0	No
Barranca Parkway	e/o Ada	65.6	65.7	0.1	No
Barranca Parkway	w/o Marine Way	68.2	68.3	0.1	No
Barranca Parkway	e/o Sterling	66.0	66.2	0.2	No
Bryan Avenue	w/o Jamboree Road	67.5	67.5	0.0	No
Bryan Avenue	e/o Jamboree Road	67.3	67.3	0.0	No
Bryan Avenue	w/o Culver Drive	68.6	68.5	0.0	No
Bryan Avenue	e/o Culver Drive	67.2	67.2	0.0	No
Bryan Avenue	e/o Eastwood	65.9	65.8	-0.1	No
Canyon View Avenue	w/o Jamboree Road	62.2	62.2	0.0	No
Chapman Avenue/ Santiago Canyon	w/o Jamboree Road	69.5	69.5	0.0	No
Chapman Avenue/ Santiago Canyon	e/o Jamboree Road	70.9	70.9	0.0	No
Creek Road	n/o Alton Parkway	55.6	55.6	0.0	No
Culver Drive	s/o Portola Parkway	69.7	69.7	0.0	No
Culver Drive	n/o Irvine Boulevard	70.2	70.2	0.0	No
Culver Drive	s/o Irvine Boulevard	71.3	71.3	0.0	No

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*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Culver Drive	n/o Bryan Avenue	70.7	70.8	0.0	No
Culver Drive	s/o Bryan Avenue	72.7	72.7	0.0	No
Culver Drive	n/o Trabuco Road	72.8	72.8	0.0	No
Culver Drive	s/o I-5 SB Ramps	73.2	73.2	0.0	No
Culver Drive	n/o Walnut Avenue	72.8	72.8	0.0	No
Culver Drive	b/w Walnut Avenue and Deerfield Drive	72.4	72.4	0.0	No
Culver Drive	b/w Deerfield Drive and Irvine Center Drive	71.9	71.9	0.0	No
Culver Drive	b/w Irvine Center Drive and Warner Avenue	72.3	72.3	0.0	No
Culver Drive	b/w Warner Avenue and Barranca Parkway	72.3	72.3	0.0	No
Culver Drive	n/o Alton Parkway	72.7	72.7	0.0	No
Culver Drive	b/w Alton Parkway and Main Street	72.8	72.8	0.0	No
Culver Drive	b/w Main Street and San Leandro	72.8	72.9	0.0	No
Culver Drive	b/w San Leandro and I-405 NB Ramps	73.3	73.3	0.0	No
E. Yale Loop	s/o Barranca Parkway	64.1	64.1	0.0	No
E. Yale Loop	n/o Alton Parkway	64.9	64.9	0.0	No
E. Yale Loop	s/o Alton Parkway	65.0	65.0	0.0	No
El Camino Real	e/o Tustin Ranch Road	65.7	65.7	0.0	No
El Camino Real	e/o Jamboree Road	68.2	68.2	0.0	No
El Camino Real	s/o Bryan Avenue	63.4	63.4	0.0	No
El Toro Road	n/o Portola Parkway/S. Margarita Parkway	68.1	68.1	0.0	No
El Toro Road	s/o Portola Parkway/S. Margarita Parkway	70.0	70.0	0.0	No
El Toro Road	n/o Trabuco Road	70.0	70.0	0.0	No
El Toro Road	n/o Toledo Way	73.0	73.0	0.0	No
El Toro Road	n/o Jeronimo Road	73.0	73.0	0.0	No
El Toro Road	s/o Jeronimo Road	73.3	73.3	0.0	No
El Toro Road	n/o Rockfield Boulevard	73.3	73.3	0.0	No
El Toro Road	b/w Rockfield Boulevard and I-5 NB Ramps	73.9	73.9	0.0	No
El Toro Road	b/w I-5 SB Ramps and Avenida Carolota	71.4	71.4	0.0	No
El Toro Road	n/o Paseo de Valencia	69.6	69.6	0.0	No
El Toro Road	s/o Paseo de Valencia	70.0	70.0	0.0	No
El Toro Road	s/o Moulton Parkway	70.0	70.0	0.0	No
El Toro Road	n/o Aliso Creek Road	69.1	69.1	0.0	No

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*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
El Toro Road	n/o SR-73	69.6	69.6	0.0	No
El Toro Road	s/o SR-73	66.0	66.0	0.0	No
Fortune Drive	b/w Gateway Boulevard and Spectrum	63.8	63.8	0.0	No
Fortune Drive	b/w Pacifica and Spectrum	63.8	63.9	0.0	No
Gateway Boulevard	w/o Fortune Drive	62.9	63.0	0.1	No
Gateway Boulevard	n/o Alton Parkway	56.4	56.7	0.3	No
Gateway Boulevard	w/o Irvine Center Drive	58.9	58.9	0.0	No
Glen Ranch Road	n/o Portola Parkway	68.6	68.6	0.0	No
Glenwood Drive/ Indian Creek	w/o Moulton Parkway	64.1	64.2	0.0	No
Handy Creek Road	w/o Jamboree Road	53.9	54.1	0.2	No
Harvard Avenue	s/o Walnut Avenue	59.9	59.9	0.0	No
Harvard Avenue	n/o Edinger Avenue	65.5	65.6	0.0	No
Harvard Avenue	b/w Edinger Avenue and Paseo Westpark	66.2	66.2	0.0	No
Hubble	n/o Irvine Center Drive	57.4	57.4	0.0	No
Irvine Boulevard	b/w Newport Boulevard and Red Hill Avenue	72.2	72.2	0.0	No
Irvine Boulevard	b/w Red Hill Avenue and Browning	70.8	70.8	0.0	No
Irvine Boulevard	w/o Tustin Ranch Road	71.6	71.6	0.0	No
Irvine Boulevard	w/o Jamboree Road	71.0	71.0	0.0	No
Irvine Boulevard	e/o Jamboree Road	72.1	72.1	0.0	No
Irvine Boulevard	b/w SR-261 Ramps	72.0	72.0	0.0	No
Irvine Boulevard	e/o SR-261 NB Ramps	72.1	72.1	0.0	No
Irvine Boulevard	w/o Culver Drive	71.4	71.4	0.0	No
Irvine Boulevard	e/o Culver Drive	71.5	71.5	0.0	No
Irvine Boulevard	e/o Yale Avenue	71.8	71.9	0.0	No
Irvine Boulevard	w/o Jeffrey Road	71.4	71.4	0.0	No
Irvine Boulevard	e/o Jeffery Road	71.3	71.2	0.0	No
Irvine Boulevard	e/o Groveland	71.2	71.2	0.0	No
Irvine Boulevard	e/o San Canyon Avenue	71.7	71.8	0.1	No
Irvine Boulevard	e/o Alton Parkway	71.6	71.0	-0.6	No
Irvine Center Drive/ Edinger Avenue	w/o Jamboree Road	69.1	69.1	0.0	No
Irvine Center Drive/ Edinger Avenue	e/o Jamboree Road	69.6	69.6	0.0	No
Irvine Center Drive	e/o Hearthstone Boulevard	69.7	69.7	0.0	No
Irvine Center Drive	e/o Culver Drive	69.9	69.9	0.0	No

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*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Irvine Center Drive	b/w Yale Avenue and Fontaine Avenue	70.3	70.2	0.0	No
Irvine Center Drive	e/o Jeffrey Road	71.8	71.7	0.0	No
Irvine Center Drive	w/o Sand Canyon Avenue	69.8	69.7	-0.1	No
Irvine Center Drive	e/o San Canyon Avenue	68.7	68.6	-0.1	No
Irvine Center Drive	b/w Laguna Canyon Road and Discovery	68.3	68.2	-0.1	No
Irvine Center Drive	w/o Barranca Parkway	69.2	69.1	0.0	No
Irvine Center Drive	b/w Barranca Parkway and Gateway Boulevard	69.4	69.4	0.0	No
Irvine Center Drive	b/w Gateway Boulevard and Alton Parkway	68.9	68.9	0.0	No
Irvine Center Drive	b/w Alton Parkway and Spectrum	71.1	71.0	0.0	No
Irvine Center Drive	b/w Pacifica and Enterprise Drive	71.1	71.1	0.0	No
Irvine Center Drive	b/w Enterprise Drive and I-405 SB Ramps	72.9	72.9	0.0	No
Irvine Center Drive	b/w I-405 SB Ramps and Research Drive	72.0	71.9	0.0	No
Irvine Center Drive	b/w Research Drive and Hubble	69.4	69.4	0.0	No
Irvine Center Drive	b/w Hubble and Bake Parkway	69.1	69.1	0.0	No
Irvine Center Drive	b/w Bake Parkway and Muller	68.9	68.9	0.0	No
Irvine Center Drive	b/w Muller and Tesla	68.7	68.7	0.0	No
Irvine Center Drive	w/o Lake Forest Drive	68.7	68.7	0.0	No
Jamboree Road	n/o Chapman Avenue/Santiago Canyon	67.9	68.0	0.0	No
Jamboree Road	s/o Chapman Avenue	66.3	66.3	0.0	No
Jamboree Road	s/o Canyon View Avenue	68.7	68.8	0.0	No
Jamboree Road	n/o Tustin Ranch Road	69.2	69.2	0.1	No
Jamboree Road	s/o Tustin Ranch Road	69.1	69.1	0.0	No
Jamboree Road	n/o Irvine Boulevard	69.2	69.2	0.0	No
Jamboree Road	s/o Irvine Boulevard	76.5	76.5	0.0	No
Jamboree Road	s/o Bryan Avenue	76.7	76.7	0.0	No
Jamboree Road	b/w El Camino Real and I-5 NB Ramps	78.6	78.6	0.0	No
Jamboree Road	n/o Michelle Drive	78.5	78.5	0.0	No
Jamboree Road	s/o Michelle Drive	73.2	73.3	0.1	No
Jamboree Road	n/o Edinger Avenue	80.6	80.6	0.0	No
Jamboree Road	s/o Edinger Avenue	80.1	80.1	0.0	No
Jeffrey Road	e/o SR-241 NB Ramps	60.3	60.5	0.2	No
Jeffrey Road	n/o Portola Parkway	64.9	64.8	-0.1	No

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*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Jeffrey Road	n/o Irvine Boulevard	70.9	70.9	0.0	No
Jeffrey Road	n/o Bryan Avenue	71.2	71.1	0.0	No
Jeffrey Road	n/o Trabuco Road	72.3	72.3	0.0	No
Jeffrey Road	s/o Trabuco Road	72.7	72.7	0.0	No
Jeffrey Road	b/w Roosevelt and I-5 NB Ramps	74.0	73.9	0.0	No
Jeffrey Road	s/o Walnut Avenue/I-5 SB Ramps	72.7	72.7	0.0	No
Jeffrey Road	s/o Irvine Center Drive	72.6	72.5	0.0	No
Jeffrey Road	n/o Alton Parkway	72.5	72.5	0.0	No
Jeffrey Road	b/w Quailcreek and I-405 NB Ramps	73.2	73.2	0.0	No
Jeronimo Road	e/o Alton Parkway	63.0	63.0	-0.1	No
Jeronimo Road	w/o Lake Forest Drive	64.3	64.3	0.0	No
Jeronimo Road	e/o Lake Forest Drive	65.6	65.6	0.1	No
Jeronimo Road	e/o Ridge Route Drive	65.3	65.3	0.1	No
Jeronimo Road	w/o Los Alisos Drive	68.2	68.1	0.0	No
Jeronimo Road	w/o Los Alisos Drive	67.2	67.3	0.0	No
Jeronimo Road	s/o Alicia Parkway	67.6	67.6	0.0	No
Laguna Canyon Road	b/w Irvine Center Drive and Discovery	62.8	62.8	0.0	No
Laguna Canyon Road	b/w Waterworks Way and Irvine Center Drive	62.7	62.7	0.0	No
Laguna Canyon Road	n/o Alton Parkway	62.0	62.1	0.1	No
Laguna Canyon Road	s/o Alton Parkway	64.1	64.1	0.0	No
Laguna Canyon Road	n/o Quail Hill Parkway	63.1	63.1	0.0	No
Laguna Canyon Road	s/o Quail Hill Parkway	65.1	65.1	0.0	No
Laguna Canyon Road	n/o SR-73 NB Ramps	69.7	69.7	0.0	No
Laguna Hills Drive	s/o Paseo De Valencia	67.4	67.4	0.0	No
Laguna Hills Drive	w/o Moulton Parkway	69.7	69.8	0.0	No
Lake Road	n/o Alton Parkway	56.9	56.9	0.0	No
Lake Forest Drive	s/o Portola Parkway	65.8	65.8	0.0	No
Lake Forest Drive	s/o SR-241 SB Ramps	68.0	68.1	0.1	No
Lake Forest Drive	s/o Rancho Parkway	69.0	69.0	0.0	No
Lake Forest Drive	n/o Trabuco Road	69.0	68.9	0.0	No
Lake Forest Drive	s/o Trabuco Road	70.9	70.8	-0.1	No
Lake Forest Drive	n/o Jeronimo Road	70.7	70.6	-0.1	No
Lake Forest Drive	s/o Jeronimo Road	70.8	70.7	0.0	No
Lake Forest Drive	n/o Muirlands Boulevard	70.7	70.6	0.0	No

## 5. Environmental Analysis

### NOISE

*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Lake Forest Drive	n/o Rockfield Boulevard	71.5	71.4	0.0	No
Lake Forest Drive	b/w Rockfield Boulevard and I-5 NB Ramps	73.3	73.3	0.0	No
Lake Forest Drive	s/o Avenida Carlota/I-5 SB Ramps	69.2	69.2	0.0	No
Lake Forest Drive	s/o Irvine Center Drive	66.6	66.6	0.0	No
Lake Forest Drive	b/w Scientific Way and Tesla	69.0	69.0	0.0	No
Lake Forest Drive	e/o Bake Parkway	69.4	69.4	-0.1	No
Lake Forest Drive	w/o Bake Parkway	67.9	67.9	-0.1	No
Los Alisos Boulevard	n/o Trabuco Road	67.1	67.1	0.0	No
Los Alisos Boulevard	s/o Trabuco Road	69.4	69.4	0.0	No
Los Alisos Boulevard	e/o Muirlands Boulevard	70.8	70.7	0.0	No
Los Alisos Boulevard	w/o Muirlands Boulevard	69.0	68.9	0.0	No
Los Alisos Boulevard	s/o Rockfield Boulevard/Fordview Street	69.9	69.9	0.0	No
Los Alisos Boulevard	b/w Avenida Carlota and Paseo de Valencia	68.9	68.9	0.0	No
Marine Way	s/o Barranca Parkway	65.5	66.0	0.5	No
Marine Way	n/o Rockfield Boulevard	68.3	68.6	0.3	No
Marine Way	s/o Rockfield Boulevard	67.2	67.6	0.4	No
Meridian	n/o Alton Parkway	54.4	54.4	0.0	No
Modjeska	n/o Irvine Boulevard	60.0	60.7	0.7	No
Moulton Parkway	e/o (s/o) Lake Forest Drive	69.8	69.8	0.0	No
Moulton Parkway	e/o (s/o) Ridge Route Drive	70.7	70.7	0.0	No
Moulton Parkway	w/o (n/o) El Toro Road	71.3	71.3	0.0	No
Moulton Parkway	e/o (s/o) El Toro Road	71.3	71.3	0.0	No
Moulton Parkway	b/w Indian Creek and Laguna Hills Drive	71.0	71.0	0.0	No
Moulton Parkway	s/o Laguna Hills Drive	69.6	69.6	0.0	No
Moulton Parkway	s/o Alicia Parkway	69.0	69.0	0.0	No
Muirlands Boulevard	e/o Bake Parkway	66.5	66.6	0.1	No
Muirlands Boulevard	w/o Ridge Route Drive	67.7	67.7	0.0	No
Muirlands Boulevard	e/o Ridge Route Drive	68.0	68.0	0.0	No
Muirlands Boulevard	e/o El Toro Road	68.3	68.3	0.0	No
Muirlands Boulevard	s/o Los Alisos Boulevard	67.3	67.4	0.0	No
Muirlands Boulevard	e/o Alicia Parkway	66.5	66.5	0.0	No
Oak Canyon/Laguna Canyon Road	w/o Sand Canyon Avenue	57.3	57.3	0.0	No
Orchard Hills/	n/o Portola Parkway	57.7	57.7	-0.1	No

## 5. Environmental Analysis

### NOISE

*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Planning Area 1 Loop					
Pacifica	w/o Fortune Drive	64.7	64.7	0.0	No
Pacifica	w/o (n/o) Alton Parkway	63.1	63.0	-0.1	No
Paseo de Valencia	e/o El Toro Road	69.1	69.1	0.0	No
Paseo de Valencia	w/o Los Alisos Boulevard	69.8	69.8	0.0	No
Paseo de Valencia	e/o Los Alisos Boulevard	71.6	71.6	0.0	No
Paseo de Valencia	w/o Alicia Parkway	70.5	70.5	0.0	No
Paseo de Valencia	e/o Alicia Parkway	65.0	65.0	0.0	No
Portola Parkway	w/o Jamboree Road	65.4	65.4	0.0	No
Portola Parkway	w/o SR-261 SB Ramps	69.8	69.8	0.0	No
Portola Parkway	e/o SR-261 SB Ramps	68.9	68.9	0.0	No
Portola Parkway	e/o Culver Drive	69.2	69.2	0.0	No
Portola Parkway	w/o Jeffrey Road	69.6	69.6	0.0	No
Portola Parkway	w/o Sand Canyon Avenue	68.7	68.7	0.0	No
Portola Parkway	w/o San Canyon Avenue	68.1	68.1	-0.1	No
Portola Parkway	e/o Ridge Valley	67.7	67.7	0.1	No
Portola Parkway	b/w Silverado Canyon and Portola Springs	68.7	68.8	0.1	No
Portola Parkway	e/o Portola Springs	68.0	68.0	0.0	No
Portola Parkway	w/o Alton Parkway	66.5	66.6	0.1	No
Portola Parkway	e/o Alton Parkway	69.8	69.9	0.1	No
Portola Parkway	w/o Lake Forest Drive	70.4	70.4	0.0	No
Portola Parkway	w/o Glenn Ranch Road	72.1	72.1	0.0	No
Portola Parkway	e/o Glenn Ranch Road	70.4	70.4	0.0	No
Portola Parkway	s/o SR-241 SB Ramps	70.3	70.3	0.0	No
Portola Parkway	s/o Rancho Parkway	72.6	72.6	0.0	No
Portola Parkway	e/o El Toro Road	71.9	71.9	0.0	No
Portola Springs	s/o Portola Parkway	61.9	62.6	0.6	No
Quail Hill Parkway	e/o Shady Canyon Drive	67.3	67.3	0.0	No
Rancho Parkway	w/o Bake Parkway	64.7	64.8	0.1	No
Rancho Parkway	w/o Lake Forest Drive	68.6	68.6	0.0	No
Rancho Parkway	e/o Lake Forest Drive	67.0	67.0	0.0	No
Research Drive	e/o Irvine Center Drive	63.9	63.9	0.0	No
Research Drive	w/o (n/o) Bake Parkway	65.2	65.2	0.0	No
Research Drive	n/o Lake Forest Drive	65.2	65.2	0.0	No

## 5. Environmental Analysis

### NOISE

*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Ridge Route Drive	s/o Trabuco Road	63.1	63.0	0.0	No
Ridge Route Drive	n/o Jeronimo Road	62.6	62.6	0.0	No
Ridge Route Drive	s/o Jeronimo Road	64.3	64.3	0.0	No
Ridge Route Drive	s/o Muirlands Boulevard	64.7	64.6	0.0	No
Ridge Route Drive	s/o Rockfield Boulevard	66.1	66.1	0.0	No
Ridge Route Drive	s/o (w/o) Avenida Carlota	65.3	65.3	0.0	No
Ridge Route Drive	s/o (w/o) Moulton Parkway	63.9	63.9	0.0	No
Ridge Route Drive	e/o Bake Parkway	63.4	63.3	-0.1	No
Rockfield Boulevard	e/o Marine Way	62.2	62.4	0.3	No
Rockfield Boulevard	e/o Sterling	60.9	61.7	0.8	No
Rockfield Boulevard	w/o Bake Parkway	64.8	64.7	0.0	No
Rockfield Boulevard	w/o Lake Forest Drive	66.3	66.4	0.0	No
Rockfield Boulevard	w/o Ridge Route Drive	67.3	67.3	0.0	No
Rockfield Boulevard	e/o Ridge Route Drive	67.8	67.8	0.0	No
Rockfield Boulevard	e/o El Toro Road	66.5	66.5	0.0	No
Roosevelt	w/o Jeffrey Road	64.4	64.5	0.0	No
Roosevelt	e/o Jeffrey Road	67.4	67.4	0.0	No
Roosevelt	w/o San Canyon Avenue	63.6	63.6	0.0	No
San Canyon Avenue	n/o Irvine Boulevard	69.0	69.0	0.0	No
San Canyon Avenue	s/o Irvine Boulevard	70.7	70.8	0.1	No
San Canyon Avenue	n/o Trabuco Road	70.3	70.4	0.0	No
San Canyon Avenue	s/o Trabuco Road	77.8	77.8	0.0	No
San Canyon Avenue	s/o Roosevelt	77.9	78.0	0.0	No
San Canyon Avenue	n/o I-5 NB Ramps	78.7	78.7	0.0	No
San Canyon Avenue	b/w I-5 SB Ramps and Burt Road	72.8	72.8	0.0	No
San Canyon Avenue	b/w Burt Road and Oak Canyon/Laguna Canyon Road	72.9	72.9	0.0	No
San Canyon Avenue	n/o Irvine Center Drive	71.9	71.9	0.0	No
San Canyon Avenue	s/o Waterworks Way	71.6	71.6	0.0	No
San Canyon Avenue	s/o Barranca Parkway	71.5	71.5	0.0	No
San Canyon Avenue	b/w Alton Parkway and I-405 NB Ramps	71.8	71.7	0.0	No
Santa Maria Avenue	s/o Moulton Parkway	63.0	63.0	0.0	No
Santa Maria Avenue	e/o Laguna Canyon Road	59.8	59.8	0.0	No
Santiago Canyon Road	e/o SR-241 NB Ramps	67.2	67.2	0.0	No
Scientific Way	s/o Irvine Center Drive	56.7	56.7	0.0	No

## 5. Environmental Analysis

### NOISE

*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
Spectrum	w/o Fortune Drive	54.1	54.2	0.1	No
Sterling	b/w Rockfield Boulevard and Barranca Parkway	55.3	55.1	-0.2	No
Technology Drive	e/o Barranca Parkway	67.5	67.5	0.0	No
Technology Drive	w/o Barranca Parkway	66.4	66.4	0.0	No
Technology Drive	e/o Laguna Canyon Road	65.6	65.6	0.1	No
Toledo Way	e/o Alton Parkway	61.5	61.1	-0.4	No
Toledo Way	w/o Lake Forest Drive	61.3	61.3	0.0	No
Toledo Way	w/o Ridge Route Drive	60.5	60.4	-0.1	No
Toledo Way	e/o Ridge Route Drive	62.6	62.4	-0.1	No
Trabuco Road	b/w Culver Drive and I-5 NB Ramps	70.2	70.1	-0.1	No
Trabuco Road	e/o I-5 NB Ramps	67.6	67.5	-0.1	No
Trabuco Road	w/o Jeffrey Road	67.1	66.9	-0.1	No
Trabuco Road	e/o Jeffrey Road	67.1	66.8	-0.2	No
Trabuco Road	e/o Bake Parkway	69.2	69.3	0.1	No
Trabuco Road	b/w Lake Forest Drive and Ridge Route Drive	70.4	70.5	0.1	No
Trabuco Road	w/o El Toro Road	70.9	70.9	0.0	No
Trabuco Road	e/o El Toro Road	67.2	67.3	0.1	No
Trabuco Road	n/o Alicia Parkway	67.8	67.8	0.0	No
Trabuco Road	s/o Alicia Parkway	65.0	65.0	0.0	No
Tustin Ranch Road	w/o Jamboree Road	65.7	65.8	0.1	No
Tustin Ranch Road	s/o Portola Parkway	69.8	69.9	0.1	No
Tustin Ranch Road	n/o Colina Drive	69.8	69.9	0.1	No
Tustin Ranch Road	s/o Irvine Boulevard	69.3	69.4	0.0	No
University Drive	b/w I-405 SB Ramps and Michelson Drive	73.4	73.4	-0.1	No
Walnut Avenue	w/o Jamboree Road	69.0	69.0	0.0	No
Walnut Avenue	e/o Jamboree Road	69.2	69.2	0.0	No
Walnut Avenue	w/o Culver Drive	68.5	68.5	0.0	No
Walnut Avenue	e/o Culver Drive	68.4	68.4	0.0	No
Walnut Avenue	e/o Yale Avenue	65.5	65.5	0.0	No
Walnut Avenue/ I-5 SB Ramps	w/o Jeffrey Road	67.3	67.3	0.0	No
Warner Avenue	w/o Paseo Westpark	64.7	64.7	0.0	No
Warner Avenue	w/o Culver Drive	64.5	64.6	0.0	No
Warner Avenue	b/w Culver Drive and W. Yale Loop	64.8	64.8	0.0	No

## 5. Environmental Analysis

### NOISE

*Table 5.7-11  
General Plan Buildout (Post-2030) With Modified Project  
Off-Site Project-Related Traffic Noise Impacts*

Roadway	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact? <sup>3</sup>
		Approved Project <sup>1</sup>	Modified Project	Project Contribution	
W. Yale Loop	s/o Barranca Parkway	62.4	62.4	0.0	No
W. Yale Loop	s/o Alton Parkway	65.3	65.2	0.0	No
Yale Avenue	b/w Portola Parkway and Arborwood	57.1	57.2	0.1	No
Yale Avenue	b/w Park Place and Irvine Boulevard	65.0	65.0	0.0	No
Yale Avenue	n/o Bryan Avenue	63.7	63.7	0.0	No
Yale Avenue	n/o Trabuco Road	64.4	64.4	0.0	No
Yale Avenue	n/o Walnut Avenue	64.6	64.6	0.0	No
Yale Avenue	s/o Walnut Avenue	65.2	65.2	0.0	No
Yale Avenue	b/w Deerfield Drive and Irvine Center Drive	65.5	65.5	0.0	No
Yale Avenue	b/w Irvine Center Drive and Yale Loop	64.7	64.7	0.0	No

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

Notes: n/o = north of; s/o = south of; b/w = between; SB = southbound; NB = northbound

<sup>1</sup> Traffic volumes represent 3,625 dwelling units and non-residential uses that were previously approved and analyzed in the 2003 OCGP EIR, as described in the Traffic Impact Analysis as the without project scenario or baseline Post-2030 condition. To provide a conservative comparison, the average daily traffic volumes used to describe the Approved Project do not include the 1,269 density bonus units.

<sup>2</sup> Modification to the configuration and the permitted on-site density of the originally approved 3,625 dwelling units and non-residential uses, and the location of the Approved Project's 4,894 dwelling units, including, without limitation, its 1,269 density bonus units.

<sup>3</sup> A significant impact is considered to occur when resulting noise levels exceed 65 dBA CNEL and the project creates an increase greater than 1.5 dBA.

### *Off-site Traffic-Related Noise Impact Summary*

Table 5.7-12 presents a summary of the unmitigated off-site traffic-related exterior noise impacts for the 363 study area roadway segments analyzed. For both the Approved Project and the Modified Project, a total of 10 segments are expected to experience an unmitigated exterior noise level that exceeds 75 dBA CNEL at a distance of 100 feet from centerline. The unmitigated 70 dBA CNEL exterior noise level is expected to be exceeded on a total of 107 segments for the Approved Project and on 121 segments for the Modified Project within the study area. The unmitigated 65 dBA CNEL exterior noise level is expected to be exceeded on 257 segments for the Approved Project and on 268 segments for the Modified Project.

However, in each case, the traffic-related exterior noise level increases generated by the Modified Project are all less than 1.5 dBA and thus do not exceed the significance thresholds. Therefore, the Modified Project's traffic-related noise impacts on the surrounding communities will be less than significant. The Modified Project will not create a substantial permanent increase in exterior or interior traffic noise levels or expose persons to noise levels in excess of the exterior or interior noise level standards established in the City's Noise Ordinance and the Noise Element of the City of Irvine General Plan.

## 5. Environmental Analysis

### NOISE

Table 5.7-12

*Off-Site Traffic-Related Exterior Noise Impact Analysis Summary*

Condition	Scenario	Number of Segments Analyzed	Number of Segments Exceeding <sup>1</sup>			Number of Segments With Potential Significant Impact <sup>2</sup>
			75 dBA CNEL	70 dBA CNEL	65 dBA CNEL	
General Plan Buildout	Approved Project <sup>3</sup>	363	10	107	257	–
	Modified Project		10	121	268	0

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

<sup>1</sup> Segments exceeding the off-site unmitigated exterior noise levels estimated at a distance of 100 feet from the roadway centerline.

<sup>2</sup> Roadway segments experiencing an unmitigated project-related traffic noise level increase of greater than 1.5 dBA.

<sup>3</sup> Traffic volumes represent 3,625 dwelling units, and non-residential uses which were previously analyzed in the 2003 OCGP EIR as described in Traffic Impact analysis as the without project scenario or baseline Post-2030 condition. To provide a conservative comparison, the average daily traffic volumes used to describe the Approved Project do not include its 1,269 density bonus units.

<sup>4</sup> Modification to the configuration and the permitted on-site density of the originally approved 3,625 dwelling units, and non-residential uses which were previously analyzed in the 2003 OCGP EIR, and the location of the Approved Project's 4,894 dwelling units, including, without limitation, its 1,269 density bonus units.

**IMPACT 5.7-2 THE MODIFIED PROJECT COULD EXPOSE NOISE-SENSITIVE RECEPTORS WITHIN THE PROPOSED PROJECT SITE TO NOISE LEVELS THAT EXCEED THE CITY'S INTERIOR NOISE STANDARD OF 45 dBA CNEL OR THE CITY'S EXTERIOR NOISE STANDARD OF 65 dBA CNEL. [IMPACTS N-1 AND N-3]**

**Impact Analysis:** The noise technical report prepared by Urban Crossroads, which is included as Appendix K to this DSEIR, calculated the noise levels that would be experienced by the Modified Project's noise-sensitive receptors due to anticipated off- and on-site traffic-related noise sources and, where necessary, also recommended the necessary mitigation measures with reference to the individual proposed Vesting Tentative Tract Maps (VTTMs 17202, 17364, 17283A, 17366, and 17368). An analysis of these impacts is provided below.

#### *Exterior Traffic-Related Noise Impacts*

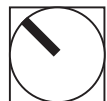
Impacts would be significant for the Modified Project as noise-sensitive portions of the single-family residential units (backyards) would exceed 65 dBA CNEL. However, with the recommended exterior noise mitigation, as provided at the end of this section, which includes the construction of six-foot-high noise barriers for single-family detached residential homes located near major highways such as Irvine Boulevard (see Figures 5.7-1 through 5.7-5), the exterior noise levels would remain below the City of Irvine 65 dBA CNEL exterior noise standards.

## 5. Environmental Analysis

### Noise Attenuation Measures for VTTM 17202



0 700  
Scale (Feet)



Source: Urban Crossroads 2011

Great Park Neighborhoods Draft Supplemental EIR

City of Irvine • **Figure 5.7-1**

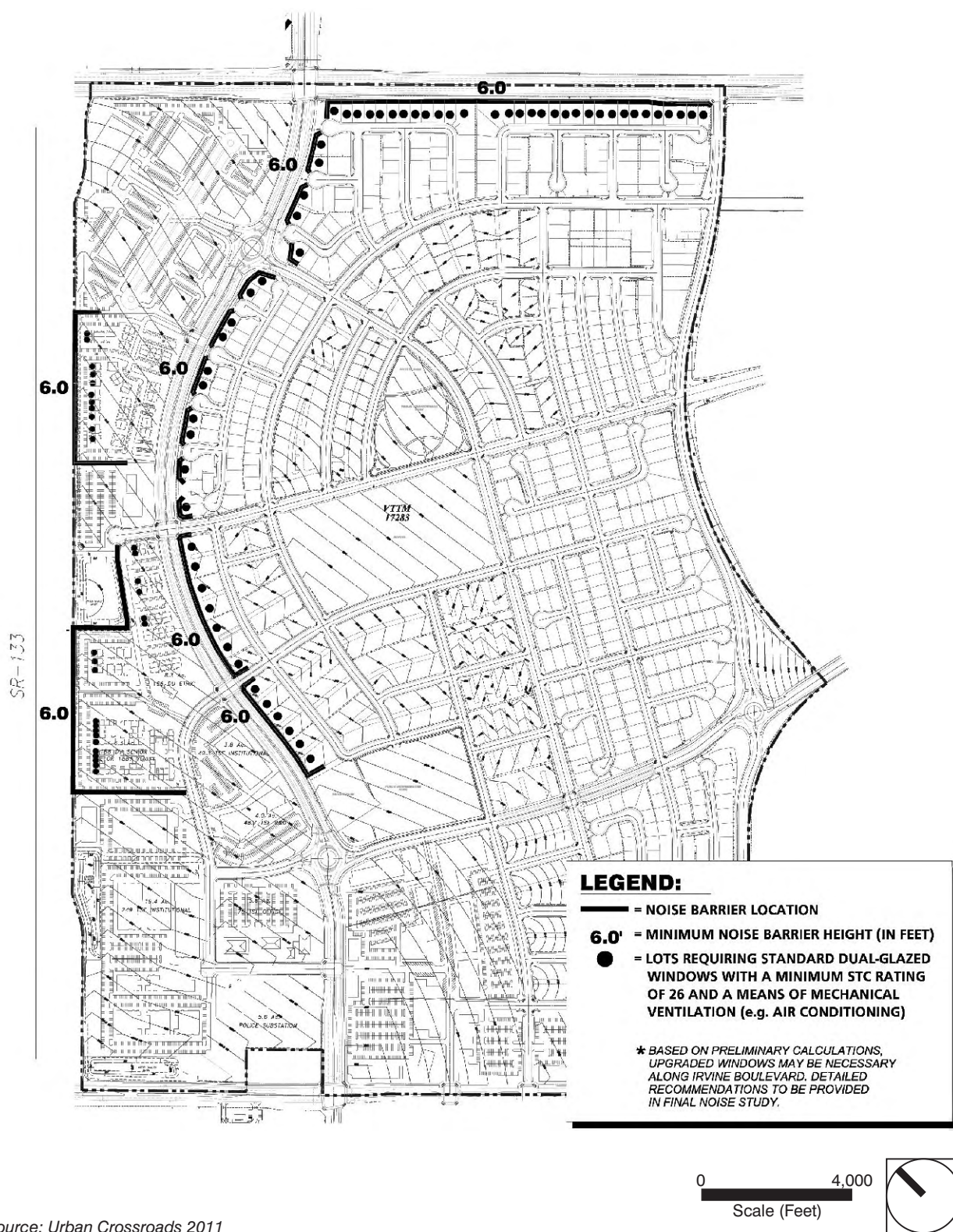
## *5. Environmental Analysis*

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### **NOISE**

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# Noise Attenuation Measures for VTTM 17283A



Source: Urban Crossroads 2011

Great Park Neighborhoods Draft Supplemental EIR

City of Irvine • **Figure 5.7-2**

## *5. Environmental Analysis*

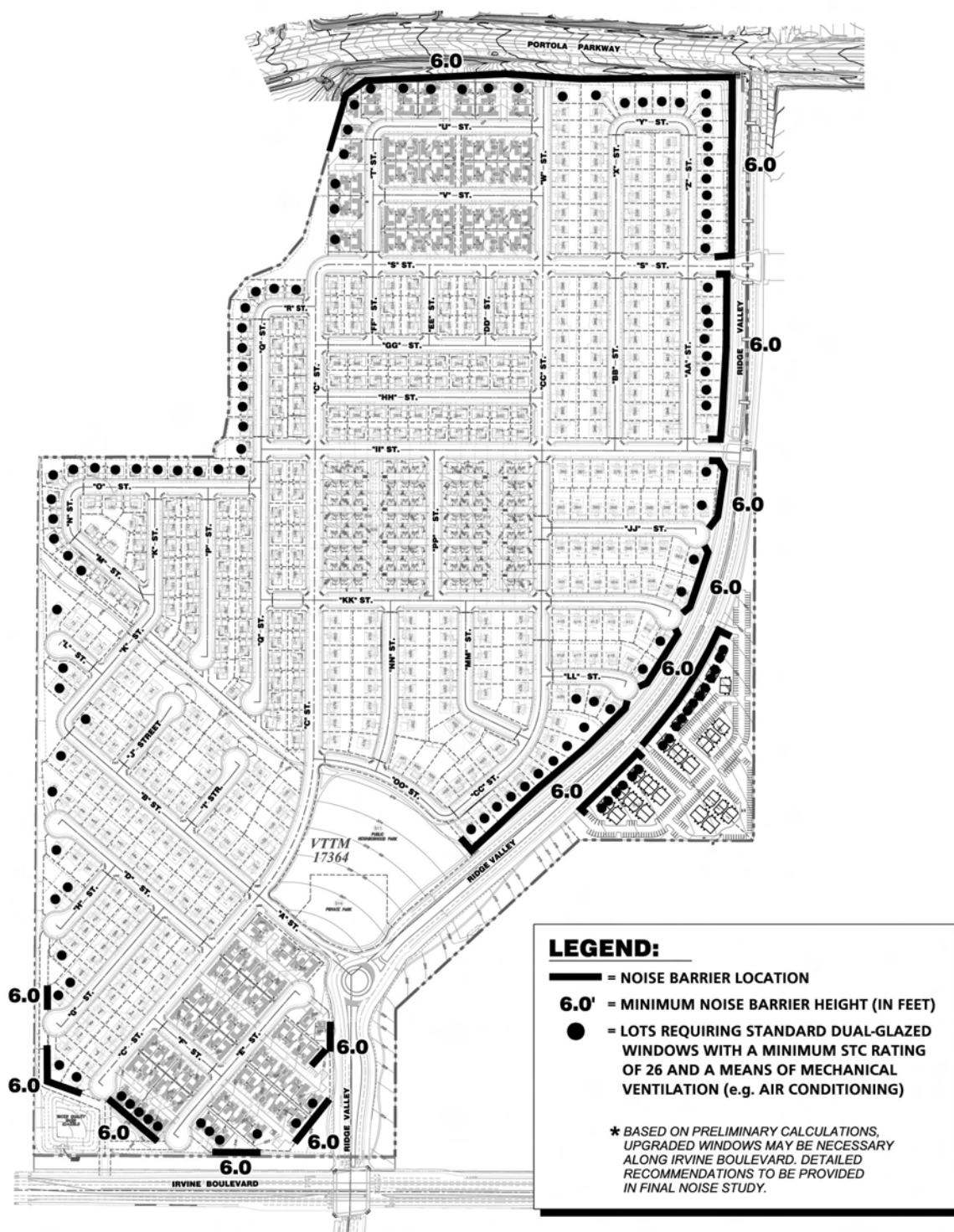
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### **NOISE**

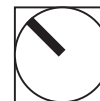
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## 5. Environmental Analysis

### Noise Attenuation Measures for VTTM 17364



0 650  
Scale (Feet)



## *5. Environmental Analysis*

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### **NOISE**

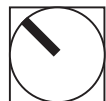
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## 5. Environmental Analysis

### Noise Attenuation Measures for VTTM 17366



0 600  
Scale (Feet)



Source: Urban Crossroads 2011

Great Park Neighborhoods Draft Supplemental EIR

City of Irvine • **Figure 5.7-4**

## *5. Environmental Analysis*

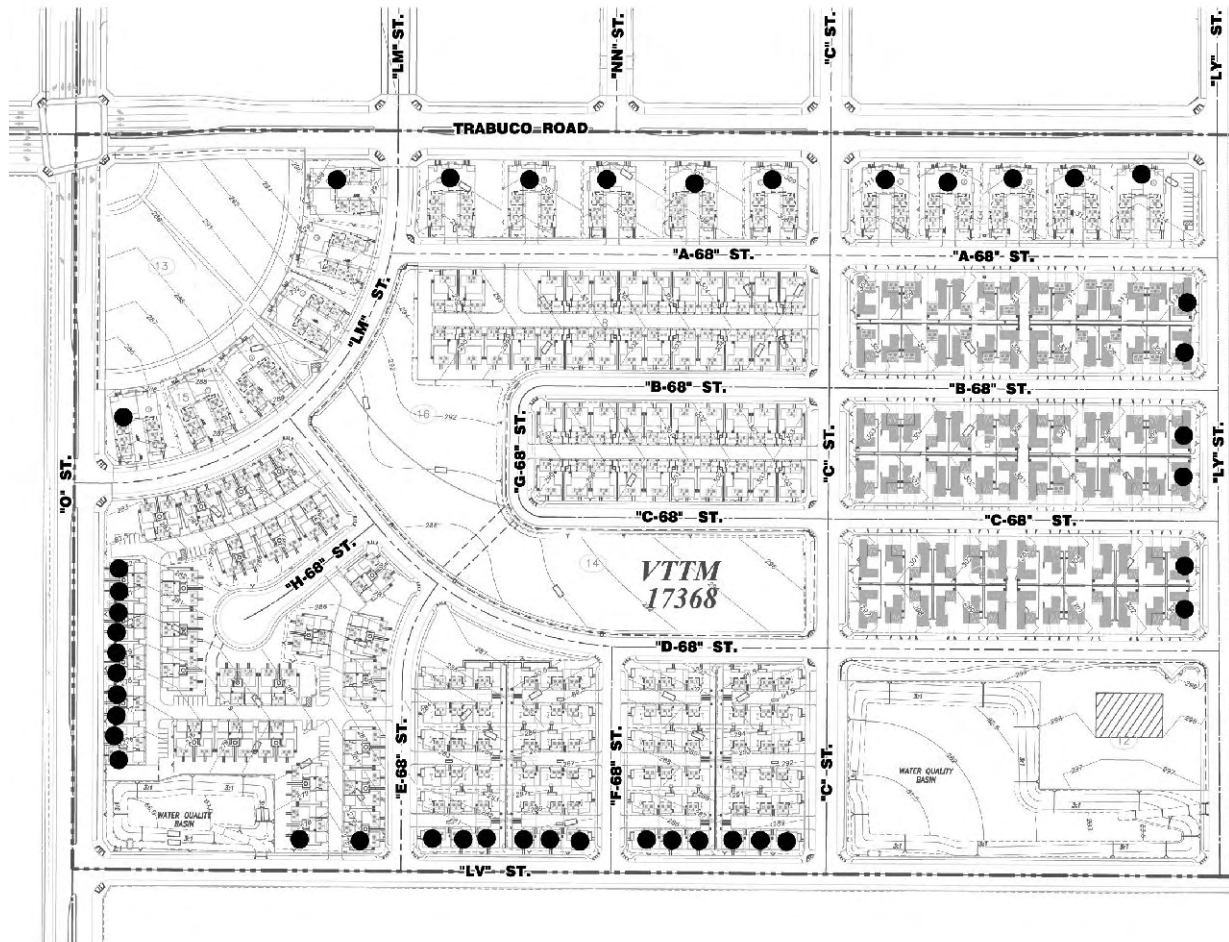
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### **NOISE**

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## 5. Environmental Analysis

### Noise Attenuation Measures for VTTM 17368



#### LEGEND:

- = LOTS REQUIRING STANDARD DUAL-GLAZED WINDOWS WITH A MINIMUM STC RATING OF 26 AND A MEANS OF MECHANICAL VENTILATION (e.g. AIR CONDITIONING)

0 350  
Scale (Feet)



Source: Urban Crossroads 2011

Great Park Neighborhoods Draft Supplemental EIR

City of Irvine • **Figure 5.7-5**

## *5. Environmental Analysis*

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### **NOISE**

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## 5. Environmental Analysis

### NOISE

#### VTTM 17202 Exterior Noise Analysis

Table 5.7-13 presents a summary of future exterior noise level impacts for VTTM 17202 using the FHWA traffic noise prediction model and the parameters discussed earlier under the *Methodology* section. As shown in Table 5.7-13, the future unmitigated exterior noise levels for the lots in VTTM 17202 are projected to range from 48.1 to 70.8 dBA CNEL. Impacts would be significant for the Modified Project as noise-sensitive portions of the single-family residential units (backyards) would exceed the applicable threshold of 65 dBA CNEL.

*Table 5.7-13  
VTTM 17202 Future Exterior Noise Levels*

<i>Lot</i>	<i>Roadway</i>	<i>Unmitigated Noise Level (dBA CNEL)</i>	<i>Mitigated Noise Level (dBA CNEL)</i>	<i>Recommended Barrier Height (Feet)</i>	<i>Top Of Barrier Elevation (Feet)</i>
433	"A" Street	58.5	–	–	–
442	"A" Street	59.2	–	–	–
465	"A" Street	57.4	–	–	–
466	"A" Street	52.3	–	–	–
487	"A" Street	51.2	–	–	–
508	"A" Street	49.9	–	–	–
577	"A" Street	58.9	–	–	–
608	"A" Street	57.3	–	–	–
634	"A" Street	55.6	–	–	–
660	"A" Street	55.4	–	–	–
693	"A" Street	56.6	–	–	–
705	"A" Street	57.8	–	–	–
345	"C" Street	48.4	–	–	–
349	"C" Street	48.1	–	–	–
353	"C" Street	48.3	–	–	–
514	Irvine Blvd.	70.8	64.2	6.0	429.7
518	Irvine Blvd.	70.8	63.7	6.0	431.9
522	Irvine Blvd.	70.2	63.2	6.0	434.4
526	Irvine Blvd.	70.2	63.1	6.0	436.6
673	Irvine Blvd.	70.1	62.8	6.0	439.0
677	Irvine Blvd.	69.7	62.6	6.0	441.5
697	Irvine Blvd.	67.9	61.1	6.0	445.8
698	Irvine Blvd.	64.5	58.4	6.0	446.6
701	Irvine Blvd.	61.0	55.1	6.0	452.2
708	Irvine Blvd.	70.2	63.6	6.0	452.3
720	Irvine Blvd.	70.2	63.0	6.0	459.0

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

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However, mitigation measures summarized in Section 5.7.7, *Mitigation Measures*, below would reduce those impacts to a less than significant level. With the recommended exterior noise mitigation measures, which include the construction of a six-foot-high noise barrier for lots 514-529, 673-680, 697-700, 707, 708, 718, 720, and 721 adjacent to Irvine Boulevard as shown in Figure 5.7-1, the mitigated exterior noise levels would range from 48.1 to 64.2 dBA CNEL. Therefore, VTTM 17202 would satisfy the City of Irvine's 65 dBA CNEL exterior noise level standard with the construction of the recommended six-foot-high noise barriers shown in Figure 5.7-1.

#### VTTM 17283A Exterior Noise Analysis

Table 5.7-14 presents a summary of future exterior noise level impacts for proposed VTTM 17283A. As shown in Table 5.7-14, based on the FHWA traffic noise prediction model, the future unmitigated exterior noise levels for the lots in VTTM 17283A are projected to range from 54.3 to 71.6 dBA CNEL. Impacts would be significant for the Modified Project as noise-sensitive portions of the single-family residential units (backyards) would exceed the applicable threshold of 65 dBA CNEL. However, mitigation measures summarized in Section 5.7.7, *Mitigation Measures*, below would reduce those impacts to a less than significant level. With the recommended exterior noise mitigation measures, which include the construction of a six-foot-high noise barrier for lots 3, 7, 8, 11, 12, 16, 17, 21, 22, 24, 65, 66, 75, 76, 81, and 82 along "O" Street, and lots 82-93 and 133-151 along Irvine Boulevard, as shown in Figure 5.7-2, the mitigated exterior noise levels would range from 54.3 to 61.3 dBA CNEL. Therefore, VTTM 17283A would satisfy the City of Irvine's 65 dBA CNEL exterior noise level standard with the construction of the recommended six-foot-high noise barriers shown in Figure 5.7-2.

Table 5.7-14  
VTTM 17283A Future Exterior Noise Levels

<i>Lot</i>	<i>Roadway</i>	<i>Unmitigated Noise Level (dBA CNEL)</i>	<i>Mitigated Noise Level (dBA CNEL)</i>	<i>Recommended Barrier Height (Feet)</i>	<i>Top Of Barrier Elevation (Feet)</i>
64	"C" Street	56.3	–	–	–
272	"C" Street	57.0	–	–	–
374	"C" Street	57.5	–	–	–
381	"C" Street	57.5	–	–	–
393	"C" Street	56.3	–	–	–
436	"C" Street	56.8	–	–	–
450	"C" Street	57.7	–	–	–
512	"C" Street	57.0	–	–	–
62	"LM" Street	54.4	–	–	–
100	"LM" Street	54.3	–	–	–
126	"LM" Street	54.4	–	–	–
158	"LM" Street	55.0	–	–	–
178	"LM" Street	55.0	–	–	–
1	"LN" Street	56.2	–	–	–
277	"LN" Street	56.3	–	–	–
290	"LN" Street	56.3	–	–	–

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*Table 5.7-14  
VTTM 17283A Future Exterior Noise Levels*

<i>Lot</i>	<i>Roadway</i>	<i>Unmitigated Noise Level (dBA CNEL)</i>	<i>Mitigated Noise Level (dBA CNEL)</i>	<i>Recommended Barrier Height (Feet)</i>	<i>Top Of Barrier Elevation (Feet)</i>
517	"LN" Street	56.7	–	–	–
151	"LY" Street	57.0	–	–	–
156	"LY" Street	55.4	–	–	–
188	"LY" Street	55.7	–	–	–
212	"LY" Street	57.8	–	–	–
215	"LY" Street	58.5	–	–	–
216	"LY" Street	56.0	–	–	–
291	"LY" Street	57.3	–	–	–
320	"LY" Street	58.1	–	–	–
329	"LY" Street	57.4	–	–	–
345	"LY" Street	57.4	–	–	–
422	"LY" Street	56.2	–	–	–
485	"LY" Street	56.9	–	–	–
489	"LY" Street	56.9	–	–	–
493	"LY" Street	56.8	–	–	–
7	"O" Street	65.9	58.8	6.0	330.2
16	"O" Street	65.5	58.5	6.0	337.6
22	"O" Street	65.6	59.2	6.0	340.6
75	"O" Street	65.2	58.6	6.0	350.8
81	"O" Street	64.7	58.5	6.0	355.3
519	"O" Street	66.1	59.4	6.0	325.0
520	"O" Street	66.1	59.6	6.0	318.0
82	Irvine Blvd.	71.6	61.3	6.0	359.0
86	Irvine Blvd.	71.5	60.5	6.0	362.5
90	Irvine Blvd.	67.2	59.2	6.0	366.5
93	Irvine Blvd.	64.4	57.7	6.0	369.0
133	Irvine Blvd.	67.3	59.4	6.0	371.5
136	Irvine Blvd.	63.6	57.3	6.0	375.0
140	Irvine Blvd.	64.2	57.5	6.0	378.5
144	Irvine Blvd.	65.0	57.9	6.0	382.0
148	Irvine Blvd.	65.4	58.0	6.0	385.0

Source: Noise Study prepared by Urban Crossroads, Inc. (see Appendix K of this DSEIR).

In addition to the residential uses within the proposed VTTM 17283A, two parks would be located within the tract boundaries. The park located at the northeast corner of "O" Street and "LQ" Street may experience traffic noise impacts from "O" Street. Due to the proximity of the park use to the roundabout at the

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intersection of the adjacent roadways, however, traffic-related noise impacts are expected to be less due to the decrease in speeds approaching and leaving the roundabout. Table 5.7-15 shows the expected contours related to various speeds on “O” Street. The design speed consistent with the City of Irvine standards is 50 miles per hour; however, it is expected that speeds adjacent to the park would be closer to 20 miles per hour. With speeds lower than 30 miles per hour, it is expected that the 65 dBA CNEL noise contour would remain within the “O” Street right of way and, therefore, will not cause a transportation noise impact to the park use.

*Table 5.7-15  
VTTM 17283A and 17364  
Transportation-Related Park Site Noise Contours*

Road	Segment	Speed (MPH) <sup>2</sup>	CNEL at 100 Feet (dBA)	Distance to Contour (Feet) <sup>1</sup>			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
“O” Street	s/o Irvine Boulevard	50	64.2	RW	88	190	409
		40	61.8	RW	61	131	282
		30	58.7	RW	RW	82	177
		20	54.7	RW	RW	RW	95
Ridge Valley	n/o Irvine Boulevard	50	65.5	RW	109	234	504
		40	63.1	RW	75	161	348
		30	60.1	RW	RW	101	218
		20	56.0	RW	RW	RW	117

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

Notes: MPH = miles per hour; s/o = south of; n/o = north of

<sup>1</sup> RW = Location of the respective noise contour falls within the right-of-way of the road.

<sup>2</sup> Current design speed based on the City of Irvine Roadway Specifications.

### VTTM 17364 Exterior Noise Analysis

Table 5.7-16 indicates that the future unmitigated exterior noise levels for the lots in proposed VTTM 17364 would range from 52.2 to 68.8 dBA CNEL. Impacts would be significant for the Modified Project as noise-sensitive portions of the single-family residential units (backyards) would exceed the applicable threshold of 65 dBA CNEL. However, mitigation measures summarized in Section 5.7.7, *Mitigation Measures*, below would reduce those impacts to a less than significant level. With the recommended exterior noise mitigation measures, which include the construction of a six-foot-high noise barrier for lots 349-354, 373, and 485-487 adjacent to Portola Parkway, and lots 317-325, 340-349, 374, 391, 392, 408, 409, and 421-434 adjacent to Ridge Valley, as shown in Figure 5.7-3, the mitigated exterior noise levels at the single-family homes would range from 49.0 to 64.7 dBA CNEL. Therefore, the exterior noise analysis shows that VTTM 17364 would satisfy the City of Irvine 65 dBA CNEL exterior noise level standard with the construction of the recommended six-foot-high noise barriers shown in Figure 5.7-3.

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*Table 5.7-16  
VTTM 17364 Future Exterior Noise Levels*

<i>Lot</i>	<i>Roadway</i>	<i>Unmitigated Noise Level (dBA CNEL)</i>	<i>Mitigated Noise Level (dBA CNEL)</i>	<i>Recommended Barrier Height (Feet)</i>	<i>Top Of Barrier Elevation (Feet)</i>
504	Irvine Blvd.	66.9	–	–	–
505	Irvine Blvd.	68.8	–	–	–
506	Irvine Blvd.	67.1	–	–	–
349	Portola Pkwy.	56.2	51.7	6.0	453.0
352	Portola Pkwy.	54.0	50.3	6.0	451.0
373	Portola Pkwy.	52.2	49.0	6.0	448.0
485	Portola Pkwy.	53.7	49.9	6.0	443.0
487	Portola Pkwy.	57.9	55.4	6.0	426.0
488	Portola Pkwy.	62.7	57.9	6.0	433.0
318	Ridge Valley	66.8	59.6	6.0	426.0
322	Ridge Valley	66.7	59.4	6.0	431.0
340	Ridge Valley	66.7	58.2	6.0	438.0
344	Ridge Valley	66.7	54.8	6.0	445.0
348	Ridge Valley	55.5	50.8	6.0	452.0
391	Ridge Valley	66.9	58.4	6.0	416.0
409	Ridge Valley	67.1	60.2	6.0	407.7
426	Ridge Valley	66.6	60.6	6.0	391.6
430	Ridge Valley	66.8	60.4	6.0	386.6
434	Ridge Valley	66.7	60.5	6.0	383.6
12	SR-133	64.7	–	–	–
42	SR-133	64.2	–	–	–
71	SR-133	63.9	–	–	–
171	SR-133	63.8	–	–	–
211	SR-133	59.7	–	–	–

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

Based on Table F-1, Interior and Exterior Noise Standards Energy Average (CNEL), of the City of Irvine Noise Element, mitigation is recommended only where excessive exterior noise levels are projected to occur at the Modified Project's “noise sensitive exterior uses [which] are limited to private yard of single-family homes or multi-family private patios which are accessed by a means of exit from inside the unit.”

Since VTTM 17364 along Irvine Boulevard contains only multi-family uses, there is no exterior mitigation necessary for the residences. Exterior noise barriers would not be provided for the proposed multi-family uses along the major highways, specifically Irvine Boulevard. While the unmitigated exterior noise levels within the on-site multi-family residential areas may exceed 65 dBA CNEL, the City of Irvine does not recognize the exterior areas of these units as outdoor living spaces. Consequently, noise barriers are not needed for the proposed multi-family residential units. However, multi-family developments with balconies that do not meet

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the 65 dBA CNEL exterior noise level standards would be required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts, as outlined in Mitigation Measure N-2 at the end of this section.

In addition to the residential uses within VTTM 17364, a private amenity area would be located within the tract boundaries. The private amenity area located at the north of “A” St. and Ridge Valley intersection may experience traffic noise impact levels from Ridge Valley. Due to the proximity of the private amenity area use to the roundabout at the intersection of the adjacent roadways, however, traffic related noise impacts are expected to be less due to the decrease in speeds approaching and leaving the roundabout. Table 5.7-16 shows the expected contours related to various speeds on Ridge Valley. The design speed consistent with the City of Irvine standards is 50 miles per hour, however, it is expected that speeds adjacent to the private amenity area will be closer to 20 miles per hour. With speeds lower than 30 miles per hour, it is expected that the 65 dBA CNEL noise contour will remain within the Ridge Valley right-of-way and therefore will not cause a transportation noise impact to the private amenity area use.

#### *VTTM 17366 Exterior Noise Analysis*

Table 5.7-17 presents a summary of future exterior noise level impacts for VTTM 17366. As shown in Table 5.7-17, based on the FHWA traffic noise prediction model, the future unmitigated exterior noise levels for the lots in VTTM 17366 are projected to range from 54.7 to 69.4 dBA CNEL.

Impacts would be significant for the Modified Project as noise-sensitive portions of the single-family residential units (backyards) would exceed the applicable threshold of 65 dBA CNEL. However, mitigation measures summarized in Section 5.7.7, *Mitigation Measures*, below would reduce those impacts to a less than significant level. With the recommended exterior noise mitigation measures, which include the construction of a six-foot-high noise barrier for lots 15, 16, 78-93, and 468-483 adjacent to Irvine Boulevard as shown in Figure 5.7-4, the mitigated exterior noise levels would range from 54.7 to 61.1 dBA CNEL. Therefore, VTTM 17366 would satisfy the City of Irvine’s 65 dBA CNEL exterior noise level standard with the construction of the recommended six-foot-high noise barriers shown in Figure 5.7-4.

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*Table 5.7-17  
VTTM 17366 Future Exterior Noise Levels*

<i>Lot</i>	<i>Roadway</i>	<i>Unmitigated Noise Level (dBA CNEL)</i>	<i>Mitigated Noise Level (dBA CNEL)</i>	<i>Recommended Barrier Height (Feet)</i>	<i>Top Of Barrier Elevation (Feet)</i>
1	"LN" Street	57.4	–	–	–
126	"LN" Street	56.7	–	–	–
157	"LN" Street	57.0	–	–	–
185	"LN" Street	56.6	–	–	–
284	"LN" Street	56.8	–	–	–
416	"LN" Street	56.6	–	–	–
429	"LN" Street	57.3	–	–	–
462	"LN" Street	56.9	–	–	–
505	"LN" Street	57.2	–	–	–
231	"LQ" Street	60.8	–	–	–
234	"LQ" Street	60.8	–	–	–
307	"LQ" Street	61.1	–	–	–
345	"LQ" Street	61.0	–	–	–
369	"LQ" Street	60.2	–	–	–
372	"LQ" Street	60.3	–	–	–
501	"LQ" Street	60.3	–	–	–
502	"LQ" Street	61.0	–	–	–
373	"Z" Street	56.5	–	–	–
377	"Z" Street	56.6	–	–	–
381	"Z" Street	56.4	–	–	–
401	"Z" Street	56.2	–	–	–
405	"Z" Street	56.1	–	–	–
464	"Z" Street	55.8	–	–	–
468	"Z" Street	54.7	–	–	–
16	Irvine Blvd.	65.3	58.1	6.0	415.0
81	Irvine Blvd.	67.7	59.7	6.0	411.0
85	Irvine Blvd.	67.0	59.2	6.0	407.0
89	Irvine Blvd.	67.7	59.4	6.0	403.0
93	Irvine Blvd.	66.1	58.7	6.0	401.0
470	Irvine Blvd.	65.5	58.1	6.0	444.4
474	Irvine Blvd.	64.8	57.9	6.0	445.5
478	Irvine Blvd.	61.8	56.4	6.0	445.0
482	Irvine Blvd.	63.4	57.0	6.0	441.0
497	Irvine Blvd.	69.2	58.0	6.0	431.0
506	Irvine Blvd.	69.4	56.5	6.0	422.0

Source: Noise Study prepared by Urban Crossroads, Inc. (see Appendix K of this DSEIR).

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#### *VTTM 17368 Exterior Noise Analysis*

Table 5.7-18 presents a summary of future exterior noise level impacts for proposed VTTM 17368 and shows that the future unmitigated exterior noise levels for the lots in VTTM 17368 would range from 53.2 to 67.4 dBA CNEL.

*Table 5.7-18  
VTTM 17368 Future Exterior Noise Levels*

<i>Lot</i>	<i>Roadway</i>	<i>Unmitigated Noise Level (dBA CNEL)</i>
9	"LV" Street	54.0
10	"LV" Street	55.3
11	"LV" Street	55.2
4	"LY" Street	54.0
5	"LY" Street	54.0
6	"LY" Street	53.2
9	"O" Street	67.3
15	"O" Street	67.2
1	Trabuco Rd.	66.8
2	Trabuco Rd.	67.4
3	Trabuco Rd.	67.4

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

Based on Table F-1, Interior and Exterior Noise Standards Energy Average (CNEL), of the City of Irvine Noise Element, mitigation is recommended only where excessive exterior noise levels are projected to occur at the Modified Project's "noise sensitive exterior uses [which] are limited to private yard of single-family homes or multi-family private patios which are accessed by a means of exit from inside the unit."

Since VTTM 17368 contains only multi-family uses, there is no exterior mitigation necessary for the residences. Exterior noise barriers would not be provided for the proposed multi-family uses along the major highways, specifically Irvine Boulevard. While the unmitigated exterior noise levels within the on-site multi-family residential areas may exceed 65 dBA CNEL, the City of Irvine does not recognize the exterior areas of these units as outdoor living spaces. Consequently, noise barriers are not needed for the proposed multi-family residential units. However, multi-family developments with balconies that do not meet the 65 dBA CNEL exterior noise level standards would be required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts, as outlined in Mitigation Measure N-2 at the end of this section.

#### *Interior Traffic-Related Noise Impacts*

To satisfy the City of Irvine's 45 dBA CNEL interior noise level criterion, residences on most lots facing major highways must maintain a windows closed condition and include a means of mechanical ventilation (e.g. air conditioning), in combination with standard building construction that includes dual-glazed windows; some residences may require upgraded dual-glazed windows. Consequently, impacts would be significant, without mitigation.

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With the recommended interior noise mitigation measures, at the locations shown in Figures 5.7-1 through 5.7-5 and as outlined in Mitigation Measure N-1, the interior noise levels of these residences would not exceed the City of Irvine 45 dBA CNEL interior noise standard. Specific window recommendations will be made once final architectural plans are available and detailed interior noise reduction calculations can be made based on actual building assembly details. Additionally, as stated in Mitigation Measure N-1, prior to the issuance of building permits for lots facing or located near major highways such as Irvine Boulevard, the project applicant shall provide a final noise study to the Director of Community Development that demonstrates how the exterior and interior noise requirements (65 dBA CNEL and 45 dBA CNEL, respectively) of the City's Noise Ordinance will be met.

**IMPACT 5.7-3      *LIKE THE APPROVED PROJECT, STATIONARY SOURCES OF NOISE GENERATED BY THE MODIFIED PROJECT WOULD COMPLY WITH THE CITY OF IRVINE MUNICIPAL CODE AND WOULD NOT SUBSTANTIALLY INCREASE AMBIENT NOISE LEVELS AT SENSITIVE RECEPTORS PROXIMATE TO THE PROPOSED PROJECT SITE. [IMPACTS N-1 AND N-3]***

**Impact Analysis:** Because the Modified Project and the Approved Project contain the same type of stationary noise sources that were analyzed in the 2003 OCGP EIR (e.g., residential, commercial, cultural/institutional/education use and transportation facilities), and the 2003 OCGP EIR concluded that these stationary sources would not result in significant off-site noise impacts, the Modified Project would also result in less than significant off-site noise impacts from stationary sources.

#### Analysis of Impacts to On-Site Noise Sensitive Receptors Due To the Modified Project's Stationary Sources

Stationary noise sources included in the Modified Project are expected to include building systems, manufacturing activities, industrial equipment, and entertainment activities. Stationary community noise sources associated with the Modified Project's residential sources include such sources as air conditioners, yard care equipment, and outdoor activities.

#### *Neighborhood Park Noise Impacts*

In addition to noise generated by the Modified Project's residential uses, noise would be generated by the neighborhood parks and two K-8 schools that are proposed to be developed within the Proposed Project Site. A review of the five VTTMs (see Figures 3-6 through 3-10) suggest that the primary noise source from each park would be from the playground and basketball court activities. Though park-related activities are exempt under the City's Noise Ordinance, the noise-sensitive residential uses may experience increased daytime noise levels if located near the planned park areas.

Based on the reference noise level measurements presented in Table 5.7-19 and on the distance from the center of activity to the nearest noise sensitive residential uses within each Proposed VTTM, projected noise levels from the K-8 playgrounds and each of the basketball courts were calculated. Table 5.7-20 demonstrates that these playground and basketball court activities would generate projected exterior noise levels at the nearest noise-sensitive residential receptor ranging from 42.5 to 57.4 dBA  $L_{eq}$ , and therefore would be less than significant.

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*Table 5.7-19  
Reference Noise Level Measurements*

<i>Noise Source</i>	<i>Distance From Noise Source (Feet)</i>	<i>Noise Source Height (Feet)</i>	<i>Drop-Off Rate<sup>1</sup> (L<sub>eq</sub> dBA)</i>	<i>Noise Levels (L<sub>eq</sub> dBA)</i>
Basketball Court Activities <sup>2</sup>	100	5.0	6.0	55.6
Youth Playground/Sporting Event Activities <sup>3</sup>	50	5.0	6.0	74.0

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

<sup>1</sup> Noise level (dBA) drop-off rate per doubling of distance.

<sup>2</sup> Activity noise level measurements taken at an existing park in the City of Irvine by Urban Crossroads on February 23, 2011.

<sup>3</sup> Activity noise levels taken from Noise Navigator® Sound Level Database.

*Table 5.7-20  
Stationary Noise Level Impact Projections  
of VTTM Park Activities*

<i>Tract</i>	<i>Lot Number</i>	<i>Source</i>	<i>Distance to Receiver (Feet)</i>	<i>Noise Source Elevation (Feet)</i>	<i>Receiver Elevation (Feet)</i>	<i>Exterior Noise Level Impact (L<sub>eq</sub> dBA)</i>
17202	85	Basketball Court	579	475	500	52.7
	376	Basketball Court	351	475	476	55.2
17283 A	309	Playground Activities	598	328	337	52.4
	521	Basketball Court	255	310	314	47.5
	522	Playground Activities	337	328	324	57.4
	523	Basketball Court	336	310	316	45.1
17364	106	Basketball Court	150	370	370	52.1
	498	Basketball Court	316	370	361	45.6
17366	226	Basketball Court	452	363	370	42.5
	228	Basketball Court	373	363	371	44.2
	496	Basketball Court	153	408	411	51.9
	499	Basketball Court	105	408	408	55.2
17368	7	Basketball Court	157	398	398	21.7
	10	Basketball Court	170	298	290	51.0

Source: Noise Study prepared by Urban Crossroads, Inc., May 2011 (see Appendix K of this DSEIR).

The expected stationary-source noise impacts within the Proposed Project Site would be consistent with typical residential land use activities (e.g., air conditioners, lawn maintenance, and outdoor activities) and are not expected to generate excessive amounts of noise. Additionally, noise associated with these sources is not expected to exceed the City's noise standards and in some cases, such as with certain park activities, may be considered exempt.

#### *Non-Residential Land Use Noise Impacts*

In addition to typical neighborhood noise impacts, portions of Proposed VTTMs 17283A, 17366 and 17364 include the development of non-residential, primarily commercial, uses. Typical noise impacts associated with these uses include passenger vehicle and truck maneuvering and unloading, air conditioning units, trash compactors and speakerphones. It is not possible to calculate the specific localized noise impacts from these uses in the absence of final site plans. At the time that final site plans or building permits are proposed for uses within VTTMs 17283A, 17366 and 17364, a site-specific noise analysis shall be completed to determine if the proposed uses would result in any significant noise impacts affecting the nearby noise-sensitive receptors (see PPP 7-2). Adherence to PPP 7-2 which requires site-specific noise analyses to demonstrate compliance with the City's Noise Ordinance would ensure non-residential land use impacts of the Modified Project are less than significant.

#### **IMPACT 5.7-4      CONSTRUCTION-RELATED ACTIVITIES OF THE MODIFIED PROJECT WOULD NOT RESULT IN A SUBSTANTIAL INCREASE IN TEMPORARY CONSTRUCTION NOISE. [IMPACT N-4]**

**Impact Analysis:** Construction noise creates a temporary intermittent impact on ambient noise levels in the vicinity of the construction. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and portable generators, can reach high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The 2003 OCGP EIR concluded that the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development (without the density bonus units) would not result in any significant construction noise impacts. The previous noise assessment considered a worst-case condition of simultaneous demolition and construction activities with the combined sound level of an assumed list of 20 pieces of large mobile equipment operating at a distance of 5,000 feet; 5 concrete breakers operating at a distance of 6,000 feet; and 2 crusher plants operating at a distance of 10,000 feet from the nearest off-site residential location. These distances represented the shortest possible distance between the construction equipment and the off-site residences closest to the Proposed Project Site during a heavy construction period. The nearest off-site residential uses (sensitive receptor) were located approximately 4,000 feet from the Proposed Project Site boundary. Under those circumstances, the analysis estimated sound levels of approximately 56 dBA at the closest off-site residences. (Refer to the 2003 OCGP EIR, p. 5.4-24, Table 5.4-8).

With the recent development of the Portola Springs community, the nearest off-site noise-sensitive receptors are now located immediately adjacent to the Proposed Project Site, specifically north and east of District 8 at distances ranging from 100 to 300 feet. The next closest noise-sensitive residential land use is the Woodbury East village located approximately 900 feet east of District 1 North portion of the Proposed Project Site. The location of each district boundary is shown in Figure 5.7-6, *Project Area Districts*, with the nearest sensitive noise receptors shown in Figure 5.7-7, *Construction-Related Sensitive Receptors*.

Construction activities may occur near noise-sensitive receptors and noise disturbances may occur over prolonged periods of time. However, construction activities that result in high noise levels would be temporary, and occur sporadically. With implementation of PPP 7-1 and PPP 7-3 and PDF 7-1, construction-related noise impacts would be less than significant without mitigation.

## 5. Environmental Analysis

### NOISE

#### Construction Noise Levels

In January 2006, FHWA published a national database of construction-equipment-reference noise emission levels. This database, which is included as part of the FHWA's Roadway Construction Noise Model ("RCNM"), provides a comprehensive list of the noise generating characteristics for specific types of construction equipment (database provided in Appendix K of this DSEIR). In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. Noise levels generated by heavy construction equipment can range from approximately 70 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 78 dBA measured at 50 feet from the noise source to the receptor would be reduced to 72 dBA at 100 feet from the source to the receptor, and would be further reduced to 66 dBA at 200 feet from the source to the receptor.

To identify the potential construction noise level impacts of the Modified Project, a detailed noise analysis was performed using information related to the Project Applicant's assumptions regarding equipment type, quantity, and typical utilization at full power, the hours of operation within each District of the Modified Project and construction-related activity type (see noise technical report in Appendix K). To estimate the construction noise levels at off-site noise-sensitive receptors by District and phase, the construction information was used in conjunction with the FHWA's RCNM to develop the anticipated noise levels shown in Table 5.7-21.

Table 5.7-21  
Construction Noise Impact Analysis Summary<sup>1,2</sup>

District	Construction-Related Activity Noise Level Impacts at 100 feet (dBA $L_{eq}$ )					Maximum Reference Noise Level by District
	Demolition	Site Preparation	Grading	Paving	Building Construction /Coating	
District 1 North	85.3	79.5	89.4	82.3	87.2	89.4
District South	–	–	84.6	77.5	83.2	84.6
District 2	–	79.5	84.6	77.5	83.2	84.6
District 3	–	79.5	84.6	77.5	83.2	84.6
District 4	85.3	79.5	84.6	77.5	85.0	85.3
District 5	88.3	82.6	89.4	82.3	86.3	89.4
District 6	–	82.6	87.7	80.6	86.3	87.7
District 7	85.3	79.5	84.6	77.5	85.0	85.3
District 8	88.3	82.6	87.7	80.6	86.3	88.3

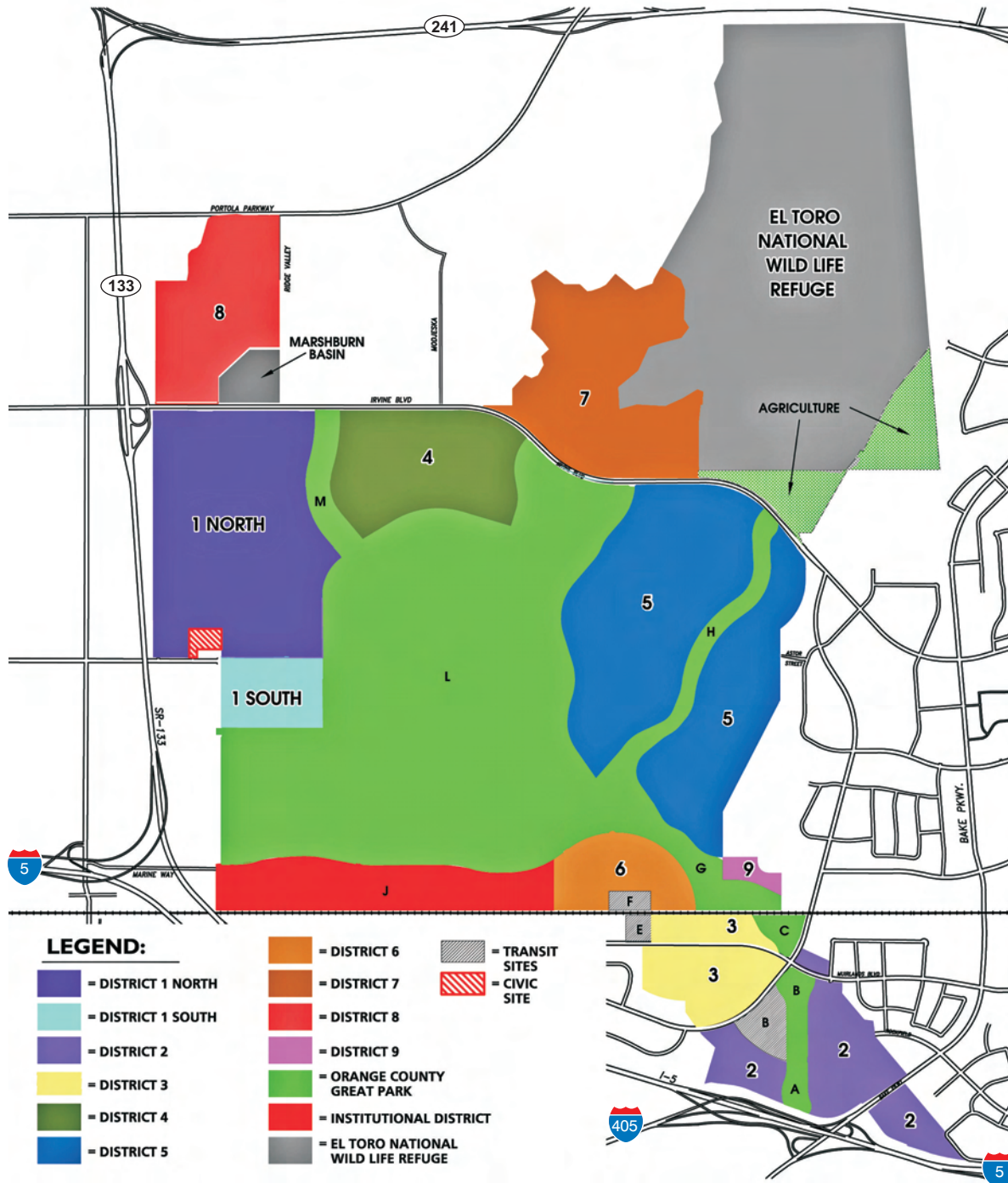
Source: Noise Study prepared by Urban Crossroads, Inc. (see Appendix K of this DSEIR).

<sup>1</sup> Noise levels at a distance of 100 feet from construction activity. Actual distance to the off-site noise sensitive receptors will vary by District and will not be closer than 100 feet.

<sup>2</sup> Construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts. It is expected that receptors located near each District during construction activities will experience temporary, short-term, significant impacts.

## 5. Environmental Analysis

### Project Area Districts



Source: Urban Crossroads 2011

Great Park Neighborhoods Draft Supplemental EIR

0 4,500  
Scale (Feet)



City of Irvine • **Figure 5.7-6**

## *5. Environmental Analysis*

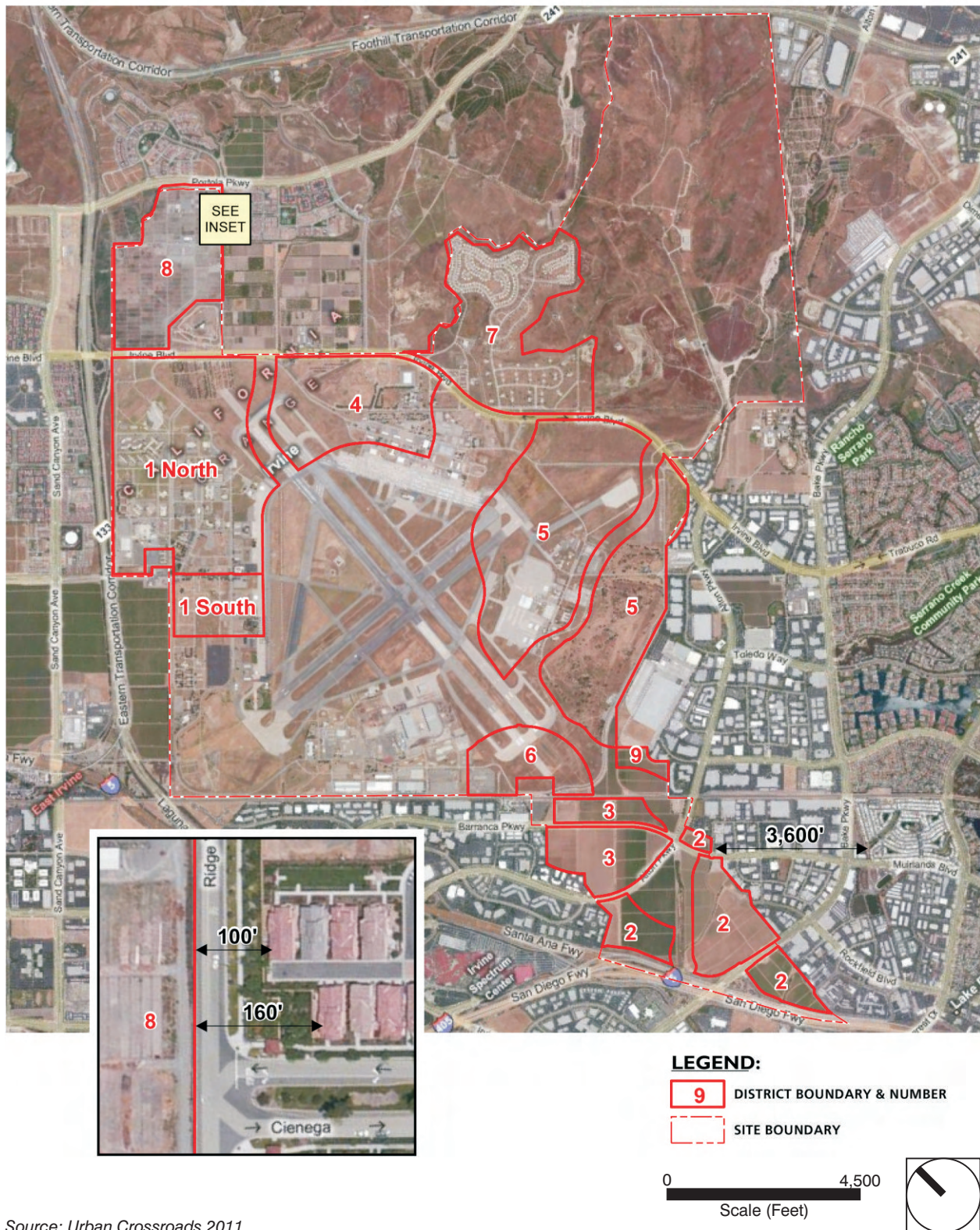
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### **NOISE**

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## 5. Environmental Analysis

### Construction-Related Sensitive Receptors



## *5. Environmental Analysis*

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### **NOISE**

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## 5. Environmental Analysis

### NOISE

As shown in Table 5.7-21, the results of the construction noise analysis indicate that the Modified Project's construction noise levels at off-site noise-sensitive receptors would range from 80.6 to 88.3 dBA  $L_{eq}$  at a distance of 100 feet from the District 8 boundaries. Additionally, Table 5.7-21 presents the maximum projected noise level within each district regardless of construction activity type, which is to estimate the worst-case maximum noise levels possible at a distance of 100 feet from the Proposed Project Site boundary for each District. Because onsite sensitive-receptors will not be closer than 100 feet from construction activities, construction noise levels in Table 5.7-21 are also indicative of noise levels at sensitive-receptors within the Districts. Each construction-related activity is described in more detail below. The detailed construction noise calculations for each activity by District are provided in Appendix K of this DSEIR.

#### *Demolition*

Construction within Districts 1 North, 4, 5, 7, and 8 will include demolition activities. During this phase of construction, the main emphasis will be on removal of the existing runways and other existing buildings and structures. Equipment used during demolition activities includes concrete and industrial saws, excavators, and rubber tire dozers.

Table 5.7-21 shows that during demolition, noise levels at the nearest noise-sensitive receptor are projected to range from 85.3 to 88.3 dBA  $L_{eq}$  at a distance of 100 feet from the District boundaries.

#### *Site Preparation*

Construction within Districts 1 North and 2 through 8 will include site preparation activities. During this phase of construction, the main emphasis will be on removal of non-structural materials and the import and export of dirt where necessary. Equipment used during site preparation activities includes rubber tire dozers, tractors, loaders, and backhoes.

Table 5.7-21 shows that during site preparation activities, noise levels at the nearest noise-sensitive receptor are expected to range from 79.5 to 82.6 dBA  $L_{eq}$  when activities occur at a distance of 100 feet from the District boundaries.

#### *Grading*

Construction within all Districts will include grading activities. During this phase of construction, the main emphasis will be on grading each portion of each site within each District according to approved grading plans. Equipment used during grading activities includes excavators, graders, rubber tire dozers, scrapers, tractors, loaders, and backhoes.

Table 5.7-21 shows that during grading activities, noise levels at the nearest noise-sensitive receptors are expected to range from 84.6 to 89.4 dBA  $L_{eq}$  when activities occur at a distance of 100 feet from the District boundaries. Grading activities are generally expected to produce the highest construction-related noise impacts.

#### *Paving*

Construction within all Districts will include paving activities. During this phase of construction, the main emphasis will be on paving roadways, parking lots, and other surfaces. Equipment used during paving activities includes pavers, rollers, and other miscellaneous paving equipment.

## 5. Environmental Analysis

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### NOISE

Table 5.7-21 shows that during paving activities, noise levels at the nearest sensitive noise-receptor are expected to range from 77.5 to 82.3 dBA  $L_{eq}$  when activities occur at a distance of 100 feet from the District boundaries.

#### *Building Construction and Coating*

Construction within all Districts will include building construction and coating activities. During this phase of construction, the main emphasis will be on the construction of buildings and homes. Equipment used during building construction and coating activities includes cranes, forklifts, generators, tractors, loaders, backhoes, welders, and air compressors.

Table 5.7-21 shows that during building construction and coating activities, noise levels at the nearest noise-sensitive receptor are expected to range from 80.2 to 87.2 dBA  $L_{eq}$  when activities occur at a distance of 100 feet from the District boundaries.

#### *Summary*

While the City's Noise Ordinance does not specify a limit on construction noise levels, it does stipulate the days and hours during which construction activities may occur and when construction would not be allowed unless a temporary waiver is requested and granted. As with the Approved Project, construction activities associated with the Modified Project will be subject to the limitations and requirements of Section 6-8-205(a) of the City's Noise Ordinance, which is incorporated into PPP 7-1 above. As outlined in Section 6-8-205(a), construction activities may occur between the hours of 7:00 AM and 7:00 PM Monday through Friday, and 9:00 AM and 6:00 PM on Saturday. No construction activities are permitted outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the Chief Building Official or his or her authorized representative. Trucks, vehicles, and equipment that are used at the Proposed Project Site or that are making, or are involved with, material deliveries, loading, or transfer of materials, equipment service, maintenance of any devices or appurtenances for or within the Proposed Project Site are not permitted to be operated or driven on City streets outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the City. Any waiver granted is required to take any impact on the community into consideration. No construction activity is permitted outside of these hours except in emergencies including maintenance work on the City rights-of-way that might be required.

Additionally, construction noise would be temporary, intermittent and of short duration, and would not create any long-term impacts. While the noise-level impacts presented for each phase of the Modified Project are a "worst-case" scenario and may at times be audible over traffic-related noise level impacts surrounding each District, these levels are not expected to be of a continuous nature.

Furthermore, to minimize the potential construction noise impacts associated with the Modified Project and to ensure that the greatest distance between noise sources and sensitive receptors during construction activities are achieved, the project applicant or its successor will be required to adhere to PPPs 7-1 and 7-3 and PDF 7-1 outlined above.

Lastly, the Modified Project would have a similar area of disturbance and a similar mix of construction equipment as the Approved Project. For all of these reasons, and with implementation of PPPs 7-1 and 7-3 and PDF 7-1, the Modified Project's construction noise impacts to off-site noise-sensitive receptors would be less than significant, like those of the Approved Project.

## 5. Environmental Analysis

### NOISE

#### **IMPACT 5.7-5      *THE MODIFIED PROJECT, LIKE THE APPROVED PROJECT, WOULD NOT GENERATE EXCESSIVE VIBRATION LEVELS DURING CONSTRUCTION.*** ***[IMPACT N-4]***

**Impact Analysis:** Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Construction equipment can produce vibration from vehicle travel, as well as from demolition, grading and building activities. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, and slight structural damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that can damage structures, but can achieve the audible and perceptible ranges in buildings close to the construction site. Groundborne vibration is almost never annoying to people who are outdoors (FTA 2006).

The Certified EIR concluded that the originally approved 3,625 dwelling units and approximately 6.5 million square feet of non-residential development would not result in any significant construction vibration or groundborne noise impacts. The closest off-site residential uses (sensitive receptor) were located approximately 4,000 feet from the Proposed Project Site Boundaries. With the recent development of the Portola Springs community, the nearest off-site sensitive receptors are now located immediately adjacent to the Proposed Project Site boundaries. The Portola Springs community is located specifically north and east of District 8 at distances ranging from 100 to 300 feet from the Proposed Project Site boundary. The next closest noise-sensitive residential land use is the Woodbury East village located approximately 900 feet east of District 1 North portion of the Proposed Project Site. The location of each district boundary is shown in Figure 5.7-6, *Project Area Districts*, with the nearest sensitive noise receptors shown in Figure 5.7-7, *Construction-Related Sensitive Receptors*.

Groundborne vibration would be generated by the Modified Project during construction activities, primarily during the demolition, site grading and foundation-construction phases. Table 5.7-22 lists vibration levels for construction equipment.

*Table 5.7-22*  
*Vibration Levels for Construction Equipment*

<i>Equipment</i>	<i>Approximate Velocity Level at 25 Feet (VdB)</i>	<i>Approximate RMS<sup>1</sup> Velocity at 25 Feet (in/sec)</i>
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Architectural Damage	–	0.200 Wood-Framed 0.500 Reinforced Masonry

Source: FTA 2006.

<sup>1</sup> RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second.

## 5. Environmental Analysis

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### NOISE

Construction equipment associated with the Approved Project and Modified Project would include: air compressors, cranes, forklifts, generator sets, tractor loaders and backhoes, welders, concrete saws, excavators, graders, dozers, scrapers, pavers, cement and mortar mixers, rollers, paving equipment, forklifts, and trucks.<sup>4</sup> Building damage is not a factor for normal projects, with the occasional exception of blasting and pile-driving during construction (FTA 2006); however, this would not occur with the Approved Project or Modified Project. Because construction activities would use typical equipment and would occur at distances over 100 feet from the nearest vibration-sensitive structures, vibration levels from construction activities would not be substantial enough to cause architectural damage. As is true for the Approved Project, construction activities associated with the Modified Project will also be subject to the limitations and requirements of Section 6-8-205(a) of the City's Noise Ordinance, which limits the construction equipment use and associated vibration to the least sensitive portions of the day (7:00 AM and 7:00 PM Monday through Friday, and 9:00 AM and 6:00 PM on Saturday). Consequently, no significant vibration impacts would occur. Like the Approved Project, impacts would be less than significant for the Modified Project.

#### 5.7.5 Cumulative Impacts

Cumulative noise impacts occur when multiple sources of noise, though individually not substantial, combine and lead to excessive cumulative noise exposure at noise-sensitive uses.

#### Operational Mobile-Source Noise

Traffic volumes and traffic noise increases on local roadways in the vicinity of the Proposed Project Site were shown in Tables 5.7-9, *General Plan Buildout (Post-2030) Off-Site Average Daily Traffic Volumes (1,000s)*, and 5.7-11, *General Plan Buildout (Post-2030) With Modified Project Off-Site Project-Related Traffic Noise Impacts*. The difference between the "Approved Project" and "Modified Project" scenarios represents the Modified Project's contribution to cumulative roadway noise increases. Project-related cumulative noise impacts could occur if the Modified Project contributes to substantial (1.5 dBA or more) cumulative noise increases. However, as demonstrated in Table 5.7-11, no increases of 1.5 dBA or greater are projected to occur and, as a result, no cumulative noise impacts on any of the roadway segments analyzed would occur.

#### Operational Stationary Source Noise

Unlike transportation noise, the effects of which can extend well beyond the limits of the Proposed Project Site, stationary source noise generated by the Modified Project is limited to impacts to sensitive receptors immediately adjacent to or within the Proposed Project Site. As discussed above, project-related sources of stationary noise would include activities associated with commercial and retail uses, including parking lots, mechanical equipment, and loading/unloading activities, and activities related to residential uses, including air conditioners, yard care equipment, and outdoor activities. However, no significant impacts would occur, as stationary source noise is regulated by the City of Irvine through the City's Municipal Code to ensure that they are controlled to acceptable levels. Future projects within the Proposed Project Site and other off-site projects within the vicinity of the Proposed Project Site will be required to comply with the City of Irvine noise regulations or those of other adjacent jurisdictions, which reduce significant impacts to less than significant levels. Consequently, like the Approved Project, the Modified Project would not result in stationary source cumulative noise impacts.

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<sup>4</sup> Construction equipment list based on the construction equipment list used for the air quality technical report prepared by ENVIRON, which is based on an equipment list provided by the Applicant.

#### Construction Noise and Vibration

Like operational stationary source noise, cumulative construction noise impacts and vibration are confined to a localized area. Consequently, cumulative impacts would only occur if other projects are being constructed in the vicinity of the Proposed Project Site within the same time frame as construction of the Modified Project so that they would contribute to the local ambient noise environment. There are three related construction projects in the vicinity of the Proposed Project Site: PA 6, PA 40, and Stonegate. However, the potential for the grading and construction activities associated with Planning Area 40 to occur simultaneously with those of the Modified Project are minimal, as Planning Area 40 is currently being mass graded and construction activities in that planning area have already commenced. Additionally, based on noise levels that would be generated by construction activities at the Proposed Project Site, the duration of construction activities (varies by individual development project), and the proximity of sensitive receptors, construction noise from the Modified Project would not substantially elevate ambient noise levels nor significantly contribute to the cumulative noise environment. Furthermore, to minimize the potential construction noise impacts associated with the Modified Project and to ensure that the greatest distance between noise sources and sensitive receptors during construction activities are achieved, the project applicant or its successor will be required to adhere to PPPs 7-1 and 7-3 and PDF 7-1 outlined above. Future projects within the Proposed Project Site and other off-site projects within the vicinity of the Proposed Project Site will be required to comply with the City of Irvine noise regulations or those of other adjacent jurisdictions, which reduce potential impacts to a less than significant level. Therefore, construction-related noise impacts would be controlled within the areas close to each construction site and would therefore be unlikely to combine with noise generated from other construction sites.

#### 5.7.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements, PPPs and PDFs, the following impacts would be less than significant for both the Approved Project and the Modified Project: 5.7-1, 5.7-3, 5.7-4, and 5.7-5.

Without mitigation, the following impacts would be **significant**:

- Impact 5.7-2 The Modified Project could expose noise-sensitive receptors within the Proposed Project Site to noise levels that exceed the City's interior noise standard of 45 dBA CNEL or the City's exterior standard of 65 dBA CNEL.

#### 5.7.7 Mitigation Measures

Applicable Mitigation Measures from the Certified EIR

No mitigation measures were recommended in the Certified EIR because noise and vibration impacts of the originally approved 3,625 and approximately 6,585,000 square feet of non-residential development were considered less than significant without mitigation.

Additional Mitigation Measures for the Modified Project

The following mitigation measures are being proposed for the Modified Project.

## 5. Environmental Analysis

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### NOISE

#### *Impact 5.7-2*

- N-1 Prior to the issuance of building permits for lots facing or located near major highways such as Irvine Boulevard, the project applicant or its successor shall provide a final noise study to the Director of Community Development that demonstrates how the exterior and interior noise requirements (65 dBA CNEL and 45 dBA CNEL, respectively) of the City of Irvine General Plan Noise Element will be met. To attain the exterior and interior noise requirements, the final noise study shall include, but not be limited to the following measures, in addition to such measures as the final noise study determines are required and shall be shown on the final map:

#### **Exterior**

- Provide a minimum six-foot high noise barrier for single-family detached residences shown in Figures 5.7-3 through 5.7-7 of this DSEIR.

#### **Interior**

- Provide a “windows closed” condition, requiring a means of mechanical ventilation (e.g., air conditioning) for all units.
- Provide standard and upgraded dual-glazed windows with a minimum Sound Transmission Coefficient rating of 26. Specific window recommendations shall be made once final architectural plans are available and detailed interior noise reduction calculations can be calculated based on actual building assembly details.

- N-2 Prior to authorization to use, occupy and/or operate any multi-family residential unit, the project applicant or its successor shall submit evidence to the satisfaction of the Director of Community Development that occupancy disclosure notices for residential units with balconies that do not meet the City’s exterior noise standard of 65 dBA CNEL will be provided to all future tenants pursuant to the City’s Noise Ordinance.

#### *5.7.8 Level of Significance After Mitigation*

With implementation of the existing regulations, PPPs, PDFs and mitigation measures outlined above, potential impacts associated with noise compatibility (Impact 5.7-2) would be reduced to a level that is less than significant. Therefore, no significant and unavoidable impacts relating to noise have been identified.